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The SLIPPS Learning Event Recording Tool for students in Advanced Practice Nursing: A translation and content validation study

Das SLIPPS Learning Event Recording Tool für Pflegestudierende: deutsche Übersetzung und Bestimmung der Inhaltsvalidität

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ABSTRACT

Introduction: Patient safety is crucial in healthcare, yet over three million people die annually worldwide due to adverse events. To learn from adverse events and patient safety incidents, they need to be identified, examined, and reflected upon. Therefore, the SLIPPS Learning Event Recording Tool (SLERT) was developed to promote learning from patient safety events, both negative and positive. This study aimed to translate and validate the SLERT, which is already available in seven languages, for German-speaking countries.
Methods: The validation study involved a structured 4-phase blind-back translation to ensure cross-cultural equivalence of the translated tool. This was followed by a cognitive validation to determine content validity, a pilot survey with nursing students, and an evaluation of user-friendliness based on the System Usability Scale (SUS). Data was analysed qualitatively with Mayring's method using MAXQDA and quantitatively with descriptive analysis in Excel.
Results: Five nurses participated in the group meeting on cognitive validation (Ø age = 28.8; Ø years of professional experience = 4.7). The German SLERT comprises sections underpinned by theory, which prompt students to describe, reflect upon, and learn from patient safety events. The pilot survey with 15 students (80 % women) indicated acceptable user-friendliness, with 50 % scoring between 80 and 100 on the SUS. The incidents described in the pilot exclusively indicated adverse events, near misses, or hazards from the sub-areas "medication management", "using medical devices", "confusion of patients", "staff problems/errors" and "self-harm of patients".
Discussion: For the first time, the German-language version of the SLERT was used to record and reflect on patient safety events among nursing students.
Conclusion: Standardised reporting and reflective practices are critical to improving patient safety. The SLERT provides a user-friendly way to contribute valuable data for targeted quality and risk management measures and prepare future healthcare professionals for advanced practice.

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ZUSAMMENFASSUNG

Hintergrund: Patient*innensicherheit ist im Gesundheitswesen von entscheidender Bedeutung, dennoch versterben jährlich weltweit über drei Millionen Menschen aufgrund von unerwünschten Ereignissen. Um aus unerwünschten Ereignissen und Vorfällen im Bereich der Patient*innensicherheit zu lernen, müssen diese erkannt, untersucht und reflektiert werden. Dazu wurde das SLIPPS Learning Event Recording Tool (SLERT) entwickelt, um das Lernen aus negativen und positiven Ereignissen zur Patient*innensicherheit zu fördern. Ziel dieser Studie war es, das SLERT, das bereits in sieben Sprachen vorliegt, für den deutschsprachigen Raum zu übersetzen und zu validieren.
Methode: Die Validierungsstudie beinhaltete eine strukturierte 4-Phasen-Blind-Back-Übersetzungsmethode, um die kulturübergreifende Äquivalenz des übersetzten Tools sicherzustellen. Es folgten eine kognitive Validierung zur Bestimmung der Inhaltsvalidität, eine Piloterhebung mit Pflegestudierenden sowie eine Bewertung des Systems und der Benutzerfreundlichkeit anhand der System Usability Scale (SUS). Die Daten wurden qualitativ mit Mayrings Methode unter Verwendung von MAXQDA und quantitativ durch die deskriptive Analyse in Excel ausgewertet.
Ergebnisse: An dem Gruppenmeeting zur kognitiven Validierung nahmen fünf Pflegepersonen teil (Ø Alter = 28,8; Ø Jahre Berufserfahrung = 4,7). Das deutschsprachige SLERT besteht aus theoriebasierten Abschnitten, die die Studierenden auffordern, Ereignisse zur Patient*innensicherheit zu beschreiben, zu reflektieren und daraus zu lernen. Die Pilotbefragung mit 15 Studierenden (80 % Frauen) zeigte eine akzeptable Benutzerfreundlichkeit, da 50 % der Teilnehmenden einen SUS-Score zwischen 80 und 100 vergaben. Bei den im Pilotprojekt beschriebenen Vorfällen handelte es sich ausschließlich um unerwünschte Ereignisse, Beinahe-Unfälle bzw. Gefahren aus den Teilbereichen „Medikamentenmanagement", „Medizinprodukte anwenden", „Verwechslung von Patient*innen", „Personalprobleme/-fehler" und „Selbstgefährdung der Patient*innen".
Diskussion: Erstmalig konnte die deutschsprachige Version des SLERT zur Aufzeichnung und Reflexion von Patient*innensicherheitsereignissen bei Studierenden der Pflege eingesetzt werden.
Schlussfolgerung: Standardisierte Berichterstattung und reflektierte Praktiken sind für die Verbesserung der Patient*innensicherheit entscheidend. Das SLERT bietet eine nutzer*innenfreundliche Möglichkeit, wertvolle Daten für gezielte Qualitäts- und Risikomanagementmaßnahmen beizusteuern und künftige Fachkräfte des Gesundheitswesens auf die fortgeschrittene Praxis vorzubereiten.

Introduction

Patient safety is crucial in healthcare, yet about 10% of hospitalised patients worldwide suffer harm that would be preventable in at least 50% of all cases [1]. The World Health Organisation (WHO) reports 42.7 million adverse events annually among 421 million hospital stays [2], often due to inadequate quality criteria, incomplete care processes, and weak management structures [1]. Adverse events, the third leading cause of death in developed countries, refer to harmful incidents arising during medical management, including diagnosis, treatment, and the use of systems and equipment, ultimately impacting patients adversely [3]. While a near miss is an event, where a serious error or mishap occurs that could trigger an adverse event but does not do so due to chance or timely interception, and a hazard is something with the potential to cause harm [2,4].

The effectiveness of measures to prevent adverse events and improve patient safety is well recognised [5]. Reporting and learning systems, like Critical Incident Reporting Systems (CIRS), are essential tools in clinical risk management. In Austria, these are used regionally in healthcare organisations, but there is also a national CIRSmedical platform (www.cirsmedical.at) [6,7]. However, the impact of these systems on reducing patient safety events remains unclear, requiring additional mechanisms to ensure effective learning [8]. The critical incident technique, developed by Flanagan in 1954, is now widely used to explore learning events in patient safety [9]. The reporting of incidents, historically implemented in safety-critical fields like aviation, has gained importance in healthcare, with an increased focus on reflecting on incidents and integrating standardized models into professional training [10,11].

Nurses, the largest professional group in healthcare, are frequently confronted with incidents and mitigate them by using their expertise to improve patient safety [12]. Advanced Practice Nurses (APNs) are key to overcoming complex challenges in healthcare. International research has shown that they can enhance healthcare quality, reduce risks, and increase efficiency by identifying adverse events, analysing causes, and implementing improvements. APNs are crucial in the early identification and treatment of high-risk patients and in managing medication adherence, education, and safety [13–15]. The International Council of Nurses (ICN) Nurse Practitioner/Advanced Practice Nurse Network defines the role of an APN as follows: 'A Nurse Practitioner/Advanced Practice Nurse is a registered nurse who has acquired the expert knowledge base, complex decision-making skills, and clinical competencies for expanded practice, the characteristics of which are shaped by the context and/or country in which they are credentialed to practice. A master's degree is recommended for entry level' [16].

As part of an Erasmus^{+} project 'Sharing Learning from Practice to Improve Patient Safety' (SLIPPS) led by Northumbria University (2016-1-UK01-KA203-024-258), a tool was developed to help healthcare students document and reflect on patient safety events [17,18]. The SLERT enables systematic recording, exploration, and reflection on safety-related events during placements. It includes three sections: event description (A), reflection on experiences and learning including open-ended questions with free text responses (B), and socio-demographic information (C). In contrast to CIRS, the SLERT focuses on reflective learning and raising awareness of critical incidents, rather than comprehensive reporting. The tool, available in English, Spanish, Finnish, Italian, Norwegian, Farsi, and Czech, has been used across several countries [17,18].

This validation study was essential due to the absence of a German translation of the SLERT tool.

Objectives and research questions

This study aimed to translate the SLERT using a standardised process and to test it in a pilot study with Advanced Practice Nursing master's students in Austria. The following research questions emerged:

1) What is the content validity and user-friendliness of the German-language SLERT?
2) What types of learning events do Advanced Practice Nursing master's students document using the German SLERT?

Theory

Enhancing patient safety in healthcare requires analysing adverse events and errors to prevent similar problems in the future. This involves exploring the causes [19] and fostering a culture of learning from incidents rather than blaming individuals [12]. The SLIPPS project focused on three main components that underpin the SLERT tool: experiential learning/situated learning, the concept of learning in different professional knowledge contexts, and reflection/reflexivity. Experiential learning emphasizes learning from practical experiences while learning in different contexts recognizes the tension between scientific and practical knowledge. Students experience different contexts of knowledge as they move through academic, practical, and organizational environments during their training and often report or reflect on these differences. Kolb's (1984) cycle of experiential learning highlights that experience alone is not enough and transformation into learning through reflection on action is required. In this respect, reflection refers to cognitive and affective processes of contemplation. Reflection and reflexivity are essential for personal and professional development, with reflexivity involving collaborative observation to monitor safety gaps. Exchanging reports among students can facilitate learning reflective skills [18].

Material and methods

Design

After clarification of copyrights and approval by Northumbria University, a validation study was carried out using a standardised translation process and a descriptive cross-sectional online survey.

German translation

The study followed a structured approach, described as a 4-phase back translation method [20], illustrated in Figure 1. Four people, including two native English speakers, participated in the process. First, the English SLERT was translated into German with the help of two translators who were native speakers of both languages and cultures, resulting in two different versions. Afterwards, these versions were harmonised into one with the help of a third person to resolve any inconsistencies. The new version was then back-translated into English by a translator who was unfamiliar with the original SLERT. A comparison between this back-translated version and the original SLERT was carried out by the original authors to ensure consistency of content, and the tool was finally approved. These methodological steps are crucial for checking the equivalence of the translated instrument before its use in the study. Disagreements were resolved through joint discussions between the team members. All changes during the process were recorded in a protocol.

Cognitive validation

After harmonising the tool, a pilot study was conducted to determine content validity and system usability and to gain insights into the learning process. Validity generally refers to

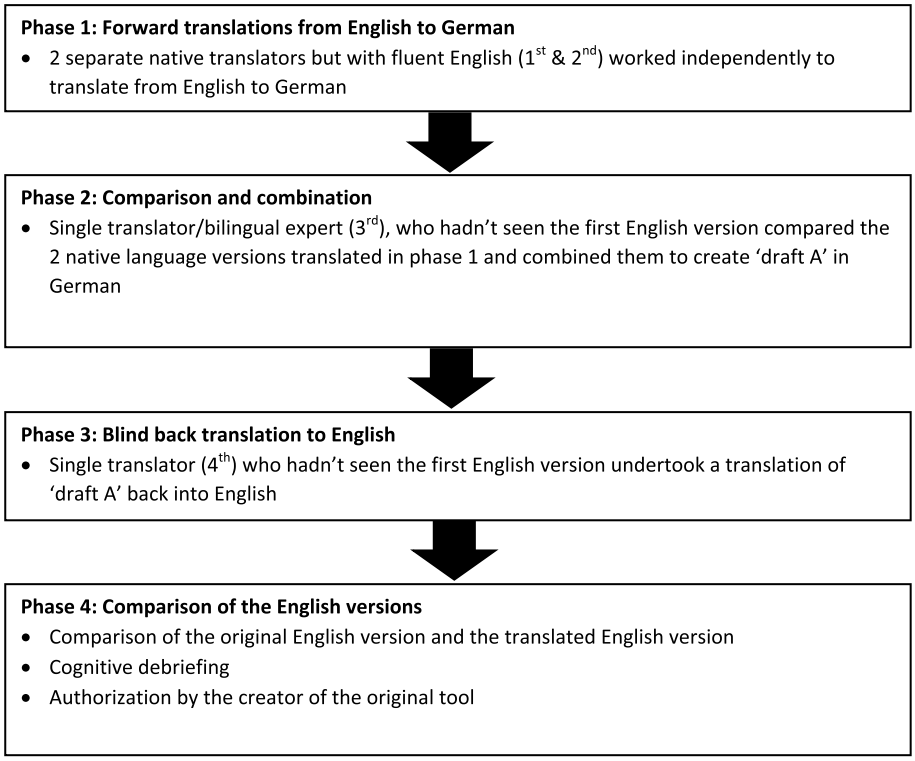

Figure 1. Translation process.

how accurately a tool does what it is supposed to. A valid tool should measure exactly the right thing without random fluctuations. Content validity specifically evaluates how comprehensively a tool covers all relevant aspects of the construct of interest [21]. In general, the main elements of the SLERT (Sections A and B) do not aim to measure. Rather they are designed to prompt and 'gather' descriptions [22], and therefore user-friendliness and cognitive validation were used to pilot the tool before the actual survey. This phase sought to evaluate the clarity of questions and identify challenges encountered by respondents in performing the given task. The 'think aloud' technique was used during an online group meeting to recognise any problems with the questions, which helped explore the content validity of the items, identify issues, and derive improvement actions. The participants were asked to think out loud and to express all the thoughts that led them to answer the question. The primary aim of this technique is to uncover difficulties participants encounter in understanding and responding to the questions [23]. In advance, participants received an information letter, data protection notice, and consent form, which also collected socio-demographic data (gender, age, experience, occupational group). They received the German SLERT version by mail. This was followed by a 117-minute recorded group meeting on MS Teams, which was deleted after the project. During the meeting, each question was evaluated for clarity, and comments were reviewed until no new feedback emerged. The researcher documented and presented the findings to the project group.

Testing the system and user-friendliness

The user-friendliness and manageability of the German SLERT were assessed using the German version of the System Usability Scale (SUS), a widely recognized 10-item tool employing a 5-point Likert Rating Scale (1 = strongly disagree; 5 = strongly agree). Participants' scores for each question were added together and multiplied by 2.5 for conversion from the original 0-40 scale to a 0-100 range. Good usability is attested to a value of 68 (or higher) [24].

Sample

A convenience sample of 50 students from an Austrian Advanced Practice Nursing master's program, all with professional nursing experience and German proficiency, was selected and informed about the survey's voluntary nature, study aims, and data handling.

Data collection

Before the study, information about the study was given to the programme directors and their permission was obtained. Subsequently, the online survey was sent to the students using the university's anonymous survey tool Lime Survey [25]. The survey period lasted a total of three weeks. A reminder email was circulated after two weeks of the survey period.

Data analysis

As the SLERT contains open and closed answers, the content was analysed both qualitatively and quantitatively. Results in sections A and B were content analysed based on Mayring's method [26] using the tool MAXQDA [27]. A content-analytical summary approach was chosen, and the material was analysed systematically in steps. The inductive formation of a coding framework was undertaken and determined directly from the material analysed. This framework encompassed elements of importance that emerged from the data and individual categories. After creating a coding guide, the content was analysed using Mayring's seven-step process (2022) which involved: (1) defining a unit of analysis, (2) paraphrasing text passages to main the content, (3) determining the level of abstraction (generalization), (4) the first reduction by selecting and deleting paraphrases with the same meaning, (5) the second reduction by bundling, constructing and integrating, (6) compiling new statements as a category system and, (7) rechecking the summarising category system against the source material [26].

Data from section C was analysed descriptively and presented graphically with the help of Microsoft Excel.

Ethical considerations

The study complies with the guidelines for ensuring good scientific practice and was approved by the PMU Ethics Committee [SS22-0034-0034] in November 2022. Participants were assured of anonymity; participation was voluntary, and consent was gained.

Results of the German SLERT

The results of the validation study are divided into four sections: cognitive validation, quantitative analysis, qualitative analysis, and testing the user-friendliness as well as usability of the German tool. Five female students with an average age of 28.8 years (SD ± 3.8) and 4.7 years of professional experience (SD ± 2.7) took part in the cognitive validation. The pilot survey included 15 nurses (80% women) aged between 26 and 30 years (SD ± 3.5), ten of whom were in the second year of the master's program. All participants completed the entire questionnaire.

Cognitive validation

As a result, ten changes were made to the tool, primarily addressing linguistic understanding and wording. For example, on page 11 of the tool, the phrase "The area of the practical placement in which the event occurred" was deemed unclear and changed to "To which topic/sub-area does the described learning event relate" The term "patient safety" was correctly gendered, and an option "do not wish to answer" was added to the age question. In addition, the sentence "Please also describe the feelings before, during and after the event and after the event and/or feelings that you noticed others expressing" was revised to "Please also describe the feelings before, during, and after the event and/or feelings shown/expressed by other people involved" (page 6 of the tool), thereby increasing validity.

Quantitative analysis

Most incidents occurred in internal medicine (n = 4), followed by three incidents in intensive care/emergency admissions. There are various reasons why the incidents were not reported in hospital systems. On the one hand, they remained unreported because, according to those affected, there was no reason to report them, and the incident was discussed internally. Fear of reporting was also cited. Conversely, it was stated that those involved were not aware of any misconduct and did not know that there was a reporting system or did not think to report the incident. The CIRS was used to report only one event. The reasons given for not documenting events were that it was perceived that nothing important had happened, or that the patients were subsequently monitored. The incidents described in the pilot survey are limited exclusively to adverse events, near misses, or hazards.

Qualitative analysis

A total of 15 different incidents were reported but can all be divided into the following sub-areas: ‘‘medication management”, ‘‘use of medical devices”, ‘‘a mix-up of patients”, ‘‘staff errors” and ‘‘self-endangerment of patients”. The majority of incidents occurred during the day shift (n = 11) and usually involved several people, but always nursing staff. Factors that contributed to the incidents included high workload and performance pressures, enormous stress potential, time pressure, hectic work, staff shortages, disregard for daily routines, inadequate patient identity checks, inadequate information transfer, language barriers, and distraction. All events occurred in a clinical setting.

Incidents were described where medication was administered to the wrong patients and patient mix-ups occurred despite the medication being labeled with the patient’s details.

“Heparin was administered to the wrong thrombocytopenic patient. The trainee was instructed to administer the heparin labeled with the patient’s name.” (ID 5, line 1ff)

Therefore, it was essential to consistently adhere to the 5 or 6-R rule for verifying patient identity and ensuring accurate medication administration.

“What I took away from the event was that I personally need to pay more attention to the 5-R rule again and instruct trainees more intensively and precisely.” (ID 5, line 16ff)

The use of medical devices without training or reading the operating instructions was reported and was viewed as having the potential for negative impacts on patients.

“There was no prior training on the product, the instructions for use/operating were not read before use - application in the sense of learning by doing.” (ID 11, line 2ff)

This indicates a need for training to be completed and checklists followed. An equipment check based on specified standards should perhaps be required when starting work and reports indicated that incidents might occur if existing checklists or predefined activities are not followed.

“This control according to checklists is particularly relevant in stressful situations.” (ID 2, line 42f)

The people involved often found it difficult to express their feelings and these were often emotions that could be observed or perceived by third parties. Sharing feelings was described as helpful in processing the event. If mistakes happen, the nurses involved may feel helpless as if there is nothing they can do in the situation. Nurses report that it is extremely important to be aware of their feelings and not to ignore them. Inadequate communication between all persons involved in the treatment process results in a major safety gap.

“Good communication within the team, clear, prompt documentation, and a sense of responsibility are essential when working with patients.” (ID 9, line 22ff)
“The incident was discussed with the trainee. Discussions within the team help to be aware of such incidents and to endeavor to avoid them in a targeted manner.” (ID 7, line 11ff)

In most cases, the participants reported that the event had no long-term effects on the patient. However, one incident was described where the patient died because of doctors failing to act.

The participants in the survey reported that it might be necessary to monitor patients and their condition more closely after an adverse event and to document this. However, only three incidents were documented in the form of a written statement or an entry in the care report.

“The responsible gynecologist was informed about the incident and documented in the care report.” (ID 8, line 23f)

User-friendliness and usability of the German tool

Overall, an average SUS-Score of 74.5 (SD ± 22.7) (n = 15) was achieved. In general, the survey shows an acceptable level of user-friendliness, as 50% of students awarded a SUS score of between 80 and 100. These results indicate a German SLERT that is easy and safe to use. However, it is important to note that five out of the 15 participants did not meet the cut-off value of 68.

Discussion

Through this study, a tool for recording patient safety incidents was made available to students in Advanced Practice Nursing in Austria for the first time. The SLERT offers the opportunity to reflect on incidents experienced during practical placements and to learn from the events encountered. Following a structured translation process, a pilot survey was conducted, which demonstrated a user-friendly tool. This is shown by the fact that, in comparison, the SUS values for the SLERT range from a high value of 87.05 in Finland to a low value of 71.08 in the United Kingdom [21]. The German version used in Austria is roughly in the middle with a value of 74.5.

Although the number of student nurses who took part in this survey was small, the results provided valuable insights. The incidents highlighted the physical and emotional effects of such experiences on the students, staff, and patients involved. The aspect of self-endangerment and/or endangerment of others was presented for some incidents. Descriptions were given of the various learning effects and long-term consequences. In addition, measures implemented after the incident to monitor and follow up with the patient were discussed, including whether the incident was documented. A total of five adverse events, two near misses, and eight incidents in ‘danger’ were described.

As demonstrated by Steven et al. (2023), various individuals (healthcare professionals, patients, family members, nursing staff, students/trainees) participated in learning events occurring in diverse settings such as hospitals and home care environments. Emotions were expressed in some incidents, highlighting the importance of apologizing to affected patients afterward [28]. If an adverse event occurs, it is important to acknowledge the mistake, inform the patient of the error, and apologize to the patient and/or other people involved. Patient safety should always be at the forefront of patient care, even in stressful situations and when there is a shortage of staff. [9]. Students included in this study often perceived a significant discrepancy between theory and practice, and experienced a reality that differed from what was described in textbooks, which can lead to stress. They sometimes experience a lack of rapport with supervisors, which can lead them to seek support from peers after adverse events. Ensuring patient safety may require considerable time and effort, necessitating prior training and information acquisition about unfamiliar procedures. Interactions, relationships, and activities can all influence patient safety [28].

Some of these aspects are confirmed in the present study. Among other things, the events described that different people/professional groups (patients, relatives, nurses, doctors, transport attendants, etc.) were involved and unlike the findings from Steven et al. (2023) [27], they all took place in a clinical setting. The utility and importance of admitting mistakes, informing patients, and apologizing to the people involved, was confirmed in this study. Furthermore, it is important to be trained to use equipment in advance and to inform oneself if certain procedures/activities are unfamiliar.

In our study, students did not state whether the respective incidents could have been avoided. In contrast, the Portuguese study indicates that 14 of the 15 reported incidents could have been avoided if checklists/activities had been followed; correct identity checks had been carried out and the dual control principle had been applied. Sousa et al. (2014) reported that of 1,669 incidents investigated, 53.2% were classified as entirely preventable [19].

Anderson et al. (2013) identified the five most common risk factors in acute care, staff competencies/skills, number of staff, medication errors, system coordination, and medical equipment/information technology. The working environment, continuity of care, lack of time, and availability of resources have an impact on patient safety [11]. In this study, it was found that inadequate skills or time constraints among staff, as well as understaffing, contribute to numerous incidents. It was observed that a lack of training in equipment usage or medication errors could lead to adverse events.

A study by Tella et al. (2016) compared 54 learning events of British and Finnish nursing students. It emerged that initially harmful events for patient safety were reported, but that these were ultimately perceived as positive learning events because of a systematically performed reflection [9]. This fact can be confirmed for all 15 incidents in our study, as participants reported a wide variety of learning effects, but only negative incidents. Students stated that they have learned from them for future actions. In addition, the aspect that clear communication is an important element in avoiding incidents in patient safety is mentioned in this survey.

Not only were the different languages spoken by healthcare staff cited as a barrier, but also communication problems between patients and nurses. Close monitoring of the patient's condition after an adverse event was seen as an indispensable measure to recognize changes quickly. It is essential to document patient safety incidents in the patient file and report them via a system. This helps everyone in the team learn from mistakes for the future. In both the UK and Finland, it was found that human errors related to patient safety are concealed [9].

Implications for practice

Positive and negative experiences were described, which affect the person(s) involved in different ways. As nurses, it is necessary to work in a focused and responsible manner to ensure the safety of patients at all times. When mistakes are made or unfortunate events occur, it is essential to admit mistakes and talk about them, strive to prevent such events in the future, and be able to process them. Apologizing and confessing to the persons concerned should never be forgotten to clarify the events and be able to deal with them. Safety in the daily work routine was described as an important factor. If events have occurred that jeopardize patient safety, it is important to address this and initiate further measures if necessary. The responsible doctors and patients should be informed and educated.

Continued training and ongoing education in patient safety are imperative for the entire team within an institution. It is important to work in a focused, careful, conscientious, and precise manner, despite any time pressure or stress. Detailed patient observation and individualized action derived from this, taking into account the patient's resources, is necessary to ensure safety. Knowledge and experience can be helpful in daily work but should never lead to rash actions.

To improve patient safety, it is essential to report incidents in a standardized manner to be able to derive implementations/changes for practice. This helps to ensure that lessons can be learned from individual incidents by consciously reflecting on them. This tool is important for students to learn how to deal with mistakes at an early stage [10].

Limitations

Due to the study's small sample size of 15 students from a single university in the pilot survey and a limited timeframe, the applicability of the findings is constrained. Despite efforts to extend the data collection period, augmenting participant numbers proved challenging. This limitation may stem from the tool's time-intensive nature, requiring participants to devote thoughtful consideration rather than simply ticking boxes for responses, particularly for the open-ended questions.

Regarding cognitive validation, it should be noted that five participants is a small number and only one group session was conducted. Nevertheless, a wide range of research experts, university professors, managers, clinical staff, tutors, etc. were involved in the original design of the English version of the SLERT, which in turn increases the validity of the tool.

Conclusions

Standardised reporting of adverse events as a valuable learning experience is a crucial step toward improving patient safety. It offers two main benefits: fostering student self-reflection and providing valuable data for research and practice improvement. Additionally, it enables practicing colleagues to reflect on patient safety and implement targeted quality management measures. Translating, validating, and piloting the SLERT tool in German marks an important milestone. A pilot study has shown that it is user-friendly for Advanced Practice Nursing students to document and reflect on patient safety incidents. Although further research with larger groups is required to confirm its wider impact, the tool has the potential for wider application in recording learning events. Despite the limited sample size in the pilot study, the data collected can inform targeted quality and risk management interventions.

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Conflict of interest

The authors declare that there is no conflict of interest.

CRediT author statement

Lisa Pointner: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. Alison Steven: Writing – review & editing, Supervision, Methodology. Piret Paal: Writing – review & editing, Supervision. Manela Glarcher: Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Formal analysis, Conceptualization.

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