

Screening and Diagnosing by Physiotherapists in the Emergency Department: a retrospective data analysis

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Abstract

Background: To face the rising number of patients presenting themselves to the emergency department (ED) due to musculoskeletal pain, a new scheme was established at a Swiss university hospital. “Physiotherapy in the emergency department” involves physiotherapists (PTs) treating these patients.

This study was part of the scientific monitoring of the new scheme and was intended to fill knowledge gaps in the area of physiotherapeutic screening and diagnostic tests used according to the current state of protocol.

Methods: To describe the number and type of tests used by PTs, a retrospective observational study was conducted. Secondary data were collected from the medical records of patients treated in the ED under the new scheme and were clustered prior to analysis. In addition, the characteristics of the patient study sample were summarised in detail and the tests performed by the PTs were compared with those of the emergency physicians (EPs) involved. All records between April and August 2022 that contained a PT consultation report were included in the analyses.

Results: The cohort consisted of 146 patients. The mean age of the population was 44 years (SD ± 17.6), and the lumbar spine (61%) was the most common area of complaint. PTs performed screening in addition to the baseline findings in 78% of cases; mainly neurological tests (38%) followed by manual provocation testing (31%), pressure tolerance (17%) and safety questions (15%). In terms of type, screening and diagnostic tests they performed were largely consistent with those used by the EPs who had previously seen the patients.

Conclusions: The screening and diagnostic tests that PTs used for patients presenting to the ED for musculoskeletal pain are largely identical in nature to those used by EPs and are appropriate for the assessment and treatment of patients in this setting. This allows physicians to transfer these screening and diagnostic tests to PTs in the ED and reduce their workload. This may create new areas of practice for PTs, e.g. in an advanced practice role.

Background

The increasing number of patients treated in the emergency department (ED) is a recurring subject of debate worldwide: The Organisation for Economic Co-operation and Development (OECD) [1] reported an average annual growth rate in ED visits across OECD countries of 2.4% between 2001 and 2011 in general. In addition, it is reported that an increasing number of patients with health issues that do not require immediate medical attention from a medical point of view are visiting the ED. In Switzerland, emergency consultations have increased by 37% (from 1.18 Mio. to 1.62 Mio) between 2012 and 2017 [2]. Musculoskeletal (MSK) complaints represent a substantial percentage (13.2%) of the presentations that would not require immediate medical attention in an ED [1, 3]. Between 2000 and 2013, the number of patients visiting an ED in Switzerland believing that their health problem would not require hospitalisation increased from 52.8–74.2% [4]. In addition to the increasing number of emergency

consultations, the current shortage of healthcare professionals is also exacerbating the supply shortage [5, 6] leading to overcrowding in EDs [4, 7, 8], a potential reduction of patients' satisfaction [1] and increasing costs [4].

To ensure patient care, an efficient use of resources as well as the implementation of innovations are necessary [9]. One of these is the "Physiotherapy in the ED" service, that involves physiotherapists (PTs) working in an advanced practice (AP) role. This service has already been successfully introduced in countries such as Australia [10, 11] and the United Kingdom (UK) [12]. In Switzerland however, this field of work for physiotherapists is new and so far, unique, therefore scientific monitoring and evaluation continued even after the definitive implementation of the service in a Swiss university hospital. The scheme implemented there works as follows: When a patient arrives at the ED, an initial triage focusing on giving a preliminary "working diagnosis" and a priority of urgency according to the Swiss Emergency Triage Scale (SETS, from 1: currently life-threatening to 4: The health issue does not require emergency medical attention [13]) is conducted by a specially trained nurse. In some cases, the nurse already administers medication (mostly non-opioid analgesics from stage 1 of the WHO analgesic ladder [14]). The patient is then further assessed and triaged by the emergency physician (EP) on duty. Depending on the medical indication and the patient's consent, the physiotherapeutic consultation service may be consulted. It is available from 11 a.m. to 7 p.m. on weekdays and from 11 a.m. to 2 p.m. on weekends and public holidays.

The PT consultation lasts 45 minutes on average and includes a) supplementary anamnesis, incl. safety questions b) clinical physiotherapeutic examination, incl. manual diagnostics, if indicated c) trial treatments d) counselling, education, instruction of exercises, instruction on self-management e) recommendation for further procedure to EP f) documentation [9]. After the consultation, the PT communicates her or his assessment to the EP and makes a recommendation for the further procedure.

Though AP roles in general and especially in the ED are not yet very common for PTs in Switzerland, evidence from other countries show promising results: a UK study found that patients' satisfaction with PTs working in ED was higher than with AP nurses and EPs on four aspects: information and advice given, explaining assessments and their results, information about procedure and the care given overall [12]. Results of other studies support the finding that patients are satisfied with PTs working in ED [9, 15]. Further, PT in the ED could help to significantly reduce waiting times for patients, as well as medical images while the costs with additional physiotherapy treatment are not significantly higher than usual care [15]. At the patient level, there is a short-term benefit in pain control and disability reduction when a PT is involved in ED treatment [16]. This is critical, as patients with MSK pain who present to the ED may have higher pain intensity and disability than those who present to the general practice [17].

Concerning safety issues, the flagging system is used to recognise and classify warning signals and contraindications in medical assessment and treatment. The red flags describe the highest warning level, i.e., pathologies that timely require further medical clarification and, if necessary, treatment by a physician [18]. The yellow flags concern the "presence of psychosocial factors which, for example, can

increase the risk of chronification” [19]. Blue flags are about the workplace factors [18]. The black flags are dedicated to financial insecurity [18].

Especially red flags need to be checked in the very beginning of medical consultation. A previous study found that the prevalence of red flags in patients with low back pain was higher in the ED than in primary care settings [20]. An Australian research team did a study on the most predictive of serious pathology in the ED. Of the 1000 participants who self-presented to the ED, triaged with “back pain” and treated by a PT, 69% had red flags [21]. Other evidence points to the fact, that PTs are able to safely manage patients with MSK problems in the ED setting [10, 11, 16]. In addition, they could offer early guidance on gradual and pain-adapted activity and screening for yellow flags to prevent pain chronification [22].

It is not yet clear whether and to what extent PTs are required to screen for red flags in the emergency care in Switzerland. A previous pilot study showed that PTs performed additional red flag screening in 11% of cases [23]. It is unclear whether these numbers will reflect reality when the service is now implemented as part of the standard operating protocol.

This study intends to fill knowledge gaps in the area of physiotherapeutic screening and diagnostic tests used in the ED according to the current state of protocol. Therefore, we aim to describe the number and type of screening and diagnostic tests for MSK complaints used by PTs in an ED. In addition, the tests are compared with those of the EPs involved and patient characteristics are detailed.

Methods

A retrospective observational study was conducted. After obtaining ethical approval, secondary data were collected from the medical records of patients treated in the adult section of the ED of a university hospital in Switzerland between April and August 2022.

Participants and sample size

This study was embedded in an overarching quality assurance project to evaluate the PT service in the ED, which has been in regular operations since 2021. Based on empirical values from our pilot study [9], a time frame of 5 months, to aim for a data set of 157, was set (margin of error of 7% at a 95% confidence level). Within this time frame, all PT consultations in the ED were considered.

Included were all documented cases of patients who were treated by a PT in the ED within the defined time period. Note that patients who were treated by a PT at the ED already fulfilled all inclusion criteria by the EPs to involve a PT in the first place. These include that the symptoms and pathology fall within the scope of MSK PT. In addition, the patient was asked for consent to involve PT. It is important to note that while there are in-house suggestions for when an EP should refer to PT, there are no clear guidelines on this in Switzerland yet. Thus, it is always up to the treating EP to decide whether the PT service is involved or not.

Outcomes

Primary outcomes are the number and type of screening and diagnostic tests used by the PTs in the ED.

Secondary outcomes include a description of patients treated by PTs to check for consistency with the results of the pilot study and to put the results of the tests used into context. Incapacity for work (IFW) will be presented by the number of patients with a certificate of incapacity for work (CIFW) and the average number of IFW days per patient; indicator of the pain management in the ED will be presented by the number of patients receiving analgesic medicine prescription. Further, screening and diagnostic testing by the EPs will be evaluated as well as compared with the results of the PTs.

Data collection

The data were collected from the clinical documentation system E.care ED Version 3.1.0.45 (by MESALVO TURNHOUT BV, Belgium). A case is created in E.care ED for each patient treated in the ED. Everything that happens to the patient during his or her hospital stay is documented in this record, i.e., all information about the patient's medical history, examination, treatment and discharge. There is also a section in which consultation notes are recorded. This is done every time the attending EP consults another specialist, e.g. a neurologist, orthopaedist, psychiatrist or similar. The consultation by the PT is also done in this section of recording and contains all the information collected by the PT as well as an accurate documentation of the examination, assessment, treatment and the proposed discharge management.

First, an algorithm specific to the E.care ED system was used to select all cases that contained a PT entry in the patient record from all emergency consultations in the specified five months. In a next step, predefined parameters were extracted from these records. All details with which a person could be identified (e.g. name, specific case no., address, insurance information, etc.) were not extracted and therefore were not part of the data set used for this analysis.

Each data set is compiled of demographical and specific data. Demographical data (age and gender) contributes to a more precise description (and understanding) of the population studied and, if necessary, to a better assessment of the possible generalisability of the study. The specific data contains type of admission (self, ambulance, other physician), diagnosis (triage, EP, PT), secondary diagnosis (SDIG), length of stay (LOS, min), diagnostic imaging, screening and diagnostic tests (by EP, by PT) and the proposed procedure (by EP, by PT). A special focus lies on the diagnostic imaging, as it can be used as an indicator for red flags detected by the EPs. They have strict guidelines to only perform imaging directly in the emergency setting if it is urgently indicated.

Since the E.care ED system is a hospital software, data protection is guaranteed there. However, to avoid any identification of a person when extracting data, the principle of data minimisation was applied: only as little data as necessary to answer the research question was collected.

In addition, the file with the extracted data has been stored in a locked cabinet in the office of a research team member at the hospital to ensure that only the involved research team has access to it.

As this study was conducted as a retrospective data analysis dealing mainly with unstructured clinical data, data inhomogeneity was expected. This can be seen, for example, in the detail of the documentation or the different nomenclature and is common when different professionals with different backgrounds do the documentation. However, in order to structure the data for the research purpose, they were categorised and the screening and diagnostic tests made in the individual cases were assigned to these categories. For example, tests that examine passive structures for integrity were assigned to the term "provocation test". The category "pressure dolence" was assigned to all screening tests in which pressure dolence was tested in cases with suspected fracture or other more serious injury. "Special tests" include specific test batteries that are performed in a standardised manner, such as the Ottawa Ankle rules or fracture screening using tuning forks. Data categorisation was performed using specialist literature [18].

Statistical analysis

The analysis focussed primarily on descriptive statistics and comparisons within and between the populations studied, as well as on medical findings and measures. Frequencies are shown as numbers (N) and percentages (%), average values for age in years, length of stay in minutes, number of secondary diagnoses per patient and number of days of incapacity for work per patient as mean and standard deviation (mean (SD)), or median and range (median, range). All calculations were performed in Microsoft Excel.

Results

Of a total of $n = 26\,626$ ED presentations within the defined period, approximately 3.2% ($n = 852$) were primary musculoskeletal diagnoses. PT was involved in about 17% of these ($n = 146$) shown in Fig. 1.

Of all cases involving PT, 141 (97%) had standard consultations with the PT as described in the introduction, only 5 (3%) of them saw the PT as a follow-up (e.g. if their initial emergency consultation was outside the PT service hours). There were 3 cases with incomplete documentation. All 146 cases were considered in the final evaluation (MOE = 7%, 95% CL).

The characteristics of the sample are summarised in Table 1:

Table 1
 Characteristics of patients (n = 146) who presented to the ED

| | |
|---|--------------------|
| Age, mean years (SD) | 44 (± 17.6) |
| Female sex | 64 (44%) |
| Male sex | 82 (56%) |
| LOS mean minutes (SD) | 286.5 (± 167.6) |
| Priority according to Swiss triage scale (SETS) | |
| Priority 1 | 2 (1%) |
| Priority 2 | 7 (5%) |
| Priority 3 | 123 (85%) |
| Priority 4 | 9 (6%) |
| Follow-up | 5 (3%) |
| Number admitted to | |
| Fast Track | 110 (75%) |
| Emergency ward | 36 (25%) |
| Types of admission: | |
| Self | 129 (88%) |
| Referral by other specialist | 11 (8%) |
| Ambulance | 6 (4%) |
| Number of patients with accident | 30 (21%) |
| Area of complaint | |
| Cervical spine | 14 (10%) |
| Thoracic spine | 11 (8%) |
| Lumbar spine | 89 (61%) |
| Upper extremities | 8 (5%) |
| Lower extremities | 18 (12%) |
| Other | 6 (4%) |
| Number discharged to | |
| Home | 144 (99%) |
| Hospitalised | 2 (1%) |

| | |
|--|--------------------|
| Age, mean years (SD) | 44 (± 17.6) |
| <i>SD standard deviation, LOS (Length of stay) in the ED is defined as the time from the first registration of the patient in E.care by the triage until the discharge by the EP after all interventions in the ED, SETS Priority 1 immediately life threatening, Priority 2 not immediately life threatening, but medical care is needed within 20 minutes, Priority 3, the patient is currently stable, time is not critical and treatment occurs within 120 minutes, Priority 4 the health issues do not need emergency medical care, Fast Track direct treatment by a specialist after self-referral</i> | |

At 56%, the male gender was slightly more strongly represented in the sample. The mean age was 44 years (± 17.6). Most of the patients were prioritised with 3 according to SETS and self-admitted (88%). Concerning the area of complaint, lumbar spine (61%) was the most common followed by lower extremities (12%), cervical (10%) and thoracic (8%) spine and upper extremities (5%). Of all cases, 46% had a secondary diagnosis (SDIG), i.e. at least one pre-existing comorbidity. The median number of SDIGs was 2 with a range of 1–7. After their visit, 99% of patients were discharged to home.

Additional information on medical findings and measures are listed in Table 2. It helps to describe the patients treated by PTs more precisely. SDIG indicates that the cases are more complex, and more factors need to be respected for examination and treatment. The decision to perform medical imaging was made by the EP in charge either before or after the involvement of the physiotherapeutic consultation service. The total number of medical images was 48/146 (33%) consisting of mostly X-rays 28/146 (19%), MRI 11/146 (8%) and Sonography 5/146 (4%). In 54/146 (37%) of cases, a median of 4 days IFW was prescribed. Further, in 129/146 (88%) of cases, analgesics were prescribed to take after leaving the ED.

| Table 2: Medical findings and measures | |
|---|--------------------|
| Findings/ measures | N (%) of cases |
| Secondary diagnosis (SDIG) | |
| Patients with SDIG | 68 (46%) |
| SDIG per patient mean (SD) | 2.22 (\pm 1.67) |
| Musculoskeletal SDIG | 20 (14%) |
| Psychological SDIG | 11 (7%) |
| Cardiovascular SDIG | 23 (16%) |
| Cancer SDIG | 12 (8%) |
| Neuro SDIG | 6 (4%) |
| Internal medicine SDIG | 38 (26%) |
| Medical imaging | |
| Total medical imaging | 48 (33%) |
| X-ray | 28 (19%) |
| MRI | 11 (8%) |
| CT | 3 (2%) |
| Sonography | 6 (4%) |
| Certificate of incapacity for work (CIFW) | |
| Patients with CIFW | 54 (37%) |
| Days of incapacity for work per patient mean (SD) | 4.3 (\pm 4.05) |
| Days of incapacity for work per patient median, range | 4, 1–29 |
| Analgesia | |
| Patients receiving analgesic medicine prescription | 129 (88%) |
| Total patients | 146 (100%) |
| <i>SDIG are secondary diagnoses that are currently present but not the reason for admission to the ED, MRI magnet resonance imaging, CT computer tomography, CIFW certificate of incapacity for work for all patients who are currently working (retired or currently unemployed persons were not taken into account in this calculation)</i> | |

The results on the primary outcome, the type and frequency of screening and diagnostic tests by EPs and PTs, are shown in Fig. 2.

Data analysis showed that PTs did screening and diagnostic tests in addition to the basic findings in 78% of cases. Mainly neurological tests were performed (38%) followed by manual provocation testing (such as tests for the integrity of the capsule ligament apparatus) (31%), pressure dolence (as part of the examination for suspected fracture) (17%) and safety questions (15%). Special tests (such as fracture screening by using a tuning fork or performing specific test batteries) were performed in 5% of cases. The EPs screened 100% of patients for red flags. Mostly performed were neurological tests (82%), percussion tenderness (50%), medical imaging (33%) and pressure dolence (21%). EPs also performed screening methods outside the scope of PTs: medical imaging, mainly X-ray (19%) and magnetic resonance imaging (MRI) (9%), lab tests (16%) and electrocardiogram (ECG) (3%). In 81% of cases, both EPs and PTs used tests from the same categories.

Discussion

This study shows a high proportion of screening and diagnostic tests performed by PTs in the ED, even though the patients were seen by a physician beforehand. The PTs could therefore have contributed to the accuracy of the diagnosis and enabled a very safe and specific treatment. As the data was collected during regular operations, it can be assumed that it reflects everyday life.

In terms of its characteristics, the sample appears similar to the sample studied as part of the pilot project. It is interesting to note that the number of patients treated by PTs, 17% (n = 146) of the total number of patients admitted with primary MSK diagnoses (n = 852), is lower than in the pilot study, where 25% of this group of patients was treated by a PT. A more detailed analysis is required to identify possible problems in the implementation and to take appropriate measures.

The results on primary outcome, type and number of screening and diagnostic tests performed by PTs and EPs, showed a high degree of agreement between the professions in terms of the most frequently chosen screening procedures (neurological tests being the most common). Exceptions were medical images, laboratory analyses and ECG, which in Switzerland can only be prescribed by medical doctors (MDs). However, a study from the UK showed no significant difference between the proportion of patients who received a radiograph when treated by a PT or an EP [24]. Whether this would also be the case in a Swiss ED needs to be investigated. Looking at the red flag screening done by both, it can be seen that the same top three screening tools were used. Here, a certain difference in the way PTs and MDs think and work can also be observed: In the ED setting, the primary aim is to recognise life-threatening situations, prevent permanent damage and act quickly. Therefore, from a medical point of view, serious conditions need to be ruled out as quickly as possible. PTs on the other hand usually work in an environment where it is not a matter of survival or not and where patients are already well assessed when they come to therapy. Therefore, potential non-musculoskeletal causes of pain are often only looked for if the treatment of the current symptomatic condition does not help. It would be very interesting to investigate these differences between PTs and MDs in more detail.

Compared to the results of the pilot study, in which PTs performed additional screening for signs and symptoms of potentially serious pathology in 11% of cases [23], this study shows an increased number of 78%. An explanation could be the operating framework. While clearly defined research conditions were determined for the prospective pilot project, the data of this retrospective study are taken from everyday clinical practice. It is possible that communication between EPs and PTs had improved due to the increased attention in the pilot, or that EPs had only referred very well examined patients to the PT service. In addition, the EPs in the current study already had experience with the PTs and may have involved the PTs earlier in the process of clarification. Another potential factor is that the differentiation between examination (e.g. joint mobility) and screening for serious pathology (e.g. ligament injury) was not obvious in every case. During the pilot, each PT had kept a diary with extensive notes for each case that was evaluated. In comparison, for this study, the documentation of treatment was evaluated by the research team from an external point of view where it was not always entirely clear based on which suspicion a test was conducted.

An interesting issue that needs further clarification is the amount of analgesics prescription. In this study, 88% of patients received a prescription for analgetic medication after discharge. Other studies highlighted the benefits of an ED PT service in terms of improved pain control at patient level [16]. To verify whether our service has the same impact would be important because medication comes with side effects of physical and financial kind. To reduce the amount of medication is always an important goal. The same question rises for low value medical images where studies from other countries showed a decrease when a PT is involved in ED treatment [15]. Imaging is always critical in terms of personal and spacious resources as well as a financial burden. Reduction of low value medical imaging would support expansion of PT service in EDs a lot. Since the data available on the topic of medication and medical imaging in emergency care, even internationally, is based primarily on observational studies and conducting studies in emergency situations is in principle difficult, there remains a major need for research.

Another point that cannot be conclusively answered by this study is whether the use of tests of the same category by EPs and PTs in a high proportion of cases is due to duplication or to a different degree of differentiation in the diagnostic process.

If the same tests are performed twice, no time is saved, which would not be expedient. For this reason, a collaborative care concept needs a clear demarcation/description of who does what between the professions so that work can be carried out efficiently.

Generalisability

As this project "PT in the ED" is unique in Switzerland, it is difficult to assess to what extent the results will be generalisable. It can be assumed that generalisability is also dependent on the following factors: type of the institution (e.g. university, regional or private hospital). The size and degree of specialisation of the institution could influence what type of patients present to the ED in terms of diagnoses, SDIGs,

and red flags. The number of patients eligible for treatment by a PT is also important. Since screening also requires a practical hands-on experience and skill level, this could have an impact on PTs' abilities to perform these tasks. Although PTs work in an AP role here, they are still dependent on prescriptions from EPs. Therefore, the professional environment and the institutional culture is also crucial in determining what kind of patients are treated by PTs. Also, the level of screening that occurs prior to treatment by the PT has an impact on what screening tests or questions a PT uses to ensure that no serious condition remains undetected.

Limitations

This study was performed as a single-centre study. Due to the fact, that the service is new and uniquely implemented in Switzerland, other options were missing. Also, the fact that the documentation was not done for research purposes in the first place represents everyday clinical practice but also leads to inhomogeneous data. These data need to be translated and structured into a form where evaluation and comparison is possible in the first place. Through the structuring of the data after the extraction, standardisation was reached before analysis. The risk of loss of information during this process is particularly a problem if categories are chosen too coarsely. This was faced by consultation of literature and experts' opinion and was limited to only negligible risk.

The retrospective design of this study has its limitations. As the data collection is based on the review of records that were not originally intended for research purposes, missing information is possible. However, the retrospective study design makes the data and results very close to daily practice as the analysed data was collected during the usual workflow in the ED. Like this, the results reflect the reality as it is without biasing the professionals' decision to screen and diagnose by knowing that a study is being conducted. Also, the case selection by defining a time frame rather than in-/exclusion criteria makes the results more generalisable in similar settings.

On advanced practice

Despite these promising results, AP roles in PT in general still lack an accurate, consistent, international and interprofessional definition. However, there is consensus that AP in PT requires the ability to combine knowledge and skills to effectively support an integrated clinical reasoning process for the treatment of patients [28]. These knowledge and skills are dependent on the educational and training programmes.

In acute care, the AP role of the acute care nurse practitioner (ACNP) is already established and can serve as a reference for AP PT models of care in EDs. This role includes advanced clinical reasoning skills, enhanced screening and diagnostic abilities, expertise in interprofessional collaboration, autonomous practice within defined scope, specialised education and training beyond the basic professional degree and high value care [25, 26, 27].

Although the use of PTs in AP roles is promising, questions about policy, health insurance coverage and what titles, role and competence profiles are being used to describe AP therapists are still open [28]. As chronic pain is a major burden in our society, another important issue would be that AP PTs could easily be implemented in a health pathway for the prevention of pain chronification [29].

Therefore, it is important that the educational pathway that is needed in order to learn all skills necessary is transparent and of high quality. Like this, other professionals and stakeholders can be shown how a possible implementation of this service in the Swiss hospital landscape could look like. Defining and implementing an AP role requires the adaptation of overarching structures.

Questions to be answered in the future?

This study focused on evaluating the current state of art of MSK PT care in a Swiss ED. To explore possibilities of PTs working in AP roles in this setting, it would be interesting to test the inter-tester reliability and agreement of EPs' and PTs' red flag assessments. This knowledge could help the process of establishing the AP role in different hospitals in Switzerland. Furthermore, to investigate even on direct access (DA) models, it would be essential to know, if the whole decision-making process from right after the triage on would be congruent between EPs and PTs. Also on this topic, an exploration of the inter-tester agreement would be interesting and necessary in order to define the framework conditions for PTs working in the ED more precisely in the future.

Conclusions

This study is intended to give an overview on the different aspects of screening and diagnostic tests performed by PTs in the current situation in a Swiss ED. The results showed that PTs are taking their responsibility serious to screen and diagnose the patients according to their knowledge and skills. They are conducting a lot of screening, even though all patients were seen by an EP before, and serious pathologies are not to be expected. In terms of type, screening and diagnostic tests used by PTs and EPs were largely consistent considering that PTs are not taught or given competence on all tools an EP uses (e.g. medical imaging or laboratory work). The study reflects on data collected during daily practice and is therefore valid for the situation examined.

As this field of work for PTs is still new in Switzerland and the implementation of AP roles in different sections of healthcare is very important to face the increasing number of patients, further research is needed to strengthen the trust in the competence of PTs working in these areas. More research is also required in order to quantify the health economic influence on PTs working in this setting as it is an important factor when negotiating framework conditions with insurance, politics and other stakeholders.

Abbreviations

| | |
|---------|--|
| AP-role | Advanced Practice Role |
| CIFW | Certificate of incapacity for work |
| ED | Emergency Department |
| LOS | Length of stay |
| EP | Emergency Physician in charge, here also as Senior Physician |
| MSK | Musculoskeletal |
| PT | Physiotherapist |
| SDIG | Secondary Diagnosis |

Declarations

Ethics approval and consent to participate

The competence of the Cantonal Ethics Committee of the Department of Health, Social Affairs and Integration of the Canton of Bern, Switzerland was clarified (No. Req-2022-01272) and has revealed that the project does not fall under the Human Research Act, ART2, Abs1 and does not require approval. All participants gave their general consent (GC) to the use of their health-related data for research purposes.

Consent for publication

Not applicable

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

BRW, RW and AR conceived and designed the analysis. They also conducted the analysis, interpreted the data and wrote the main part of the manuscript. BRW collected the data generated by the PTs and RW summarised them. BRW prepared the final manuscript for submission. All authors contributed to, read and approved the final manuscript.

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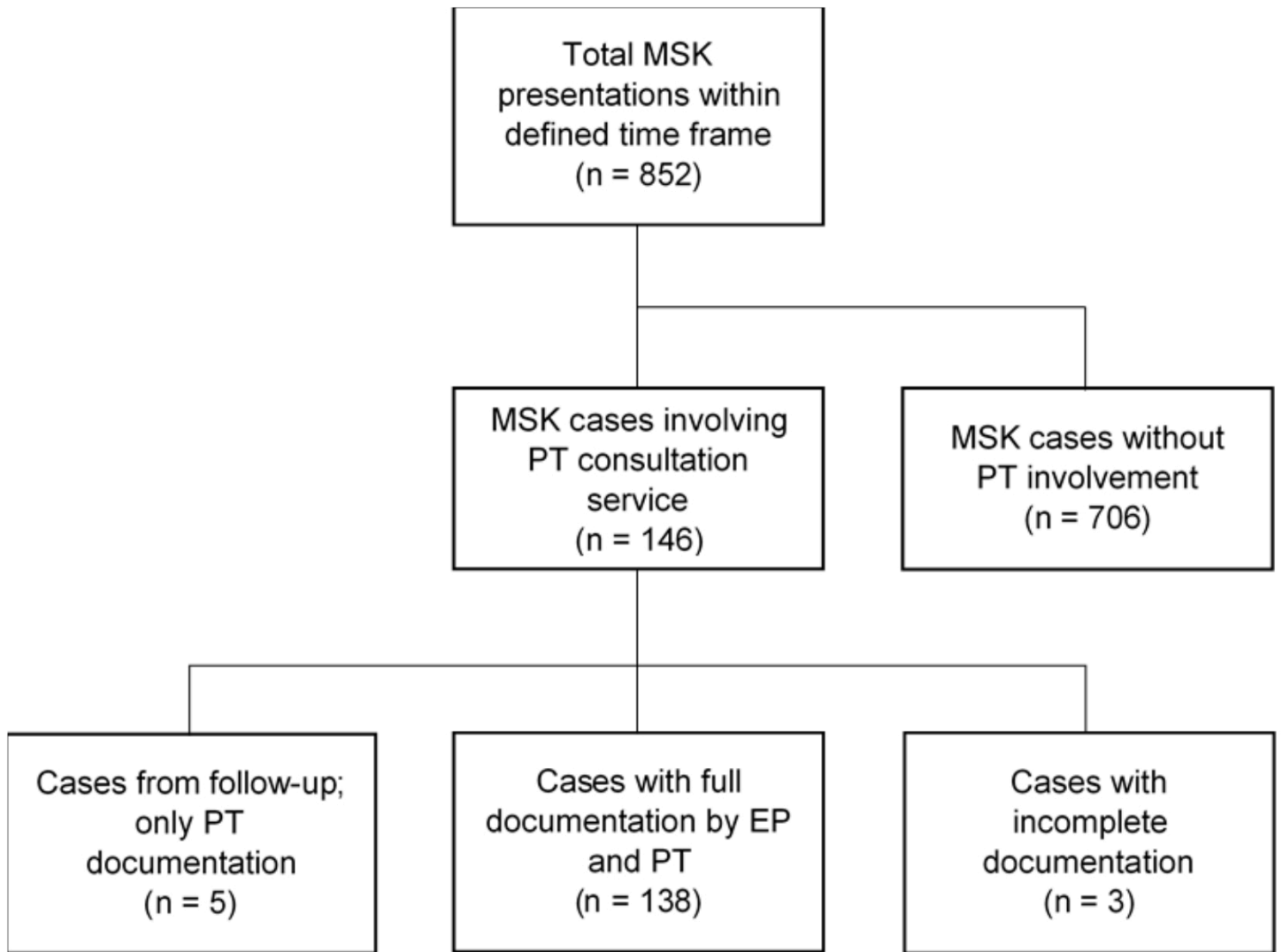
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Figures



MSK musculoskeletal, PT physiotherapy, Cases from follow-up e.g. if their initial emergency consultation was outside the PT service hours, EP emergency physician

Figure 1

Overview of data collected

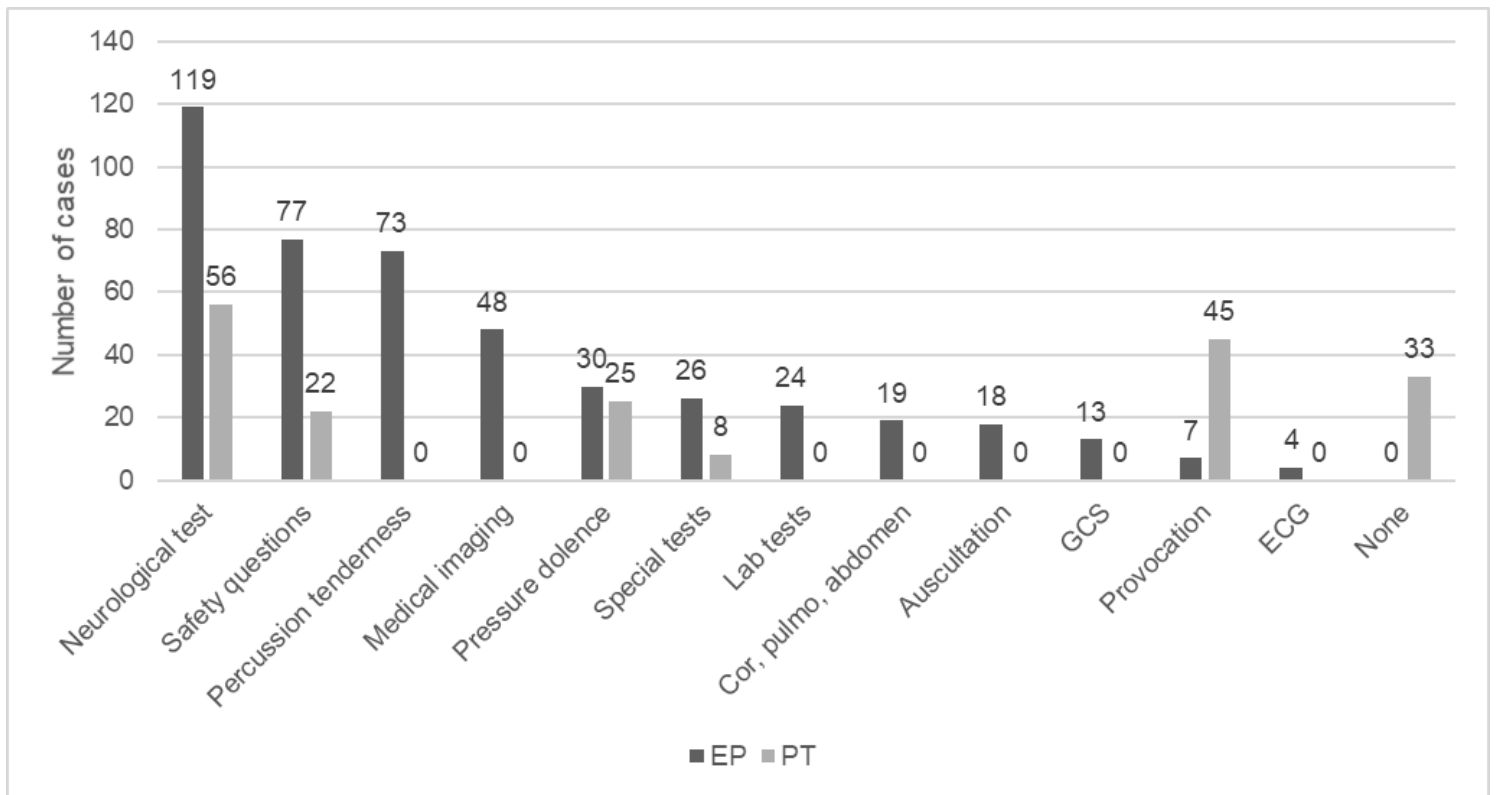


Figure 2

Screening and diagnostic tests by EP, PT

EP emergency physician, PT physiotherapist, Cor, pulmo, abdomen heart, lungs, abdomen, GCS Glasgow Coma Scale, ECG electrocardiogram