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Physiotherapy Practices for Managing Ankle Osteoarthritis in Peshawar, Pakistan: A Cross-Sectional Study

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ABSTRACT

Background of the study: Efficient and prolonged rehabilitation is becoming increasingly necessary due to the rising prevalence of ankle osteoarthritis (OA), resource shortages for effective rehabilitation delivery, and the high percentage of patients experiencing persistent impairments following short-term treatment. Despite ankle OA prevalence, adequate evidence on physical therapy treatment specific to ankle OA remains absent. This cross-sectional survey evaluated existing physiotherapy practices for treating ankle osteoarthritis among physical therapists in Peshawar, Pakistan.

Methodology: A survey form, adapted from a United Kingdom-based study, was distributed to 105 physical therapists in Peshawar through online platforms. Physical therapists with less than one year of experience were excluded. Data collected comprised physical therapist characteristics, clinical information, management objectives, preferred treatment approaches, and outcome measures. Descriptive statistics were used for analysis.

Results: Of 105 physiotherapists approached, 98 met inclusion criteria and were analyzed. Respondents reported utilizing patient education (100%), self-management techniques (70.6%), ankle strengthening (68.4%), lifestyle modification (61.4%), and proprioception training (43.9%) for managing ankle OA. However, modalities such as hydrotherapy, electrotherapy, and contrast hydrotherapy were infrequently utilized or never used.

Conclusion: This study provided valuable insights into current physiotherapy practices for ankle OA management in Peshawar, Pakistan. While aligning with international guidelines regarding patient education and exercise therapy, improvement opportunities were identified, particularly in utilizing certain treatment modalities. Findings highlight the need for further research and standardization in ankle OA management practices.

Keywords: *Ankle Osteoarthritis, Exercises, Electrotherapy, Management practices, Physiotherapy.*

INTRODUCTION

Human balance is a multifaceted concept, related to the maintenance of posture, transitioning between positions, and not falling when something unexpected happens[1]. Balance is necessary to stand upright and walk[2]. The vestibular system is a sensory system that offers the main contribution to the sense of balance and spatial orientation[3]. The capacity to keep the center of mass of the body inside the base of support is necessary for postural equilibrium and maintaining

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balance; failing to do so will result in a fall[4]. Ankle pain accounts for approximately 3% of primary care consultations among elderly individuals aged over 50, with those between 71 and 80 years experiencing the highest incidence of physician visits[1]. Radiographic ankle osteoarthritis (OA) affects about 3.4% of individuals over 50 years of age[2]. Radiological, cadaveric, and clinical studies have demonstrated that ankle OA is far less common compared to knee and hip OA[3–5]. Although accurate data on ankle/foot OA are limited, it is reported that 32% of people consult their physician for foot or ankle pain more frequently than other musculoskeletal pain conditions such as hip/knee (25.1%), back (22.4%), and arm/elbow (21.6%)[6].

Ankle OA presents significant challenges, with severe pain being its most debilitating symptom, profoundly impacting physical and mental well-being. Many individuals with ankle OA describe their pain in emotional terms such as 'terrible' and 'horrendous.' Research indicates that the mental and physical disability resulting from ankle OA is at least as severe as that observed in individuals with end-stage hip OA[7]. Unlike hip and knee OA, primary ankle OA is uncommon[8–10], accounting for only 7-9% of cases, with 13% secondary to conditions like rheumatoid arthritis or osteonecrosis. The majority (75-80%) of ankle OA cases are post-traumatic, primarily from fractures (62%) or chronic ligament instability (16%), particularly of the lateral collateral ligament[9–11].

Global clinical recommendations advocate for non-pharmacological management such as exercises and weight loss as first-line treatment for OA, irrespective of the affected joint[12–16]. In the United Kingdom (UK), non-surgical management for ankle OA is typically provided by physiotherapists and podiatrists within the NHS or private practice settings. While various evidence-based non-surgical management options exist for other joints[17], explicit evidence for interventions targeting ankle OA remains scarce. Individuals with ankle OA frequently report diverse experiences with non-surgical treatment[7], and extrapolating evidence from other joints may not be appropriate. Therefore, there is a lack of guidance for clinicians concerning optimal management interventions for ankle OA[7].

The lack of literature on physical therapy protocols for managing ankle OA in Peshawar reveals a critical gap in understanding this prevalent condition. Ankle OA significantly affects quality of life and burdens healthcare systems. However, its physiotherapy management remains unknown in the local context. Research in this area is essential to develop evidence-based interventions, improve treatment outcomes, and advance physical therapy practices in Peshawar, contributing to the knowledge base on ankle OA.

METHODOLOGY

This survey received ethical approval from Khyber Medical University (Ref.No: KMU/IPMR//IRB/2023/105). The study duration was six months (from January 2024 to June 2024), comprising physiotherapists employed in both private and public sector hospitals in Peshawar, Pakistan. Participants with less than one year of experience were excluded from the study due to their limited experience and insufficient clinical skills. The questionnaire used in this study was adapted from a UK-based study[18] which reported evidence of its reliability and validity in assessing physiotherapy practices for ankle OA. The original questionnaire was designed to capture key aspects of clinical practice, including diagnostic criteria, treatment aims, preferred interventions, and outcome measures. The option for podiatrists was excluded due to their unavailability in the local context. The questionnaire was distributed to 105 physical therapists using convenience sampling in Peshawar through various online platforms such as WhatsApp, email, and Facebook, utilizing a Google Form link. The questionnaire consisted of five parts: I)

Participant characteristics, II) Clinical service characteristics and diagnostic criteria, III) Treatment goals, IV) Preferred management decisions, and V) Management outcome measures. Most questions were closed-ended multiple-choice questions, with provisions for open-ended answers in parts II to V. Additionally, participants were asked about their preferences for diagnostic tests, management objectives, and outcome measures. Data were collected and transferred to an Excel spreadsheet for storage. Analysis was conducted using SPSS version 22. Descriptive statistics, including counts and proportions for categorical variables, were calculated and presented using histograms and tables.

RESULTS

Of the 105 physiotherapists approached for participation, 98 met our inclusion criteria and were included in the study analysis. There were 60 male physical therapists, constituting 61.2% of the total, and 38 female physical therapists, accounting for 38.8%. Among them, 55 (56.1%) possessed a master's degree in physiotherapy, while 43 (43.9%) held a bachelor's degree.

In Table 1, the clinical service characteristics, diagnostic criteria, treatment objectives, and outcome measures for ankle osteoarthritis (OA) are outlined. Physiotherapists commonly saw one patient with ankle OA weekly (64.2%), with a significant proportion also seeing two patients (17.3%). Referrals predominantly came from general practitioners (64.2%) and orthopedic surgeons (70%), with substantial involvement from rheumatologists (42.8%). Initial treatment sessions varied in duration, with 40 minutes being the most common (36.7%), followed by 30 minutes (21.4%). Patients typically underwent multiple treatment sessions, with a significant portion undergoing four or more sessions (30.6%). A considerable percentage of physiotherapists (40.9%) worked as part of a multidisciplinary team while managing ankle OA, often referring patients to orthopedic surgeons (76.5%) and rheumatologists (79.5%). Diagnosis of ankle OA commonly relied on symptoms like early morning pain (64.4%) and imaging diagnosis (87.7%). Treatment aims primarily focused on reducing pain (100%) and improving activities of daily living (91.8%). Outcome measures frequently included patient satisfaction (66.3%) and pain scales, such as the visual analogue scale (53%) and numerical rating scale (44.8%), for evaluating treatment effectiveness.

The most common modalities used by physical therapists were patient education (100%), self-management (70.6%), ankle strengthening (68.4%), lifestyle modification (61.4%), activity pacing (47.4%), and proprioception (43.9%) as shown in Table 2.

Table 1: Clinical features, diagnostic criteria, treatment goals, and outcome measures for ankle osteoarthritis

Variable	Response Preferences	Total (%)
Weekly No. of Patients with Ankle OA	1	63 (64.2)
	2	17 (17.3)
	3	10 (10.2)
	4	6 (6.1)
	5	2 (2.94)
	>5	0 (0)
Referral Source	Primary care specialist	63 (64.2)
	Orthopedic specialist	69 (70)
	Patient initiated referral	41 (41.8)
	Rheumatology	42 (42.8)
	Others	39 (39.7)

Duration of First Treatment Session	10 minutes	2 (2)
	20 minutes	5 (5.1)
	30 minutes	21 (21.4)
	40 minutes	36 (36.7)
	50 minutes	10 (10.2)
	60 minutes	20 (20.4)
	>60 minutes	4 (4.06)
Total Number of Sessions	1	0 (0)
	2	10 (10.2)
	3	15 (15.3)
	4	30 (30.6)
	5	13 (13.2)
	6	16 (16.3)
	>6	14 (14.2)
Multidisciplinary Team	Yes	40 (40.9)
	No	58 (59.1)
Patient Referrals	Orthopedic specialist	75 (76.5)
	Rheumatology	78 (79.5)
	Others	11(11.22)
Diagnostic Criteria	Age	60 (61)
	Pain while palpating	66 (67)
	Pain site (ankle joint line)	82 (83.6)
	Pain in early morning	64 (64.4)
	Joint stiffness improvement with movement	78 (80)
	Common inflammatory signs	64 (65.3)
	Presence of crepitus	30 (30.6)
	Pain during weight-bearing	77 (78.4)
	Limited ankle ROM	91 (92.8)
	Overweight status	30 (30.6)
	Previous history of trauma	41 (41.8)
	Activity level (history/past)	30 (30.6)
	Imaging diagnostic (X-ray, CT, MRI, US)	86 (87.7)
	Pain relief after local anesthetic injection	0 (0)
	No specific test/criteria	1 (1)
	Others	0 (0)
Treatment Goals	Reduce pain	98 (100)
	Progress ankle stability	59 (60)
	Improve ROM	60 (61)
	Increase strength	65 (66)
	Enhance proprioception	80 (81.6)
	Improve daily life activities	90 (91.8)
	Enhance cardiovascular/aerobic fitness	27 (27.5)
	Enhance quality of life	90 (91.8)
	Slow down OA progression	45 (45.9)
	Prepare for surgery	12 (12.2)
	Teach self-management	98 (100)
	Others	0 (0)
Outcome Measures	None	9 (9.18)
	Visual Analogue Scale (VAS) for pain	52 (53)
	Numerical Rating Scale (NRS) for pain	44 (44.8)
	Quality of Life Questionnaire Score (SF-36/12/6D)	26 (26.5)
	Ankle OA Scale (FAOS, AAOS Foot & Ankle Questionnaire)	14 (14.2)
	Western Ontario and McMaster Universities Osteoarthritis (WOMAC)	3 (3.06)
	Patient Satisfaction	65 (66.3)
	Global Rating of Change Score (GROC)	5 (5.1)
	Others	0 (0)

Table 2: Management approaches used for ankle OA by physical therapists

Treatment Approach	Response Options	Response (%)	Treatment Approach	Response Options	Response (%)
Patient Education and Counseling	Always	100%	**Neural Mobilization**	Always	5.3%
	Frequently	0%		Frequently	8.7%
	Sometimes	0%		Sometimes	31.6%
	Rarely	0%		Rarely	33.3%
	Never	0%		Never	17.5%
	N/A	0%		N/A	3.5%
Lifestyle Changes and Modifications	Always	61.4%	**Water Therapy**	Always	1.8%
	Frequently	29.8%		Frequently	8.8%
	Sometimes	8.8%		Sometimes	24.6%
	Rarely	0%		Rarely	19.2%
	Never	0%		Never	36.8%
	N/A	0%		N/A	8.8%
Joint Mobilization	Always	14%	**Thermal Therapy**	Always	5.3%
	Frequently	14%		Frequently	24.5%
	Sometimes	36.8%		Sometimes	40.3%
	Rarely	22.8%		Rarely	12.3%
	Never	10.5%		Never	15.8%
	N/A	1.9%		N/A	1.8%
Soft Tissue Therapy	Always	3.5%	**Cold Therapy**	Always	5.3%
	Frequently	14%		Frequently	14%
	Sometimes	29.8%		Sometimes	42.1%
	Rarely	29.8%		Rarely	15.8%
	Never	17.5%		Never	21%
	N/A	5.4%		N/A	1.8%
Strengthening Exercises (Ankle Focus)	Always	68.4%	**Electrotherapy Modalities**	Always	1.8%
	Frequently	19.3%		Frequently	1.8%
	Sometimes	10.5%		Sometimes	10.5%
	Rarely	1.8%		Rarely	15.8%
	Never	0%		Never	64.9%
	N/A	0%		N/A	5.7%
Self-management Techniques	Always	70.6%	**Pharmacological Treatment**	Always	7%
	Frequently	24.2%		Frequently	35%
	Sometimes	5.2%		Sometimes	28.1%
	Rarely	0%		Rarely	27.1%
	Never	0%		Never	2.8%
	N/A	0%		N/A	0%

DISCUSSION

This survey represents an initial endeavor to evaluate the prevailing practices among physiotherapists in Peshawar, Pakistan, concerning the management of ankle osteoarthritis (OA). Currently, there exists a paucity of guidance to aid allied healthcare professionals in devising evidence-based management strategies for this condition, unlike the extensive guidance available for knee and hip OA.

The common strategies employed by physiotherapists in managing ankle OA include patient education, lifestyle modifications, ankle strengthening exercises, self-management techniques, and proprioception exercises. These choices align with the primary aims of reducing pain, enhancing quality of life, and promoting self-care, as recommended by various OA guidelines[13],[17].

Furthermore, these findings coincide with the management research agenda proposed by an international foot and ankle OA consortium, which underscores the importance of understanding usual care approaches to inform the design of protocols in clinical trials[19],[20].

However, some management options reported by physical therapists appear to be derived from evidence related to other joint sites and applied to ankle OA. For instance, hip strengthening exercises were commonly utilized by physical therapists (57.9%), despite not being specifically recommended for ankle OA in existing systematic reviews[21]. Additionally, some treatment modalities such as hydrotherapy, electrotherapy, dry needling/acupuncture, taping, and intra-articular injections were infrequently used, possibly due to various factors such as limited access, contradictory OA and OARSI guidelines[13],[17], lack of skills or supporting evidence, and restricted availability of certain products.

Interestingly, despite guidelines recommending the use of electrotherapy such as TENS[13],[17] for pain relief, its adoption by physiotherapists was notably low (3.6%). Similarly, ankle bracing and taping, which are commonly employed to improve joint stability[22],[23], were underutilized, potentially due to a lack of specificity in the survey regarding the stage of ankle OA appropriate for their use.

The significant use of orthotics by physiotherapists aligns with their role in foot and ankle care, although the distinction between providing appropriate orthotics themselves and referring to podiatric or orthotic services wasn't addressed in the survey[23],[24]. Notably, footwear wasn't listed as a treatment option, which might have been selected by respondents if included.

Comparatively, a survey on the treatment of foot and ankle OA by general practitioners in Australia found a preference for pharmacological interventions over active and self-management methods, contrasting with the practices observed among physiotherapists in our survey[25].

Overall, these findings illuminate the diverse approaches employed by physiotherapists in managing ankle OA in Peshawar, Pakistan, underscoring the need for further research and standardization in this area.

The study was confined to physiotherapists practicing in Peshawar, Pakistan, which limits the generalizability of the findings to other regions or countries. The exclusion of physiotherapists with less than one year of experience may have inadvertently omitted valuable insights from newer professionals.

Future studies should aim to include a broader sample of physiotherapists from diverse regions within Pakistan and beyond to ensure a more comprehensive understanding of current practices. Longitudinal studies tracking the progression of physiotherapy practices over time could provide valuable insights into evolving trends and areas for improvement in the management of ankle OA.

CONCLUSION

In conclusion, this study sheds light on current physiotherapy practices for managing ankle osteoarthritis (OA) in Peshawar, Pakistan. While aligning with international guidelines, such as patient education and exercise therapy, there are opportunities for improvement, including the underutilization of certain modalities. Future research should encompass broader geographical areas, include practitioners with diverse experience levels, and foster collaboration with podiatrists to enhance ankle OA management strategies. These endeavors will contribute to more effective interventions for individuals with ankle OA.

AUTHORS' CONTRIBUTION:

The following authors have made substantial contributions to the manuscript as under:

Conception or Design: Manzoor and Arif Shah

Acquisition, Analysis or Interpretation of Data: Ali Rahman, Ijaz ul Haq

Manuscript Writing & Approval: Manzoor, Arif Shah, Ali Rahman, Ijaz ul Haq

All authors acknowledge their accountability for all facets of the research, ensuring that any concerns regarding the accuracy or integrity of the work are duly investigated and resolved.

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