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Research Article

Impact of a Lateral Ankle Sprain in General Practice: Comparison between Patients With and Without Persistent Complaints after 6-12 Months

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Keywords

- Ankle sprain impact
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Abstract

Background: Although ankle sprains are common and often lead to persistent complaints, their impact on functioning and related costs remains unclear.

Objective: To investigate the impact of a lateral ankle sprain on functioning and heath care utilization at 6-12 months follow-up.

Design: Cross-sectional study.

Setting: General practice.

Patients: 204 subjects were included from general practice after a lateral ankle sprain 6-12 months previously; 96 reported persistent complaints and 108 reported no persistent complaints, measured on a 7"point" Likert scale (with a respectively 3-7score in the persistent complaints group and with a 1-2 points score in the group without complaints).

Assessment of Risk factors: A standardized questionnaire included the 7"point" Likert scale to measure recovery.

Main outcome measures: A standardized questionnaire assessing history, pain and function.

Results: A significantly higher BMI (26.9 and 24.9 kg/m2), higher pain scores at rest (1.87 vs. 0.44) and during exercise (3.62 vs. 1.25) and a lower Ankle Function Score (72.47 vs. 82.90) were reported in the group with persistent complaints, while a higher percentage of patients without persistent complaints participated in sports (77.8% vs. 36.4%).

Limitations in functioning due to ankle sprain and a high medical consumption (76.5% visiting the GP, 20.1% a specialist and 45.6% a physiotherapist) and radiographic imaging (35.3%) were reported in both study groups.

Conclusions: A lateral ankle sprain has a high impact on functioning and physical health, especially in those with persistent complaints. In subjects with and without persistent complaints, considerable use of health care resources was found 6-12 months after the initial visit to the general practitioner.

ABBREVIATIONS

BMI: Body Mass Index; GP: General Practitioner

INTRODUCTION

Ankle sprains are one of the most commonly occurring musculoskeletal injuries. In the Netherlands, of the 600.000 people who yearly sustain an acute ankle injury, 50% are seen in general practice or visit (on their own initiative) emergency departments of hospitals [1]. In Dutch general practice there is an incidence of 12.8 per 1000 patients per year and the incidence is higher in younger people, and in men compared to women [1]. In ≥ 75% of the patients, damage to the lateral ligament complex occurred due to an inversion sprain of the ankle [1].

Conventional treatment consisting of early mobilization combined with the use of an external support (tape, bandage or brace) is the preferred initial treatment for acute ankle sprains [2-4]. In daily practice, although physiotherapy is often used as an additional treatment, there is no evidence that physiotherapy is effective for the treatment of acute ankle sprains [5]. Also, in patients from primary care, a supervised training program combined with conventional treatment provided no better results compared with conventional treatment alone [6].

A systematic review revealed that one year after a lateral ankle sprain, a high percentage of patients still experienced persistent complaints like pain, functional loss and instability. Many patients (range 36-85%) reported full recovery after 3 years, while a third of the patients with an acute ankle sprain

reported at least one re-sprain [7]. One study found that nearly 50% of patients with chronic ankle disorders reported persistent complaints for ≥ 10 years and the majority of those patients were limited in their physical activities [8]. Consequently, healthcare costs, and costs due to productivity loss, are certainly expected [9]. However, the exact impact on daily functioning and the use of medical care after a lateral ankle sprain is unknown.

Therefore, this study assesses the impact on functioning and medical consumption of a lateral ankle sprain at 6-12 months follow-up. We also compared these aspects for patients with and without persistent complaints 6-12 months after their initial visit to the general practitioner (GP).

MATERIALS & METHODS

Design

Data of a cross-sectional study on patients with a previous lateral ankle sprain were used to study the impact on functioning and medical consumption.

Ethical considerations

This article is an original article, has never been published and is not under consideration for publication in another journal. All authors made a substantial contribution to the information and material submitted and have read and approved the final version. Ethical considerations: Ethical approval was received by Medical Ethics Committee Erasmus MC Medical University Rotterdam The Netherlands (NL30645.078.09).

Participants

Participants were selected from the medical records of 84 general practices in the Netherlands. To select participants, the International Classification of Primary Care (ICPC) code 'ankle sprain' (L77) was used in combination with the text search terms 'ankle', 'distortion' and 'sprain'. Interested subjects were subsequently approached by telephone by the experienced research assistant for eligibility. Invited for participation in the study were subjects aged 16-65 years who were registered with a new ankle sprain at the GP's practice 6-12 months prior to this study [10]. Subjects with structural damage like fractures, other osseous abnormalities, former ankle operations or known systematic diseases involving the ankle with an impact on functioning (e.g. multiple sclerosis, rheumatoid arthritis) were excluded, as were patients with insufficient knowledge of the Dutch language.

Procedures

Eligible subjects from general practice received a letter from their own GP with study information and a response card. Responding subjects were subsequently approached by telephone by a trained research assistant and the inclusion criteria were checked. Additionally, the presence of complaints was reported using a 7"point" Likert scale (1=completely recovered to 7=worse than ever). Based on this score included subjects were divided into two groups: those without persistent complaints after an ankle sprain [score 1-2 on the scale ('completely recovered' or 'strongly improved')] and those with persistent complaints after an ankle sprain [score 3-7 ('slightly improved' to 'worse than ever')]. Subjects were included after they had provided informed consent and were subsequently asked to fill in a standardized questionnaire. In addition, all participants were invited for a physical and a radiological examination (although these findings are not used for the present study).

Measurements

All included participants received a standardized questionnaire with questions on patient characteristics [age, gender, body mass index (BMI) and education level] and history of the ankle sprain, i.e. the side of the injury, preferred leg, previous sprains, the cause of sprain, and related(change in) activity. Measurement of the current symptoms included: pain at rest and during exercise [rated on a numeric rating scale (NRS) 0-10], function measured with the Ankle Function Score (AFS; 0-100) [11] and the Tegner score (11-point activity level score)[12], feeling of instability (expressed in a subscale of the AFS),as well as symptoms, pain and functioning during physical sport [Foot and Ankle Disability Index (FADI) on a 0-34point scale ranging from 'no difficulty' to 'unable to do'] [13].

The current impact on work and physical activity was measured using a question on ability, participation and bother sameness, expressing limitation in activity. Ability was measured using a single question with three response categories: 'not able to do due to ankle complaints'; 'not able due to other reasons'; 'able to do'. Current bothersomeness in work and physical activities was measured using a 0-10 NRS scale. Details of sports participation in terms of competing, intensity and complaints were asked in separate questions. All impact measures were registered by the patients as perceived at the moment of filling in the questionnaire. Perception of general health at the time of filling in the questionnaire was measured using the EQ-5D subscale, ranging from bad to excellent. Medical consumption was asked for the complete follow-up period, by means of total number of visits to the GP, medical specialist and/or physiotherapist. Any diagnostic imaging performed during follow-up was registered (radiograph, MRI). In addition, the applied physiotherapeutic treatment protocols and any additional support items were reported.

Statistical analysis

Descriptive statistics were used to analyze patient characteristics, impact on functioning, and medical consumption of participants with and without persistent complaints. Differences between the groups were tested using an independent sample t-test for continuous variables and a chi-square test for dichotomous variables. Data were analyzed using SPSS (version 20.0, SPSS Inc. Chicago, IL, USA). For all analyses, a p-value < 0.05 was assigned as statistically significant.

RESULTS

A total of 632 subjects were found in the electronic medical records of 84 general practices, of whom 206 were willing to participate in the study [10]. Finally, 204 participants completed the online questionnaire and are included in the present study. Based on the 7-point Likert scale, two groups were formed based on the current presence of complaints: 96 subjects had persistent complaints and 108 subjects reported no persistent complaints.

Baseline characteristics

Table (1) presents the baseline characteristics of the included participants**:** mean age was 37 (SD 14.7) years and 42.6% was male. In 56.4% the right ankle was injured and almost 50% had an previous ankle sprain in their medical history, with no significant difference between the two groups. The BMI was significantly higher in the group with persistent complaints compared to those without persistent symptoms (26.9 and 24.9kg/m^2, respectively; $p < 0.006$). A higher percentage of subjects in the group without persistent complaints participated in sport at the time of study inclusion (77.8% vs. 36.4%). Directly after the ankle sprain,

Table 1: Patient characteristics (n (%), unless otherwise stated).

	Total (n = 204)	Persistent symptoms (n = 96)	Withoutsymptoms (n = 108)	*P* value
Age (years)*	37.53 (14.6)	36.55 (14.38)	38.41 (14.80)	0.37
Gender (male)	85 (41.7%)	34 (35.4%)	51 (47.2%)	0.128
BMI (kg/m^2)*	25.77 (4.80)	26.92(5.51)	24.94 (4.04)	0.006
Education level				0.056
Lower	124 (60.8%)	65 (67.7%)	59 (54.6%)	
Higher	80 (39.2%)	31 (32.3%)	49 (45.4%)	
Sport participant (yes)	119 (58.3%)	35 (36.4%)	84 (77.8%)	0.477
Preferred leg (right)	167 (81.9%)	81 (84.4%)	86 (79.6%)	0.359
Side of ankle sprain (right)	114 (55.9%)	58 (61.4%)	56 (51.9%)	0.219
Previous ankle sprain	96 (47.0%)	49 (51.0%)	47 (43.5%)	0.277
Diagnosis made by				0.316
General practitioner	120 (58.8%)	52 (54.2%)	68 (63.0%)	
Physiotherapist	14 (6.9%)	6 (6.2%)	8 (7.4%)	
Orthopedic surgeon	22 (10.8%)	14 (14.6%)	8 (7.4%)	
Self	6 (2.9%)	2 (2.1%)	4 (3.7%)	
Unknown	42 (20.6%)	22 (25.0%)	20 (18.5%)	
Complaints directly after the ankle sprain (retrospectively reported)				
Reported cause ankle sprain				0.854
Distortion	96 (47.0%)	44 (45.8%)	52 (48.1%)	
Out of balance	19 (9.3%)	9 (9.4%)	10 (9.3%)	
Hit against ankle	9 (4.4%)	5 (5.2%)	4 (3.7%)	
Unknown	80 (39.2%)	38 (39.6%)	42 (38.9%)	
Ankle sprain occurred during				0.926
Sport	75 (36.8%)	36 (37.5%)	39 (36.1%)	
Work	26 (12.7%)	13 (13.5%)	13 (12.0%)	
Hobby	14 (6.9%)	5 (5.2%)	9 (8.3%)	
Task around the house	10 (4.9%)	4 (4.2%)	6 (5.6%)	
Traffic participation	21 (10.3%)	9 (9.4%)	12 (11.1%)	
Other	56 (27.4%)	28 (29.2%)	28 (25.9%)	
Ankle swollen after sprain				0.373
No	13 (6.4%)	7 (7.3%)	6 (5.6%)	
Slight	47 (23.0%)	18 (18.7%)	29 (26.9%)	
Serious	142 (69.6%)	70 (72.9%)	72 (66.7%)	
Unknown	2 (1.0%)	1 (1.0%)	1 (0.9%)	
Place swelling after sprain				0.080
Medial side	20 (9.8%)	13 (13.5%)	7 (6.5%)	
Lateral side	169 (82.8%)	75 (78.1%)	94 (87.0%)	
Other place	15 (7.4%)	8 (8.3%)	7 (6.5%)	
Most pain after sprain				0.113
Medial side	25 (12.2%)	12 (12.5%)	13 (12.0%)	
Lateral side	109 (53.4%)	42 (43.7%)	67 (62.0%)	
Frontal side	14 (6.9%)	9 (9.4%)	5 (4.6%)	
Caudal side	7 (3.4%)	5 (5.2%)	2 (1.9%)	
Other place	49 (24.0%)	28 (29.2%)	21 (19.4%)	
Instability after sprain (yes)				0.020
yes	170 (83.3%)	86 (89.6%)	84 (77.8%)	

*Expressed mean (SD); statistically significant differences in bold

in 82% of the participantsswelling was present and in 53.4% pain was localized at the lateral side of the ankle, but with no significant differences between the two groups.

Effects on functioning 6-12 months after a sprain

Overall, significantly higher pain scores at rest (1.87 vs. 0.44; $p < 0.001$) and during exercise (3.62 vs. 1.25; $p < 0.001$), and a lower function expressed in AFS (72.47 vs. 82.90; $p < 0.001$) and FADI sport (0.80 vs. 0.92; $p < 0.001$), were seen in subjects with persistent complaints compared to subjects without persistent complaints (Table 2). A high percentage of subjects reported a feeling of instability, with a significantly higher percentage in the group with persistent complaints (78% vs. 64.8%; $p < 0.001$); ≥ 10% of subjects with persistent complaints maintained a feeling of instability with every step, or in normal daily activities.

During follow-up, no significant differences were seen in work activity and physical activity between the two groups. Overall, 4.4% of the participants were unable to work due to ankle complaints. In addition, in subjects both with and without

Table 2: Impact on functioning 6-12 months after an ankle sprain.

	Total (n = 204)	Persistent symptoms (n = 96)	Nosymptoms (n = 108)	*P* value
Pain score *				
In rest (VAS 0-10)	1.11 (1.83)	1.87 (2.20)	0.44 (1.03)	<0.001
During exercise (VAS 0-10)	2.37 (2.46)	3.62 (2.62)	1.25 (1.64)	<0.001
Recovery (7-point Likert scale)				n.a.
Completely recovered	36 (17.6%)	-	36 (33.3%)	
Strongly improved	72 (35.3%)	-	72 (66.7%)	
Slightly improved	51 (25.0%)	51 (53.1%)	-	
No change	17 (8.3%)	17 (17.7%)	-	
Slightly worsened	20 (9.8%)	20 (20.8%)	-	
Sharply worsened	6 (2.9%)	6 (6.2%)	-	
Worse than ever	2 (1.0%)	2 (2.1%)	-	
Ankle Function Score (0-100)*	73.45 (20.50)	62.47 (20.24)	82.90 (15.44)	<0.001
Instability (subscale of AFS)				<0.001
Every step	2 (1%)	2 (2.1%)	0 (0.0%)	
Frequently in normal activity	9 (4.4%)	9 (9.3%)	0 (0.0%)	
Sometimes in normal activity	38 (18.6%)	23 (23.9%)	15 (13.9%)	
Frequent during sports	4 (2.0%)	3 (3.1%)	1 (0.9%)	
Sometimes during sports	92 (45.1%)	38 (39.6%)	54 (50.0%)	
Never	54 (26.5%)	17 (17.7%)	37 (34.3%)	
FADIsport (0-5 points)*	0.86 (0.14)	0.80 (0.15)	0.92 (0.09)	<0.001
Tegner (0- 10 levels of activity)	5 (1-9)	5 (1-9)	5 (0-10)	0.22
Work activities				0.67
Not able to work due to ankle complaints	9 (4.4%)	4 (4.2%)	5 (4.6%)	
Not able to work due to other reasons	5 (2.4%)	1 (1.0%)	4 (3.7%)	
Had paid work	150 (73.5%)	72 (75.0%)	78 (72.2%)	
Bothersomeness work (0-10)*	1.73 (2.39)	2.40 (2.48)	1.14 (2.16)	0.004
Physical activity (PA)				0.53
No PA due to ankle complaints	39 (19.1%)	22 (22.9%)	17 (15.7%)	
No PA due to other reasons	8 (3.9%)	3 (3.1%)	5 (4.6%)	
Did PA	127 (62.3%)	56 (58.3%)	71 (65.7%)	
Bothersomeness during PA (0-10)*	3.72 (2.93)	4.80 (2.52)	2.78 (2.96)	<0.001
Sports participation				
Competition (yes)	46 (22.5%)	19 (19.8%)	27 (25.0%)	0.477
Intensity (hours per year)*	160.74 (207.89)	167.42 (251.93)	154.93 (161.17)	0.673
Ankle complaints during sports	61 (29.9%)	35 (36.5%)	26 (24.1%)	0.006
General Health (EQ 5D subscale)				0.097
Excellent	29 (14.2%)	11 (11.5%)	18 (16.7%)	
Very good	57 (27.9%)	22 (22.9%)	35 (32.4%)	
Good	95 (46.6%)	48 (50.0%)	47 (43.5%)	
Moderate	18 (8.8%)	11 (11.5%)	7 (6.5%)	
Poor	3 (1.5%)	3 (3.1%)	0 (0.0%)	
Missing	2 (1.0%)	1 (1.0%)	1 (0.9%)	

*Expressed mean (SD); 3 median, range; n.a: Not Applicable; statistically significant differences in bold

persistent complaints, 22.9% and 15.7%, respectively, reported the impossibility to participate in physical activity due to their ankle complaints. Significantly higher bothersomeness scores both during work (2.4; $p < 0.004$) and physical activities (4.8; $p < 0.001$) were reported in subjects with persistent symptoms. No differences were found between the two groups in general health status.

Medical consumption after an ankle sprain

A high level of medical consumption was found in both groups (Table 3). Most subjects (76.5%) had visited the GP, while the remaining participants entered the study based on the medical records of the GP (i.e. this latter group had visited an emergency department, which was subsequently reported to the GP). In subjects with and without persistent complaints, the physiotherapist was visited by 52.1% and 39.8%, respectively. In the total group of subjects a medical specialist was consulted by 20.1% of them. Radiographic imaging was applied in 38.5% of the group with persistent complaints and in 32.4% of those without complaints, while a MRI or CT scan was made in 9.4% of subjects with persistent complaints and in 4.6% of those without complaints.

The most frequently applied additional supports included cold compresses (59.8%), elastic ankle brace (34.8%), braces (30.9%), tape (42.6%), and crutches (37.3%). Finally, when physiotherapy was applied, in most cases this included stability (33.8%) and mobilizing exercises (22.5%).

Table 3: Medical consumption, expressed n (%).

	Total period (n = 204)	Total period Persistent complaints (n = 96)	Total period Without complaints (n = 108)
Visits to medical care			
General practitioner	156 (76.5%)	72 (75.0%)	84 (77.8%)
Sports physician	3 (0.01%)	2 (2.1%)	1 (0.95%)
Physiotherapist	93 (45.6%)	50 (52.1%)	43 (39.8%)
Medical Specialist	41 (20.1%)	23 (24%)	18 (16.7%)
Doctor at work	10 (4.9%)	5 (5.2%)	5 (4.6%)
MRI / CT-scan	14 (6.9%)	9 (9.4%)	5 (4.6%)
Radiology	72 (35.3%)	37 (38.5%)	35 (32.4%)
Manual therapist	4 (2.0%)	2 (2.1%)	2 (1.9%)
Usage of additional support			
Cold compress	122 (59.8%)	55 (57.3%)	6762.0%)
Orthopedic insoles	16 (7.8%)	12 (12.5%)	4 (3.7%)
Elastic ankle brace	71 (34.8%)	32 (33.3%)	39 (36.1%)
Brace / bandage	63 (30.9%)	32 (33.3%)	31 (28.7%)
Tape	87 (42.6%)	45 (46.9%)	42 (38.9%)
Crutches	76 (37.3%)	35 (36.5%)	41 (38.0%)
Plaster	22 (10.8%)	14 (14.6%)	8 (7.4%)
Physical therapy			
Stability exercises	69 (33.8%)	37 (38.5%)	32 (29.6%)
Strength exercises	39 (19.1%)	20 (20.8%)	19 (17.6%)
Mobilizing exercises	46 (22.5%)	25 (26.0%)	21 (19.4%)
Massage	43 (21.1%)	26 (27.1%)	17 (15.7%)
Walk training	26 (12.7%)	18 (18.8%)	8 (7.4%)
Bicycle training	16 (7.8%)	10 (10.4%)	6 (5.6%)

DISCUSSION

This study, performed in general practice, shows that lateral ankle sprain has a high and prolonged impact on functioning and leads to a considerable use of medical resources, expressed in a high percentage of visits to the GP, physiotherapist and medical specialist, both in subjects with and without persistent complaints. In both groups there was considerable use of radiographic imaging. Almost 20% of all participants still had restrictions to their physical activities due to the ankle sprain at 6-12 months follow-up; moreover, 23% reported complaints of persistent instability during daily normal activities and 47% during sports activities. Overall, the impact on function, expressed in different outcomes related to daily activity and sport activities, was significantly higher in the group with persistent complaints compared to the group without complaints.

In an earlier study using a population-based computer-aided telephone survey of subjects in primary care, 20% of the participants reported chronic ankle disorders, mostly due to a previous ankle sprain and 64.6% of these participants reported to have limited (or changed) physical activity [8]. Also, nearly 50% of patients with chronic ankle disorders reported persistent complaints for ≥ 10 years and a decrease in their sports activities [8]. Comparable to our study, most subjects visited their GP, and used tape and braces [8].

A systematic review on the economic evaluation of diagnostic tests, treatment and prevention for lateral ankle sprains concluded that there is evidence(although limited) for potential cost-effectiveness of the use of the Ottawa Ankle Rules (OAR) for diagnosing lateral ankle sprains in an emergency setting, the use of NSAIDs and plaster in the acute phase, and use of neuromuscular training in preventing recurrence [14]. We have in our study not presented the costs of the medical consumption of the participatns. Though Hupperets et al. [9], estimated the costs of visits to the GP (€ 21.36), physiotherapist (€ 24.03), medical specialist (€ 71.98) and costs for a brace (€ 86.49). Given the fact that45% visited a physiotherapist and 20% a medical specialist, the costs per subject after a lateral ankle sprain seem to be relatively high. Especially since the prevalence of ankle sprains is high.

In the present study, subjects were selected in general practice for which the Dutch Guidelines (the OAR) on ankle complaints are mostly used. However, we found that in more than one third of the participants radiography was applied. In a national study on diseases in general practice in the Netherlands, only 6.2% of the patients with ankle sprains had radiography and 6.6% was referred to a physiotherapist after an ankle sprain [15]. In the present study we found that radiography was performed more often among participants who also visited a medical specialist(83%) than those who had not visited a specialist (5%) [1]. This may be due to the severity of the complaints, or to the potential difference in the implementation of the existing decision rules (such as the OAR) in excluding fractures or other osseal abnormalities. In their systematic review, Lin et al., suggested to implement the OAR more frequently in emergency departments to decrease costs [14].

In the present study, one third of the subjects received

physiotherapy as a consequence of their ankle sprain (in both groups). A balance training program was shown to prevent re-sprains in an athletic population [16] and this is confirmed by a recent review on the treatment of chronic ankle sprain complaints [17]. However, Kerkhoffs et al. [5], found no effect of the use of physiotherapy in acute ankle sprains on the outcome function. Therefore, it is debatable whether all these patients should have received therapy after their ankle sprain. In the present study, MRI was performed in only 6.9% of the participants. In the Netherlands, GPs cannot directly refer patients to an MRI; therefore, all MRIs documented in our study were initiated by a medical specialist. Based on their review, one of the conclusions of Lin et al. was to discourage the use of MRI as a too-often performed diagnostic measure. Additionally, based on the same study population as in the present study, our group earlier demonstrated no direct correlation between MRI findings and persistent complaints after a lateral ankle sprain [10]. Therefore, it does not seem appropriate to initiate MRI for ankle sprains in general practice, and 'free accesses to this should not be stimulated.

Many additional support devices (e.g. cold compresses, elastic ankle braces and tape) were used in both study groups. A study on the economic impact of different treatment options for ankle distortions in occupational accidents [18] found a high rate of inappropriate use of cast immobilization and concluded that conventional treatment, consisting of rest, ice, compression and elevation, led to the fastest, full resumption of activities with the lowest medical costs.

STRENGTHS AND LIMITATIONS

Our original aim was to design a case-control study to compare participants with persistent complaints with those without persistent complaints. Based on earlier reports [7] we expected at least twice as many controls as cases and aimed to match controls and cases on age and gender (with 100 persons per group). However, because an equal number of respondents reported persistent and non-persistent complaints we refrained from matching, and evaluated the data as a cross-sectional cohort study. Despite this possible bias induced by recruiting the patients, we found sufficient subjects with adequate statistical power to demonstrate differences in impact and medical consumption after a lateral ankle sprain between the two groups.

A strength is that we performed our study in general practice, whilst most studies recruited their participants from secondary care (e.g. emergency departments). Ankle sprains are most commonly seen in general practice and (apart from the few studies mentioned above) we are not aware of other studies investigating the impact and medical consumption after a lateral ankle sprain in primary care.

A limitation could be that we could not establish whether it was a first ankle injury or the recurrence of a previous ankle sprain, because we had no details of the medical history before the patients filled in the questionnaire. We affirm that this study had a retrospective character and recall bias might occur since the period of time between the initial ankle sprain and the inclusion for the study was 6-12 months. It could be argued that the range of follow-up, i.e. 6-12 months, might have influenced our results. However, because the follow-up time was highly comparable in both study groups (median 44.2 vs. 43.9 weeks) it is unlikely that this variability influenced our study outcomes.

Implications for future research or clinical practice

We found that a lateral ankle sprain has a large impact on functioning, especially in those with persistent complaints. The sprain also results in considerable use of medical consumption, without large differences between patients who do or do not have persistent complaints. Based on the literature, there is considerable doubt as to whether the routine use of radiographic imaging or MRI shortly after a lateral ankle sprain (in both general practice and emergency departments) has any additional value; more research on this is needed.

Although physiotherapy is often applied as a treatment option directly after a lateral ankle sprain, its effectiveness seems limited and can lead to high costs. Therefore, more research on the most efficient type of care, and optimal implementation of efficient decision rules (like the OAR) and proven treatment options for these patients is warranted.

CONCLUSION

A lateral ankle sprain has a high impact on functioning and also leads to considerable use of medical resources 6-12 months after the initial visit to the GP. Also, a high impact on physical health, expressed as a decrease of physical activity and sports participation was found. The considerable use of medical resources was mainly attributed to visits to the GP, physiotherapist and medical specialist, to the use of radiographic imaging, and the use of additional supports like bandage, tape and crutches. This was found in patients both with and without persistent complaints, after a previous ankle sprain.

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