

“The Patient Was Faster than I Could Think” Errors in Acute Care Physiotherapy: A Mixed-methods Survey

Verena Izzo, PT, BSc,* Eveline Howald, PT, BSc,*
Doerte Watzek, Psych., PhD,* Peter Nydahl, PhD, RN,†‡ and
Sabrina Eggmann, PT, PhD§||

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Objectives: Patient safety aims to prevent avoidable harm in health care, yet adverse events affect 10% of hospitalized patients. Data on physiotherapy-related errors and consequences remain scarce. This study explored the nature of self-reported errors among physiotherapists working in acute care hospitals in Switzerland.

Methods: A cross-sectional, mixed-methods study was conducted using an anonymous, web-based survey. Physiotherapists were invited to report errors they had committed in acute care settings. They were asked to describe the context and to categorize the resulting harm. Afterward, they could select any previously-committed errors from a predefined list. Responses were analyzed using content analysis, descriptive statistics, and triangulation.

Results: Sixty-two physiotherapists reported 79 errors across various specialties, experiences, and hospital sizes. The majority of errors occurred in musculoskeletal and medical settings. While most errors caused no patient harm, 21 (27%) resulted in temporary to permanent harm. Researchers assessed the level of harm as higher than that of participants in 26 (33%) cases. Most errors had multiple contributing factors [73 (92%)]. Interprofessional miscommunication and blame were common. Data triangulation revealed gaps in physiotherapists' awareness and conceptualization of errors.

Conclusions: Physiotherapy-related errors were common and were influenced by a mix of system-level and human factors. Most self-reported errors did not result in serious harm, yet physiotherapists' understanding of errors was concerning. A proactive, interprofessional, and open safety culture seems crucial to improve both patient safety and clinical practice in acute care physiotherapy.

Key Words: adverse events, critical medical incidents, medical errors, patient safety, physical therapy specialty, prevention and control, qualitative research

Patient safety is a vital aspect of health care, aiming to safeguard patients from preventable harm (ie, impairments on body structure and function).^{1,2} Yet around 1 out of 10 hospitalized patients experience an incident leading to harm³ termed an adverse event,¹ whereby half of these are preventable.⁴ In Switzerland, the fatality rate of these adverse events ranges between 1% to 30%, which would equal ~9400 fatalities per year out of 140,500 in-patients who experienced an adverse event in hospitals.⁴ Moreover, adverse events are associated with longer hospital stays and earlier readmissions.⁵ In Switzerland, the estimated amounts of increased costs are, on average, 27,409 Swiss Francs per event.⁵

Patient safety is also paramount to physiotherapists working in acute care hospitals.^{6,7} The profession traditionally emphasized patient safety at the individual level, with primary education focusing on foundational knowledge and the skills needed for safe 1-to-1 patient care.⁸ As a result, many physiotherapists have limited awareness of human or systemic factors, especially when compared with other health care professionals⁹ with research predominantly focusing on individual adverse events.^{10–13} However, an adverse event might have been preceded by a potentially preventable error, for example, providing treatment to the wrong patient.¹⁴ The World Health Organization (WHO) defines error as “a failure to carry out a planned action as intended or application of an incorrect plan.”¹⁵ Errors typically occur through a cascade of multiple factors (Fig. 1).^{1,15,16} In complex environments such as

From the *School of Health Professions, Bern University of Applied Sciences, Bern, Switzerland; †Nursing Research, University Hospital of Schleswig-Holstein, Kiel, Germany; ‡Institute of Nursing Science and Practice, Paracelsus Medical University, Salzburg, Austria; §Department of Physiotherapy, Inselspital, Bern University Hospital, Bern, Switzerland; and ||The Australian and New Zealand Intensive Care Research Centre, School of Public Health and Preventive Medicine, Monash University, Melbourne, Australia.

The data presented in this study are available on request from the corresponding author. The data are not publicly available due to sensitive data.

Verena Izzo and Eveline Howald share first authorship.

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E.H.: conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, visualization, writing—review and editing. V.I.: conceptualization, data curation, formal analysis, funding acquisition, investigation, methodology, project administration, resources, software, visualization, writing—review and editing. D.W.: conceptualization, data curation, formal analysis, methodology, project

administration, resources, software, supervision, validation, visualization, writing—review and editing. P.N.: formal analysis, methodology, resources, software, supervision, validation, visualization, writing—review and editing. S.E.: conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, supervision, validation, visualization, writing—original draft.

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Correspondence: Sabrina Eggmann, PT, PhD, Department of Physiotherapy, Physiotherapy Respiratory, Haus 5, G 010, Inselspital, Bern University Hospital, Insel Group, CH 3010 Bern, Switzerland (e-mail: sabrina.eggmann@insel.ch).

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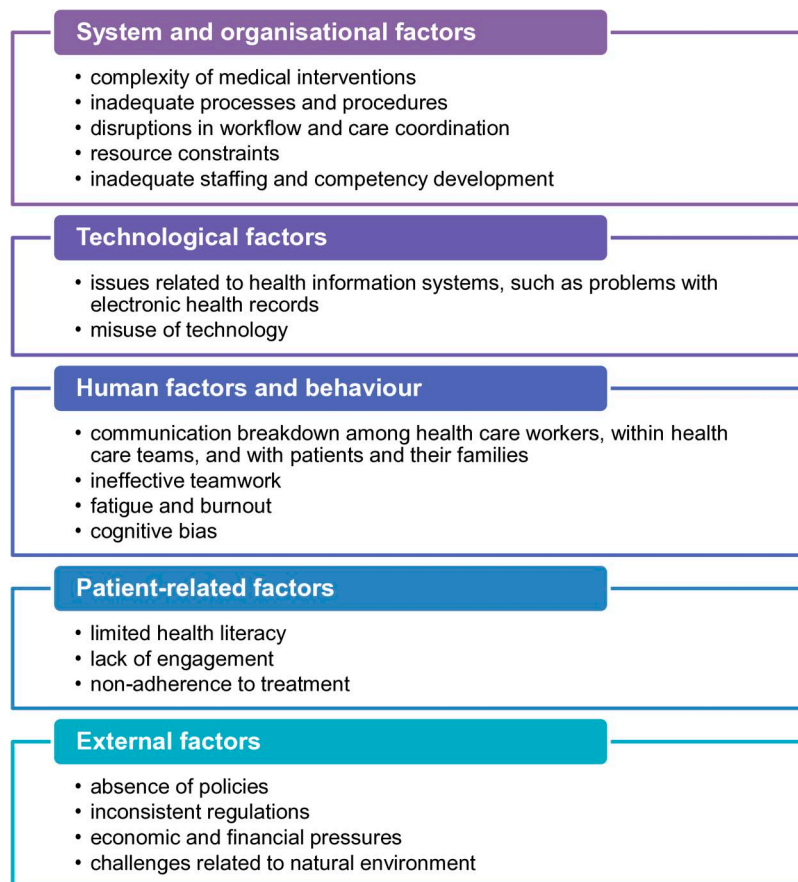


FIGURE 1. The 5 factors for patient harm with examples according to the WHO.¹

acute care hospitals, this risk is amplified.¹⁷ Because professions rarely work in isolation, a shared interprofessional understanding of patient safety is therefore fundamental for improvement.¹⁸ Yet, there is a paucity of data about the nature of physiotherapy errors and their potential consequences on the acute health care system.^{14,19,20} This lack hinders adequate (interprofessional) error management, the development of prevention strategies, and integration into interprofessional educational curricula.^{8,21,22} To close the gap, a better understanding of the nature of physiotherapy errors is urgently needed.

This study, therefore, aimed (1) to explore self-reported errors (content, categorization, and frequency of harm); (2) to identify contributing factors; and (3) to triangulate findings with a list of predefined errors from physiotherapists working in acute care hospitals in the Canton of Bern, Switzerland. Based on our clinical experience and recent trials,¹⁰ we hypothesized that physiotherapy errors would range from no to serious harm, but that most errors would be associated with no to minor harm.

METHODS

Design and Setting

This was a cross-sectional, mixed-methods study conducted via a web-based, a priori-piloted survey

distributed to physiotherapists working in acute care hospitals in the Canton of Bern, Switzerland. According to the Swiss Human Research Act, this anonymous, voluntary survey did not require ethics approval. Electronic, written informed consent was collected at the beginning of the survey from each participant in accordance with the Declaration of Helsinki. This study is reported according to the “Consensus-Based Checklist for Reporting of Survey Studies (CROSS)” and Good Reporting of A Mixed Methods Study (GRAMMS) (Supplemental File 1, Supplemental Digital Content 1, <http://links.lww.com/JPS/A833>).^{23,24}

Survey

Participants were informed that this survey was voluntary and anonymous. They were provided with the aim, the estimated duration, and the researchers' contact details for inquiries. Participants could click forward and backward during the survey, but interruptions in participation required restarting the survey.

After confirming eligibility and consent, the online survey began with the WHO's definition of error,³ followed by 2 examples, then 8 questions (Supplemental File 2, Supplemental Digital Content 2, <http://links.lww.com/JPS/A834>). For the qualitative part, physiotherapists were asked to describe any errors they had experienced, including the context and consequences, in their own words

(open questions) during their clinical practice in acute care hospitals. They were asked to categorize each reported error's harm according to internationally recognized standards.²⁵ Thereby, category A is a situation with the potential for errors, categories B to D include errors that did not cause any harm, categories E to H summarise errors that resulted in harm, and finally, category I is defined as an error that resulted in a patient's death.^{25–27} In addition to error categories, we collected the specialty, hospital size, and the physiotherapist's experience at the time of each reported error. Respondents were given the opportunity to describe up to 10 errors using a display logic. At the end, for the quantitative part, they were asked to select any errors they had previously committed out of a predefined list of 19 common errors (quantitative verification and multiple-choice question). This list was developed from clinical experience, expert opinion, and the previous literature.^{9,19} Finally, participants were given the opportunity to provide general comments on the topic (qualitative). The sequential approach (from open questions to a predefined list) allowed participants to freely describe errors in their own words based on their experience before confronting them with some previously known errors from various contexts.

Participants

The German-speaking physiotherapists (aged 18 years or older) working in an acute care hospital in the Canton of Bern, Switzerland, were eligible to participate. This bilingual region (French and German) has a population of 1 million and 4.8 hospital beds per 1000 citizens.²⁸ Physiotherapy students, physiotherapists working in private practice, or who did not understand German, were excluded. All participants had to confirm their eligibility at the start of the survey.

Data Collection Methods

The survey was conducted electronically through findmind.ch. This is a secure, password-protected, encrypted, anonymous survey tool storing data on a Swiss server, maximizing data protection and limiting unauthorized access. The survey was piloted by 15 persons of the target population who were not involved in the subsequent study. Piloting also included feedback from persons who had been previously hospitalized to gain their perspective. Overall, only minor wording changes were required. The survey was distributed via snowball sampling via e-mail contacts from the Bern University of Applied Sciences, the newsletter of the regional physiotherapy union (physio-bern), and the contact lists of the regional heads of hospital physiotherapy departments. All were invited to distribute the survey among their teams and beyond. The invitation e-mail included a brief introduction, the survey link, and a corresponding QR code. In addition, the survey was advertised at a practical training session of the Bern University of Applied Sciences for acute care physiotherapists who supervise physiotherapy students. No incentives were offered to participants.

Data Analysis

A mixed-methods approach was chosen to enhance completeness, because we suspected physiotherapists may be unaware of some potential errors. Combining qualitative narratives with a quantitative verification item and frequency data derived from categorical coding enabled

us to more comprehensively explore physiotherapists' awareness and conceptualization of errors.

The survey data were processed in Microsoft Excel. We excluded non-eligible participants and incomplete surveys of mandatory questions (no error reported). Subsequently, 2 researchers (V.I. and E.V.) independently screened self-reported errors using a content-analysis and deductive approach according to a previously published, standardized process.²⁷ Errors were then analyzed for contributing factors as described by the WHO (Fig. 1). Discrepancies were resolved with a senior physiotherapist from an acute care hospital (SE). To ensure complete anonymity, any potential identifiers (sex, age, rare diagnoses, or consequences) were removed, and self-reported errors were reviewed by an independent expert in the field (PN).

The number of self-reported errors (specialty, hospital size, experience, and error categories) and the multiple-choice question were analyzed using descriptive statistics, including graphs and frequency analyses. At the end, emerging themes from content analysis were mapped against the predefined list of errors.

RESULTS

The survey was open from the 17th of April to the 24th of May, 2023. A total of 79 errors, reported by 62 physiotherapists, were analyzed (Fig. 2). Notably, 1 participant reported never having made an error and was therefore excluded from the analysis. Most errors occurred in musculoskeletal [32/72 (44%)], medical [15/72 (21%)], neurological [9/72 (13%)], or other specialties [16/72 (22%)] in medium [39/71 (49%)] to large [19/71 (24%)] and small hospitals [13/71 (18%)]. Physiotherapists committed errors across all ranges of professional experiences: 1 to 5 years [34/71 (48%)], 5 to 10 years [20/71 (28%)], and > 10 years [17/71 (24%)].

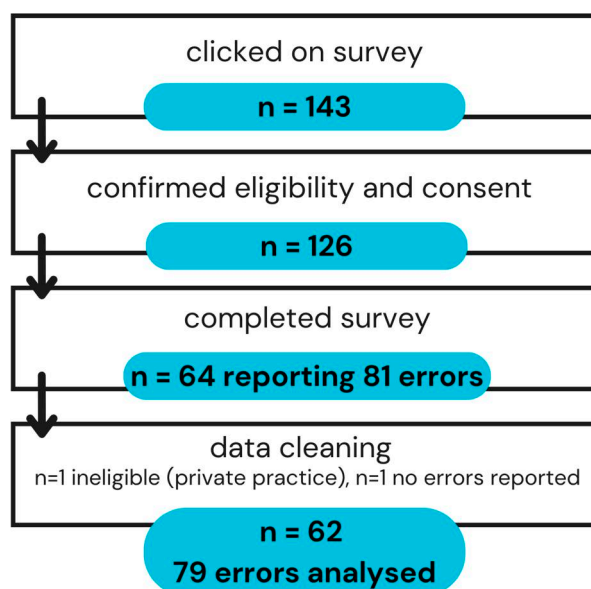


FIGURE 2. Study flow.

Error Content and Categories

The content analysis and categorization, along with appropriate anchor examples and their frequencies, are presented in Table 1. Two categories (A and H) were not allocated to any reported errors. The error category was judged as more harmful than reported by the physiotherapist in 26 (33%) of all reported errors, and as less harmful in 3 (4%). The most common error described verbatim was an incorrect procedure [24 (30%)] and the most frequently described adverse event a fall [23 (29%)] (Fig. 3). Some examples reported psychological harm to physiotherapists predominantly due to blame: “After initial accusations that the physio was to blame, an X-ray showed that the position of the prosthesis was poor and that the hip would have dislocated sooner or later anyway, but the damage had been done because the patient was firmly convinced that I was to blame.”

Contributing Factors

Most self-reported errors [73 (92%)] had multiple underlying factors contributing to the occurrence of an

error with high involvement of system and organisational factors [71 (90%)] as well as human factors and behaviour [69 (87%)] (Fig. 4). Typical single factors were human or external factors, particularly economic and financial pressure: “patients are rushed through due to a lack of time with only the most necessary things being done.” This commonly led to shortened treatments or underdosing.

System and organizational factors typically involved inadequate processes and a lack of competency: “A patient suddenly had an oxygen saturation of 72% during pulmonary rehabilitation; only then did the therapist realize that the oxygen bottle was empty. A colleague quickly fetched a new bottle, and the patient recovered quickly.” Technical factors were particularly about issues with electronic health records, mishandling of wheelchairs, or other therapy materials: “Forgot to use the brakes of the wheelchair.” Human factors and behavior mostly included ineffective teamwork and communication errors, as well as instances of cognitive bias or stress: “I did not read up sufficiently on the patient file.” Patient-related factors

TABLE 1. Error Content and Category with Definition, Anchor Examples, and Frequency of Reporting

Category	Definition*	Anchor examples	Frequency (n = 79), n (%)
A	Circumstances with the capacity to cause error	Not reported	0
B	An error occurred but did not reach the patient	“Forgot to document my treatment.”	1 (1)
C	An error occurred but did not cause harm	“Treatment of the wrong patient, who was in the same room. The right patient did not respond to their name and I was inattentive to how the bed was labelled.”	26 (33)
D	An error occurred and required monitoring and/or required intervention to prevent harm	“A patient with a neurological diagnosis glided to the floor in a controlled manner while I was transferring them from the bed to the wheelchair. They had not cooperated and were too heavy. Several nurses helped me to lift the patient back up. The patient was thoroughly examined, but there were no adverse effects.”	31 (39)
E	An error occurred that may have resulted in temporary harm and required intervention	“While going up or down stairs the patient with partial weight-bearing was faster than I could think and was already putting weight on the wrong leg. They then briefly had increased pain, but fortunately there were no further consequences.”	9 (11)
F	An error occurred that may have resulted in temporary harm and prolongation of hospitalization	“A patient had surgery and radiotherapy. They were not wearing a vest for mobilization. I did not know there was such a thing. During mobilization to the edge of the bed, the wound suture burst open and had to be stitched up again as an emergency measure.”	10 (13)
G	An error occurred that may have resulted in permanent harm	“A person with a degenerative neurological disease lost their balance during gait training and fell. The therapist was not attentive enough and could not prevent the fall. The subsequent supination trauma led to immobility due to their pain and the irreversible, partial loss of their ability to walk.”	1 (1)
H	An error occurred that required intervention to sustain life	Not reported	0
I	An error occurred that may have resulted in the patient’s death	“A patient was determined to climb stairs even though they had not been on the stairs for weeks and no longer needed to. I granted them their wish. Pulse and oxygen saturation remained in the normal range. After 10 steps, I said, “that’s enough for now”. But they wanted to go on. After 10 more steps they stopped, groaned, rolled their eyes. I was able to slowly accompany them to the ground. The patient had a pulmonary embolism and died within seconds.”	1 (1)

*Categories and their definition are based on (25-27).

Triangulated results

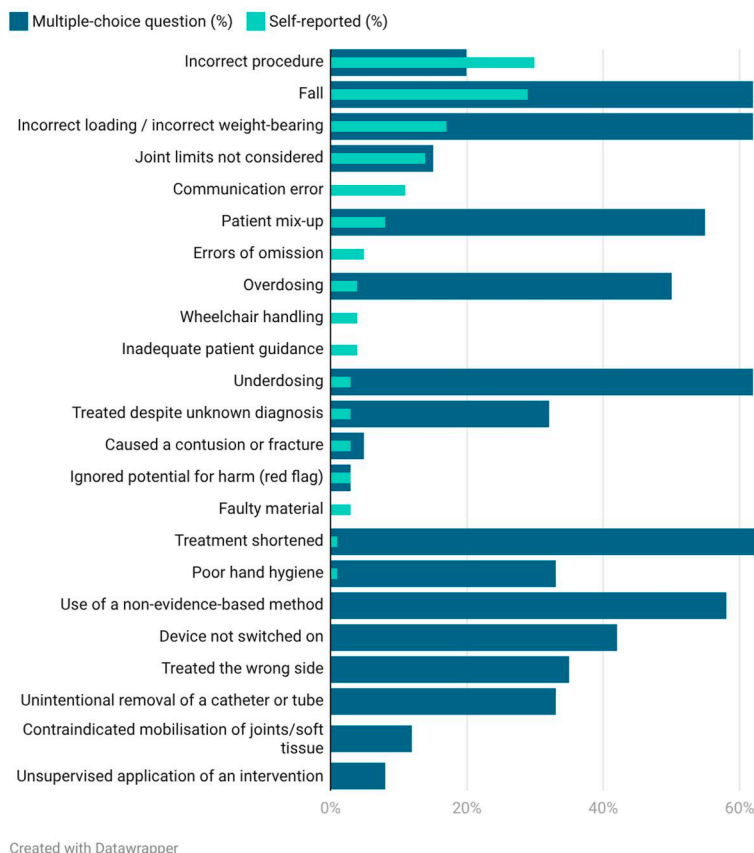


FIGURE 3. Triangulated results from the prespecified multiple-choice question (% of selected errors) with themes from content analysis (% of self-reported errors). Legend: Respondents could choose more than 1 error in the multiple-choice question. Similarly, content analysis revealed some overlap between themes; thus, the total percentage exceeds 100%.

mainly were about patient mix-ups and inadequate patient guidance, particularly weight-bearing instructions: "Patient (with minimal weight-bearing) hurries to stand up, directly on the operated leg, collapses very quickly (partial remaining paresis from surgery), and I can't hold them. The reopening of the suture required surgery." Whereby physiotherapists generally overestimated patients: "After installing a continuous passive motion machine, the patient said that it did not rub anywhere, which was unfortunately wrong due to reduced sensitivity after anaesthesia. The consequence was an abrasion in the genital area."

Triangulated Results

The multiple-choice question at the end was answered by 60 physiotherapists. More than half selected treatment shortened [42 (70%)] and acknowledged underdosing [37 (62%)] or using non-evidence-based methods [35 (58%)]. Data triangulation with self-reported errors revealed some major discrepancies with newly emerging topics such as communication errors [9 (11%)], errors of omission [4 (5%)], inadequate patient guidance "the patient was faster than I could think" [3 (4%)], wheelchair handling [3 (4%)] and faulty material [2 (3%)] (Fig. 3).

Other Optional Comments

These optional statements reflected a shared understanding that errors are inevitable, particularly under conditions of increasing time and cost pressures. The absence of a clear error definition was seen as complicating the interpretation and management of incidents. Communication and blame emerged as central themes. Several contributors described a lack of clear interprofessional communication as a frequent cause: "A system that enables better interprofessional communication would be desirable." One physiotherapist reported being publicly reprimanded for an incident. A culture of blame rather than dialogue made the situation even worse. Despite these challenges, there was a clear call for a shared safety culture. Respondents advocated for open communication, mutual respect, and shared learning: "Don't point the finger at it, but see it as a learning situation." There was further recognition that in certain contexts, such as "private practice physiotherapy, where monitoring is less intensive," risks may go unnoticed.

DISCUSSION

In this mixed-methods study, physiotherapists in acute care hospitals reported a wide range of errors, with 1 in 4 resulting in temporary or permanent harm. Errors occurred

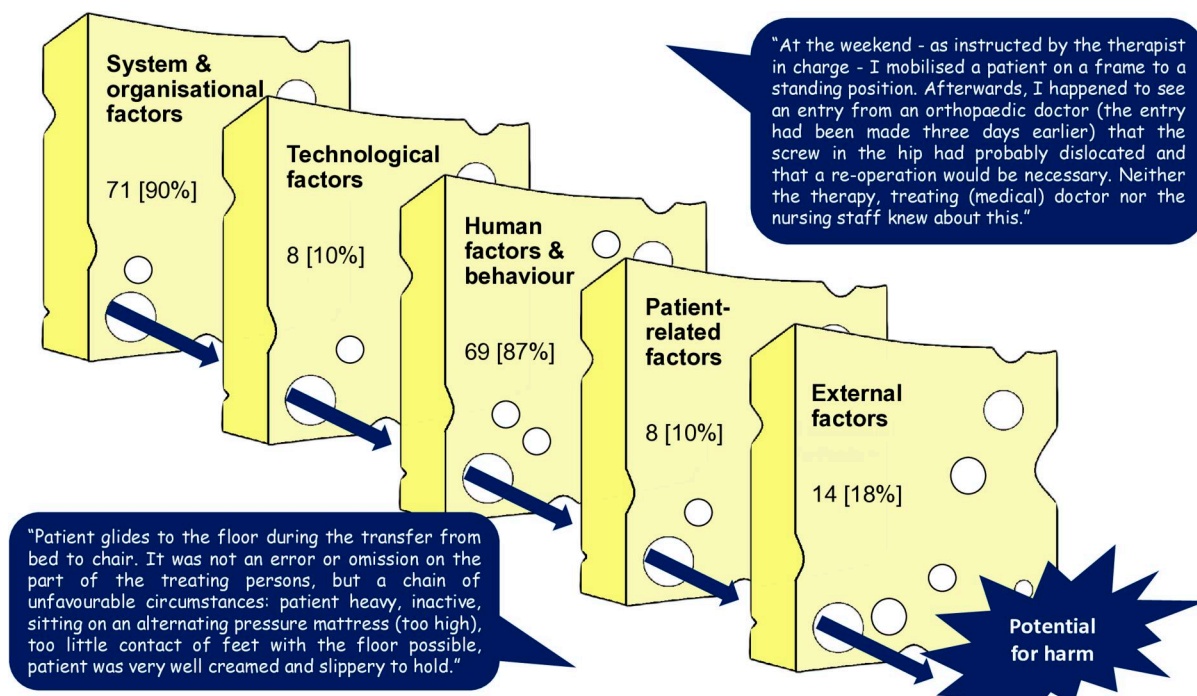


FIGURE 4. Reported factors with anchor examples to illustrate the complex interplay between factors. Legend: the conceptual 'Swiss Cheese model'¹⁴ was chosen to easily convey the complexity of errors while acknowledging that causes may be nonlinear and oversimplified.²⁹

in all specialties, regardless of therapist experience and hospital size. Two out of 3 physiotherapists experienced a patient fall. Reported errors typically had multiple contributing factors, with 'system and organization' and 'human and behavior' dominating. This was mirrored by multiple interprofessional communication errors that often led to blame between professions: physiotherapists accusing medical doctors and nurses, or vice versa. Physiotherapists were also quick to blame patients, yet they often overestimated patients' abilities and provided poor guidance. Data triangulation indicates a lack of awareness and conceptualization, as the selected errors were neither self-reported nor reported by others. Overall, our findings show that physiotherapy treatments carry risks that may cause harm. They highlight the need for a shared safety culture across professions to minimize errors and harm.

Gonzalez-Caminal et al⁹ report that physiotherapy treatments are often not connected with harm. While most errors were indeed mostly harmless, our results indicate that physiotherapy treatments in an acute care setting are associated with risks. Concerningly, physiotherapists were poor at reporting errors, with major discrepancies evident through triangulation. Moreover, 1 out of 3 errors seemed wrongly classified as less harmful. A simulation-based study similarly found that physiotherapists at entry level did not recognise the majority of their errors.³⁰ This might indicate a poor understanding of errors and their consequences. For example, 1 therapist clearly described a typical error cascade involving multiple factors that led to a patient's fall (Fig. 4).^{15,16} They then stressed that the fall was not due to an error on their part, which is an error in itself for failing to take responsibility for inadequate assessment and

risk calculation. Simple theoretical frameworks such as the Swiss Cheese Model¹⁵ or previous similar reports¹⁶ seem unknown. A potential reason could be the difficulty of "unlearning" safety as an individual concept, as described earlier in a North American study arguing for the earlier integration of system-level concepts in physiotherapy education.⁸ To this end, the Functional Resonance Analysis Method (FRAM) might be better aligned to physiotherapy practice, because FRAM focuses on enabling safety rather than just preventing errors while accounting for performance variability.³¹

Another therapist argued that the error was not theirs but the patient's (Table 1: "not cooperated, too heavy"). Again, the opposite applies: the patient is under the therapists' responsibility during their treatment. While the error content and contributing factors in our study were similar to those in previous qualitative research from a different health care setting,^{16,19,20} the themes of patient blame, inadequate guidance, and material vigilance seem novel. The Swiss Medical Devices Ordinance clearly states that "any health care professional who uses a device that is intended for repeated use must ensure that it is checked for functionality and reprocessed in accordance with the latest scientific and technical knowledge."³² Hence, it is the physiotherapist's responsibility to check that a device is working properly before its use. Any malfunction must be reported. Likely, more awareness and education are required to safeguard patients.

Physiotherapists in our study also reported being blamed in multiple instances. Fear of blame or punitive actions might hinder physiotherapists from reporting errors,^{19,20} yet interprofessional collaboration is closely

linked to a hospital's safety culture.³³ Instead of blame and punitive actions, health care organisations should offer support from leadership and provide the possibility for interprofessional debriefing and counselling.³⁴ Thus, patient safety is not only the physiotherapists' responsibility. Physiotherapists must become part of interprofessional education initiatives. Importantly, despite the emphasis on blame, physiotherapists in our study have been positive towards a shared safety culture, confirming earlier research from Dutch physiotherapists working in private practice.³⁵

Data triangulation revealed some major discrepancies between self-reported and selected errors. While most selected multiple errors from the list, many respondents described only 1 error verbatim, potentially focusing on the most impactful 1. However, one-third of self-reported errors were inconsequential and easy to report because they are common and do not hurt the reporter. It therefore seems likely that respondents did not conceptualize some of the listed errors as errors. For example, almost half selected treating the wrong side, a serious error with potentially fatal consequences in health care, yet there were no self-reported errors on this topic. Concerningly, trivialisation was overly prevalent and contrast with previous case-reports of serious harm from moral, ethical or system errors.²⁰

Overall, research on errors in acute care physiotherapy is still in its early stages. The profession needs to understand the nature of errors made by physiotherapists working in acute care hospitals and in other settings, such as private practice or advanced practice models.³⁶ Future studies should develop a framework for errors in physiotherapy, as the current taxonomy varies widely. The FRAM framework might offer a useful conceptual foundation.³¹ In addition, the effectiveness of interprofessional educational and simulation-based interventions could provide valuable insights into how to improve the safety culture across professions. This is already standard practice in Canada^{7,18} and should be considered in future Swiss curricula.

Limitations

While this study sheds light on a highly underreported and underestimated topic, it has some important limitations. The anonymous online survey relied on participants to confirm their eligibility (ie, language, region, and qualifications) and their truthfulness regarding the reported errors. We cannot exclude a reporting bias, though the reported errors are not unknown to the senior authors, who have extensive clinical experience, including in the management of error-reporting systems. However, it is probable that some errors were not reported, minimized, or presented in a more favorable manner. This survey asked about any errors during participants' professional practice and does not allow estimation of error frequency (eg, annual or weekly) or group comparisons (eg, across specialties) of errors among physiotherapists. We were also unable to prevent multiple participation. However, error descriptions were unique and unlikely to have influenced the qualitative findings. Participation bias is possible as those from institutions with an established safety culture may have been more likely to respond. The use of the snowball method limits the ability to estimate the response rate. The multiple-choice question at the end was not drawn from a representative sample, and the inconsistent

terminology, mixing concepts of error with those of harm, could have led to misinterpretation. Our results, therefore, need to be interpreted with caution, while acknowledging that they are likely underreported and may only scratch the surface. Despite these limitations, this study offers valuable insights into physiotherapy errors in acute care hospitals across various specialist areas, with extensive descriptions of the errors.

CONCLUSIONS

To err is human, and the physiotherapy profession is no exception. While the majority of reported errors were not associated with harm, 1 in 4 self-reported errors resulted in patient harm, ranging from mild to severe. These results clearly illustrate that physiotherapy treatments are associated with risks. The identified contributing factors highlight that acute care physiotherapists are not working in isolation, but are contributors within a complex system. Consequently, earlier integration of system-level concepts in physiotherapy education is required. Physiotherapists must be further part of a transparent, interprofessional, shared safety culture in acute care hospitals. Until then, physiotherapists are encouraged to share errors within their teams and to improve patient safety by learning from each other.

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