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ORIGINAL ARTICLE

The role for Physiotherapists in the management of minor musculoskeletal injuries presenting to an Emergency Department. An evaluation of the Physiotherapy service at the Emergency Department of Mater Dei Hospital

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Background

Musculoskeletal injuries presenting to the emergency department are very common and a significant burden of work. This study aims to assess the impact of their management by musculoskeletal physiotherapists.

Method

A comparative analysis was selected with three outcomes: (1) patients' total length of stay in the emergency department, (2) patients' return rate with the same complaint, and (3) the referral rate to physiotherapy out-patients. Retrospective data over six months was collected from an electronic record of patients who presented with minor musculoskeletal injuries to the Emergency Department in Mater Dei Hospital, Malta.

Results

Over a period of 6 months, 6,087 patients with minor musculoskeletal complaints presented to the emergency department. Of these, 11% were managed by a physiotherapist who worked a limited total of 30 hours per week. The length of stay in the emergency department for patients managed by physiotherapists had a mean of 202 minutes and a mode of 99 minutes, whilst those managed by doctors had a mean of 380 minutes and mode of 109 minutes. Of the patients who returned to the emergency department with the same complaint, 74% were managed by doctors only and 26% were managed together with the physiotherapist. Physiotherapists referred 26% of their patients for follow-up physiotherapy appointments whilst doctors referred only 11% of the patients. The latter two findings were statistically significant.

Conclusion

Timely physiotherapy intervention in the Emergency Department for minor musculoskeletal cases contributes to a shorter length of stay, lower return rate, and more specific referrals to physiotherapy out-patients.

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Introduction

A physiotherapy service in the Emergency Department (ED) of Mater Dei Hospital (MDH), Malta, was introduced in August 2016. This ED is the main one on the island with a turnover of approximately 300 patients per day.[1] Physiotherapy in the ED has long been proven to be effective and to help free up medical staff from minor Musculoskeletal (MSK) conditions which are commonly encountered in the ED.[2,3] Research reveals that traditional management of MSK conditions with analgesia and onward referral produces poor results.[4] Recent studies have shown that physiotherapists can manage MSK conditions effectively resulting in reduced admissions, shorter ED length of stay (LOS) and less waiting time, and these studies have recommended their role as primary contact health providers in ED's.[5-8]

Physiotherapy in the ED evolved in the UK in the 1990s. This was due to the increased pressure on EDs because of increased visits for minor MSK conditions and started with physiotherapists working as secondary contact practitioners.[9] The drive for specialisation, through advanced practitioners, fostered the development of MSK physiotherapists working in EDs as primary contact health providers.[10] Local internal audits so far have consistently revealed positive results, and included a situational analysis of physiotherapy referrals from the ED in 2006, a patient satisfaction survey in 2016, yearly audits, and an undergraduate study of ED doctors' perceptions of ED physiotherapy.

Although quantitative studies investigating ED physiotherapy services are scarce, the majority conclude that there is a scope for this service.[2,5-8,11] Two particular observational cohort studies revealed that primary contact physiotherapists were effective in reducing waiting times in EDs.[6,7] Another prospective observational study revealed similar positive results focusing on length of stay as a major outcome.[5] A prospective non-randomised control trial investigating the difference between primary and secondary contact physiotherapists in EDs using waiting times as the major outcome, concluded that primary contact physiotherapists were more efficient than secondary contact, which is the system currently used in Malta and analysed in this study.[11] Two more recent systematic reviews have specifically investigated qualitative studies, both showing positive patient and staff perceptions of the service given by physiotherapists in EDs.[10,12] Current evidence seems to support the role of MSK physiotherapy in the ED mainly by reducing waiting time and LOS, and this study was designed to assess this role within the main ED in Malta.

Materials and Method

A retrospective quantitative comparative method was used with three outcomes: LOS in the ED, return rates with the same complaint to the ED and physiotherapy out-patients referral rate. LOS was taken as the total time in minutes from when the patient was registered on arrival to the ED to the time the patient was discharged and left the ED. Return rates represented patients with minor MSK cases who returned to the ED with the same complaint during the same month (a total of 113 in the study period). These outcomes were selected on the basis of being the most commonly used in current literature to evaluate the effectiveness of the service.[5-8] The cohort of 6,087 patients studied included all those presenting to Mater Dei hospital's ED with minor MSK complaints over a 6-month period, from January to June 2018. Minor MSK complaints were defined as any MSK injury classified as Emergency Severity Index (ESI) 4 or 5, the lowest two priorities out of a five-tier MDH ED triage system that included traumatic and non-traumatic cases.

Retrospective data of the cases seen by physiotherapists and doctors were retrieved from ED and physiotherapy electronic records following the appropriate ethical and hospital approvals. The three outcome measures were analysed for these two sets of data in order to make comparison. The patients who were not managed by physiotherapists were those who presented after physiotherapy working hours (during this study period, ED physiotherapists worked from Monday to Friday, from 8am to 2pm).

Data on the cases seen by a physiotherapist were taken from the ED physiotherapy database. Data on the cases seen by doctors only were taken from the ED statistics on the hospital database while data on physiotherapy out-patient referrals were taken from the physiotherapy out-patient department database. The LOS return rates and referral rates for physiotherapy follow-up were noted from both groups. The data were calculated using descriptive statistics and the Statistical Package for the Social Sciences (SPSS).

RESULTS

During the study period, 6,087 patients presented with minor MSK complaints to the ED; of these 669 patients (11%) were seen by physiotherapists. These 11% represented 35% of the ESI 4 and 5 MSK patients who attended the ED during physiotherapy working hours, totalling 30 hours per week (Monday to Friday, 8am to 2pm). An average of 1,015 patients presented with minor MSK complaints to the ED per month, and these accounted for 8% of the total number of attendees to ED. The results showed a significant preponderance (4,194 patients or 69% of total) for MSK patients presenting outside physiotherapy working hours, that is, during the afternoons, evenings and weekends.

Length of Stay (LOS)

As shown in Figure 1, the mean LOS for patients who received a physiotherapist assessment in the ED was 202 minutes. It was noted that this was heavily affected by a small number of cases with extremely long LOS. Indeed, the mode for this group was significantly shorter at 99 minutes. In comparison, the mean LOS of minor MSK cases seen by doctors only after physiotherapy hours was 380 minutes (i.e. 178 minute longer), and the mode was 109 minutes (10 minute difference). These latter numbers were also influenced by a few cases with extremely long LOS.

Return Rates

The results showed that out of a total of 113 patients who returned to the ED, 28 patients (26%) returned in the same month after being seen by a physiotherapist, while 85 patients (74%) returned after being seen by a doctor only. Out of these 85 patients, who were seen by a doctor during their first visit, and seen by a physiotherapist in their second visit, 39 patients (37%) did not return again to the ED. Figure 2 shows the 6-month figures comparing patients returning after being seen by a physiotherapist with those seen by a doctor only after-hours. The results were found to be statistically significant as shown from the Chi test (p<0.001) as presented in table 1.

Figure 1 Graph showing the Mean and the Mode of Length of Stay in minutes of Minor MSK cases managed during Physiotherapy hours and outside Physiotherapy hours.

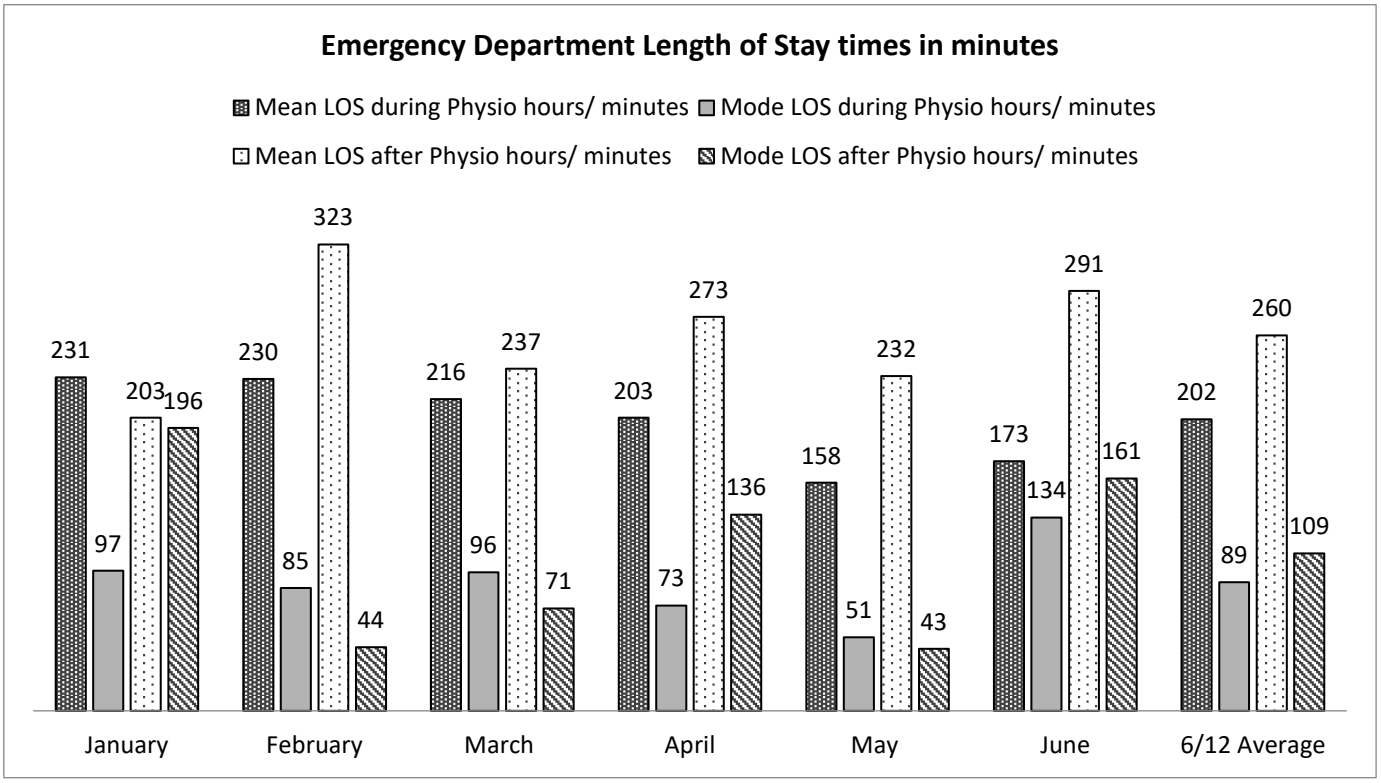


Figure 2 Number of Minor Musculoskeletal cases returning to the Emergency Department with the same complaints within the same month

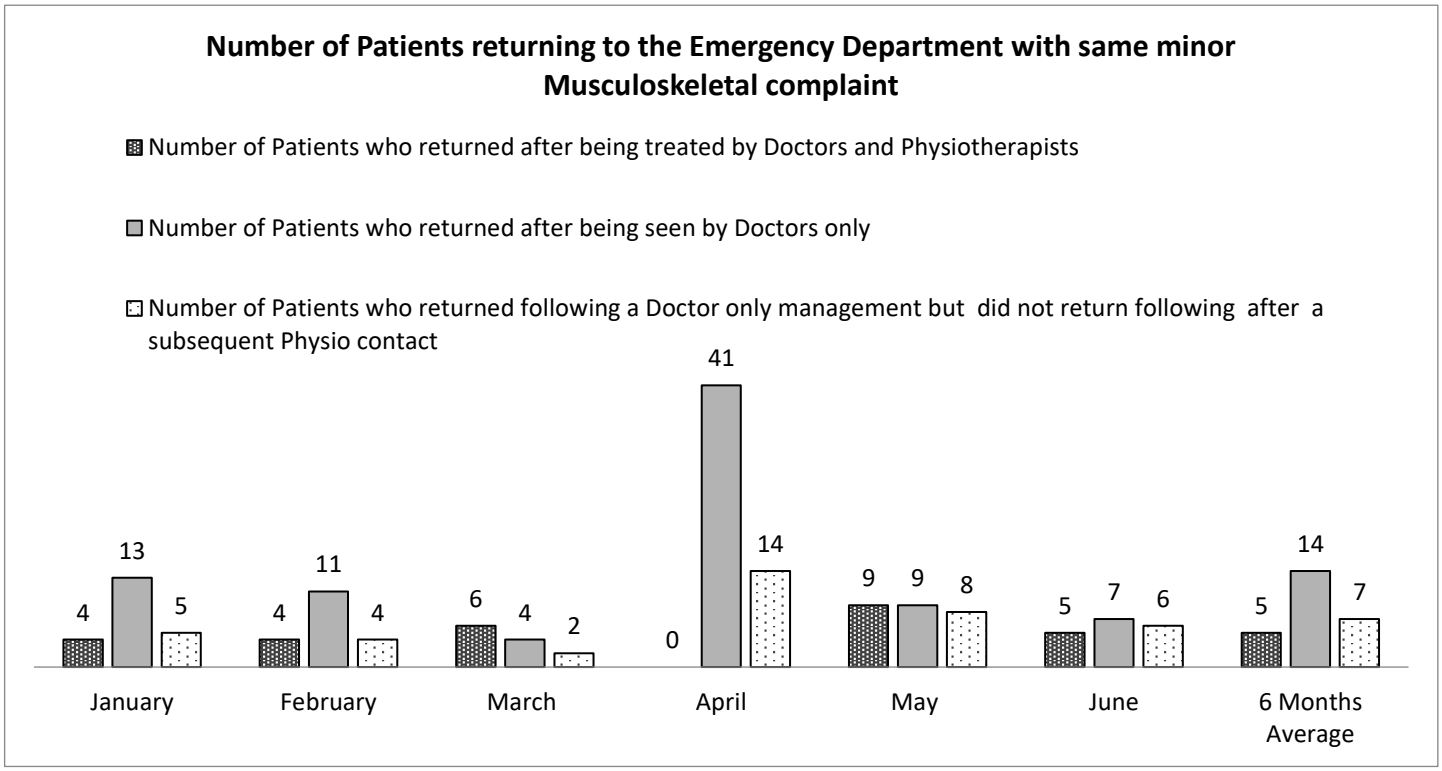


Table 1 Chi-Square Tests for return rates and physiotherapy follow-up referrals

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	115.896[a]	3	0.000
Likelihood Ratio	103.115	3	0.000
N of Valid Cases	1423		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 29.86.

Physiotherapy Out-Patient Referrals

Out of the total of 669 patients seen by physiotherapists, 174 (26%) were referred to physiotherapy out-patient services, which included follow-up care in speciality and general clinics. On the other hand, doctors, who managed the majority of patients, only referred 11% (481 patients) to physiotherapy out-patients. Among those onward referrals sent by physiotherapists, 96 patients (55%) were sent to general physiotherapy out-patients while 78 patients (45%) were sent to the various speciality physiotherapy clinics, namely hospital staff, hands-unit, woman's health, paediatrics, oncology, geriatrics, Gozo residents, neuro-rehab, amputees, and community physiotherapy. In comparison, among those onward referrals sent by doctors, 92% (441 patients) were sent to general physiotherapy outpatients while only 8% (40 patients) were sent to speciality physiotherapy clinics. Figures 3A and 3B illustrate these two trends. The data suggest that specific follow-ups to individuals presenting to the ED with MSK pain depend on whether they are seen by a physiotherapist which was found to be statistically significant (p<0.001) as presented in table 1.

Figure 3A Referrals to Physiotherapy Outpatients by Physiotherapists during Physio Hours.

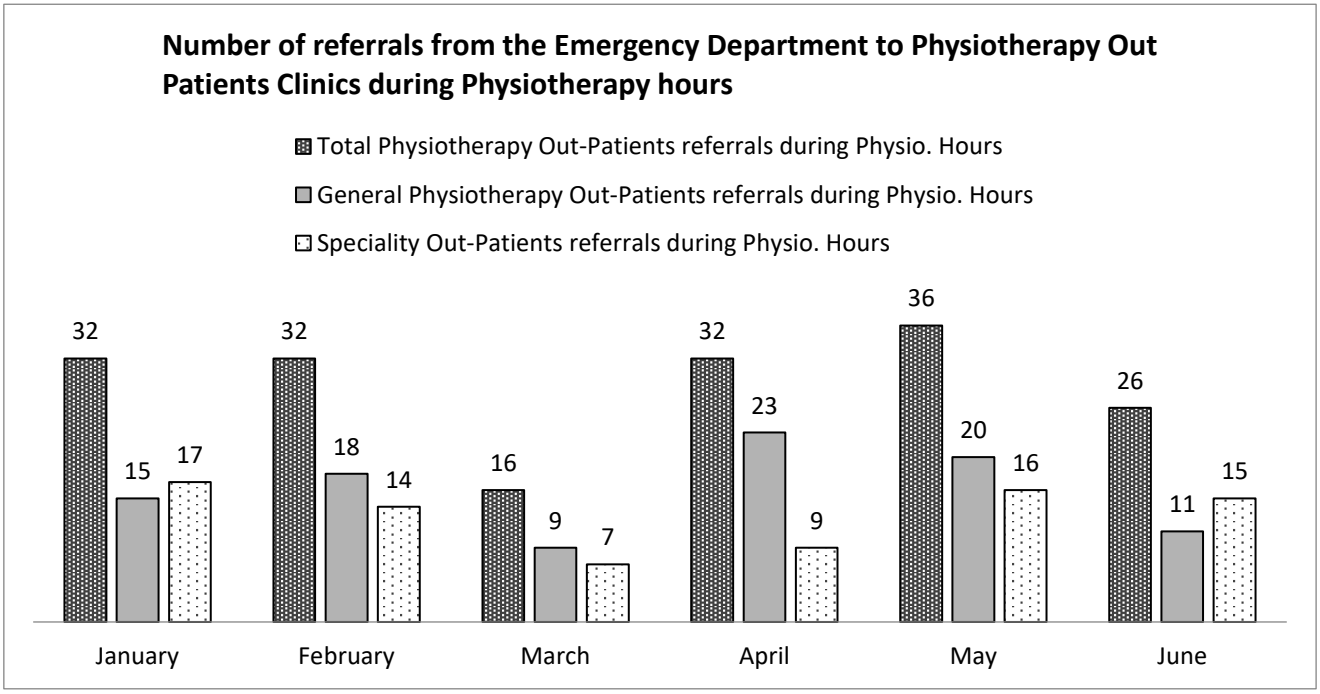
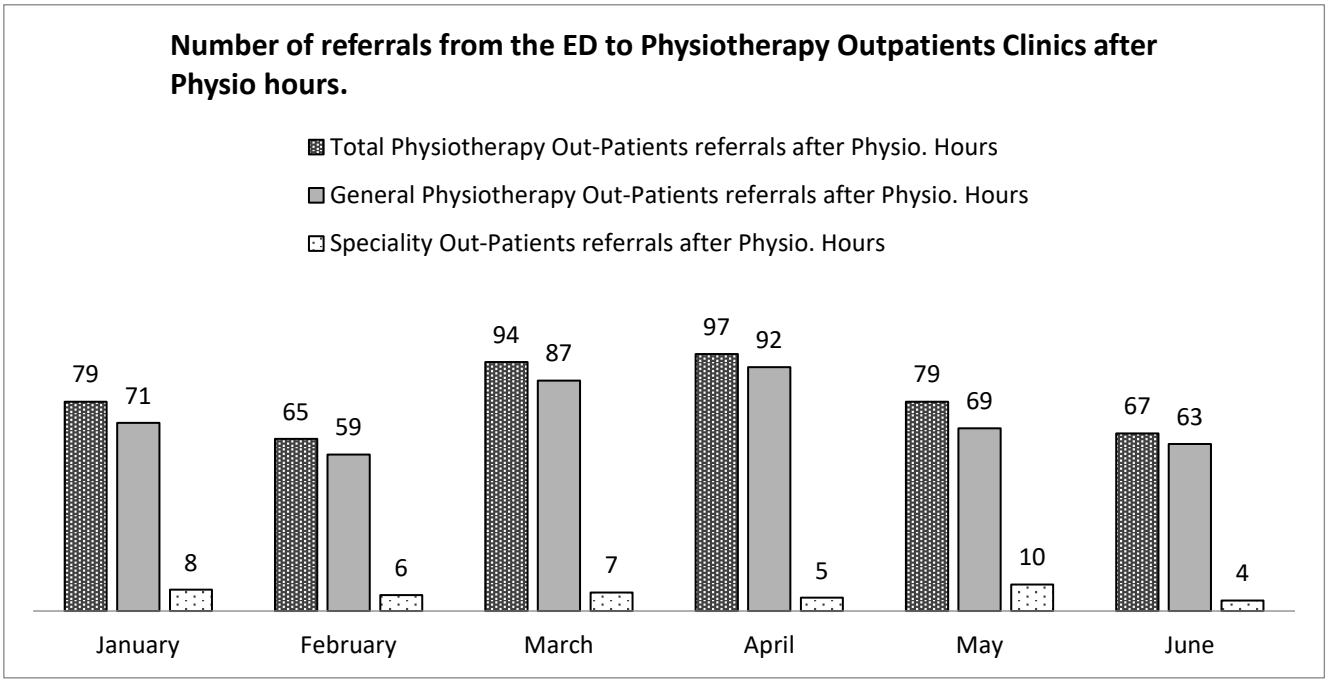


Figure 3B Referrals to Physiotherapy Outpatient Services by Doctors after Physio Hours.



Discussion

Within the limited operational hours (30 hours) provided by physiotherapists per week, physiotherapists at the ED managed 11% of all minor MSK cases in the ED, which represent 35% of the minor MSK patients presenting during physiotherapy working hours. This finding supports the further development and expansion of an MSK service at the ED delivered by physiotherapists. Within the local context, despite independently assessing, treating and advising patients, the physiotherapist had to liaise with a medical practitioner to request imaging, issue pharmaceutical prescriptions and discharge the patient, as per hospital policy. Notwithstanding this medical input, this study found that the LOS for patients seen by physiotherapists was shorter than those seen by doctors only, and the return rate with the same complaint was lower. Reasons for these findings may include the fact that physiotherapists selected MSK patients only, whereas doctors had to see these cases together with all the other patients in the department. Physiotherapists referred a higher number of patients (26%) to physiotherapy out-patients than did the doctors (11%), possibly because they may have a greater awareness of what general and specialty physiotherapy services were available.

There are a number of factors influencing the LOS of patients at the ED such as the requirement for imaging, blood tests, or specialist consultation. This resulted in much longer LOS regardless of whether being seen jointly with physiotherapists or doctors only. Mean LOS duration was significantly skewed by a relatively small number of patients who required very lengthy stays in the ED. Hence, the mode was also considered. Nevertheless, the LOS of patients seen by a physiotherapist besides the doctor was shorter than that of patients seen by a doctor alone (mean -178min, mode -10min). This finding was similar to that reported by similar studies, where the difference ranged from 34-83 minutes.[6-8,11] A possible explanation for this could be that physiotherapists are specifically trained in MSK examination skills, and differential diagnosis in

relation to MSK conditions increasing their efficiency in managing such cases.[6,7,11]

In order to reduce the enormous pressure on the ED and LOS future practice may consider implementing first contact physiotherapy in the ED leading to a more efficient patients' care pathway. This may help to reduce the need for a doctor to see the patient before referring to the ED physiotherapist. This would only be possible if MSK physiotherapists with adequate post-graduate training are employed to screen for minor MSK cases, and search for red flags in accordance with established scientific guidelines.[6] Indeed, first contact physiotherapy practice is currently strongly advocated in the countries like the UK & Australia to increase efficiency and quality of public health services.[6,7,9,11]

When observing patients' return rates to the ED, those previously seen by physiotherapists demonstrated lower return rates (26%) compared with those (74%) only seen by doctors ($p<0.001$). This finding was significantly higher than other studies which reported a minimal difference.[8,11] Since a returning patient suggests lack of satisfaction with the management of a condition, persistence or worsening of that condition, this result may indicate that physiotherapists, in the local scenario, provided more targeted care for the conditions they saw such as exercise and lifestyle changes. The spike in the return rates (figure 2) during the month of April may reflect the fact that less physiotherapy interventions were carried out by resident physiotherapists due to absences resulting from leave entitlements.

This study found that ED physiotherapists had a higher physiotherapy out-patient referrals rate (26%), compared to doctors (11%). This may also contribute to the observed reduced return rates since patients were given an alternative follow-up pathway by their physiotherapist. Lower referrals by doctors may have reflected a general lack of awareness of the variety of physiotherapy speciality clinics. Of the number of cases seen by physiotherapists during operational hours, only a quarter (26%) was sent for follow-up. This may indicate that ED physiotherapists managed to deal with minor MSK injuries effectively on the front line through assessment, advice, and onward specialty referral. While physiotherapists referred more follow-ups than doctors, 45% were sent to speciality clinics rather than to general physiotherapy. The relatively high speciality clinic referral rate ($p<0.001$) by physiotherapists may be due to their understanding of the physiotherapy speciality clinics available. It may also indicate that physiotherapists were more specific with their management options. Appropriate referral means timely treatment for the patient at the appropriate speciality clinics. After-hours, doctors sent 92% of their referrals to general physiotherapy out-patient clinics, with the low specific clinic referral rate resulting in longer appointment delays for patients needing such follow-ups. Further doctor awareness on the various existing physiotherapy services may help improve the quality and specificity of referrals. This can be achieved by reformatting the physiotherapy referral form, and making it available digitally with a drop-down selection with all the available services. This would not replace the physical presence of an experienced physiotherapist, triaging cases on site and deciding best follow-up options, as well as providing a first session with assessment, management and advice on the day. Further inter-professional in-service training between MSK physiotherapists and ED medical doctors would help bridge this gap in the service and lead to two-way mutual learning benefitting both professions.

While the feedback for the ED physiotherapy service in Malta is positive, a number of limitations are

evident, namely the lack of tools and procedures leading to a primary contact role. It is also a very niche clinical area, requiring adequately trained staff with experience in the local health system, which adds a human resource challenge. The positive results obtained in the ED are heavily dependent on the working relationship between MSK physiotherapists and ED doctors. This has allowed the service to develop successfully, by both professions complementing each other in the provision of a more holistic service to minor MSK conditions.

The fact that the study was retrospective presents a number of weaknesses, including the inability to compare the outcomes prospectively. While it gives a good overview as a service evaluation, the study was limited by the low number of patients' enrolled, the short study period and absence of comparable local studies. The service evaluation did not consider actual days and hours of service, but rather provided a blanket overview on the effects of physiotherapy presence in the ED, using the chosen outcomes. It did not investigate patient-oriented outcomes but analysed patient metrics. Further quantitative and qualitative patient-oriented outcomes and satisfaction surveys with larger samples are recommended to be able to collect improved data on the service provided. Notwithstanding these limitations, the results were clinically and statistically significant and there seems to be strong scope for the presence of physiotherapists in the local ED to manage minor MSK complaints and a future potential to implement first contact physiotherapy as an ED service.

Conclusion and Recommendations

This retrospective analysis produces encouraging results and supports the role of the ED physiotherapist in managing minor MSK injuries in the ED. It has shown that the MSK ED physiotherapy service resulted in shorter LOS for minor MSK cases, lower return rate with the same MSK complaint, and more appropriate referrals to physiotherapy out-patients. It showed that patients seen by physiotherapists were better informed on how best to manage their MSK condition with or without follow-up, and how to use the public service better, resulting in reduced return rates. There is thus a scope for a practice shift towards a primary contact physiotherapy service, in line with international practice.[5-7,10] To achieve this, patient pathways need to be formed to facilitate first contact practice in a more efficient way. Further training, on emergency medicine for physiotherapists and MSK medicine for doctors, would strengthen the skillset of the practitioners and contribute to solidify the service further.

Summary

- Physiotherapists manage minor MSK injuries effectively in the ED in Malta. They contribute to a shorter LOS, lower return rate and more accurate physiotherapy follow-up referrals, compared to patients managed by doctors alone.
- Recommendation for future practice includes increasing physiotherapy capacity and strengthen the role of the physiotherapist at the ED with clearer operational procedures and first contact.
- Further quantitative and qualitative patient-oriented outcomes of larger samples are recommended to assess the quality of the service.

REFERENCES

1. Azzopardi-Muscat N, Buttigieg S, Calleja N, Merkur S. Health Systems in Transition. Malta Health System Review. 2017; 19(1): 80.
2. Lau PM, Chow DH, Pope MH. Early physiotherapy intervention in an Accident and Emergency Department reduces pain and improves satisfaction for patients with acute low back pain: a randomised trial. Australian Journal of Physiotherapy. 2008; 54: 243-249.
3. Sohil P, Hao PY, Mark L. Potential impact of early physiotherapy in the emergency department for non-traumatic neck and back pain. World Journal of Emergency Medicine. 2017; 8(2): 111-115.
4. Machado GC, Rogan E, Maher CG. Managing non-serious low back pain in the emergency department: Time for a change? Emergency Medicine Australasia. 2018; 30: 279-282.
5. De Gruchy A, Granger C, Gorelik A. Physical therapists as primary practitioners in the emergency department: six-month prospective practice analysis. Physical Therapy. 2015 Sep; 95(9): 1207-1216.
6. Sutton M, Govier A, Prince S, Morphett M. Primary-contact physiotherapists manage a minor trauma caseload in the emergency department without misdiagnoses or adverse events: an observational study. Journal of Physiotherapy. 2015; 61: 77-80.
7. Bird S, Thompson C, Williams KE. Primary contact physiotherapy services reduce waiting and treatment times for patients presenting with musculoskeletal conditions in Australian emergency departments: an observational study. Journal of Physiotherapy. 2016; 62: 209-214.
8. Sayer JM, Kinsella RM, Cary BA, Burge AT, Kimmel LA, Harding P. Advanced musculoskeletal physiotherapists are effective and safe in managing patients with acute low back pain presenting to emergency departments. Australian Health Review. 2018; 42: 321-326.
9. Seal R. Can advanced musculoskeletal physiotherapy practitioners help to relieve some of the pressures on the emergency department? International Emergency Nursing. 2017; 35: 59-61.
10. Ferreira GE, Traeger AC, O'keeffe M, Maher CG. Staff and patients have mostly positive perceptions of physiotherapists working in emergency departments: a systematic review. Journal of Physiotherapy. 2018; 64: 229-236.
11. Taylor NF, Norman E, Roddy L, Tang C, Pagram A, Hearn K. Primary contact physiotherapy in emergency departments can reduce length of stay for patients with peripheral musculoskeletal injuries compared with secondary contact physiotherapy: a prospective non-randomised controlled trial. Physiotherapy. 2011; 97: 107-114.
12. Barrett R, Terry L. Patients' and healthcare professionals' experiences and perceptions of physiotherapy services in the emergency department: a qualitative systematic review. International Journal of Emergency Medicine. 2018; 11(1): 1-10.