

Original Article

Prevalence of coccydynia in postpartum women: a cross-sectional study in Lahore, Pakistan

Muhammad Ayaz Ul Haq Chatta ^{a,*}, Qurat Ul Ain ^b, Muqadas Harram Amjad ^c, Muhammad Usman ^c

^a Department of Orthopaedic Surgery, Hameed Latif Teaching Hospital, Rashid Latif Khan University Medical and Dental College, Pakistan

^b The Small Steps Therapeutic Clinic, Lahore, Pakistan

^c Independent Researcher, Lahore, Pakistan

* Correspondence: ayazchatha07@gmail.com



Citation: Chatta MAUC, Ain QU, Amjad MH, Usman M. Prevalence of coccydynia in postpartum women: a cross-sectional study in Lahore, Pakistan. J Basic Clin Med Sci. 2023;2:44-50.

Received: 19 October 2023

Revised: 10 December 2023

Accepted: 18 December 2023

Published: 23 December 2023

Publisher's Note: Logixs Journals remains neutral concerning jurisdictional claims in its published subject matter, including maps and institutional affiliations.



Copyright: © 2023 The Author(s). This is an open access article distributed under the terms of the [Creative Commons Attribution \(CC BY\) License](https://creativecommons.org/licenses/by/4.0/). The use, distribution, or reproduction in other forums is permitted, provided the original author(s) and the copyright owner(s) are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms.

Abstract

Coccydynia, a condition characterized by pain in the tailbone region, is frequently exacerbated by childbirth and particularly affects women due to increased pelvic stress and changes in posture during and following delivery. The condition, which resembles a cuckoo's beak in shape, disproportionately affects females and those with obesity and can arise from various causes, such as trauma, infections, and degenerative diseases. This study aimed to determine the prevalence of coccydynia among postpartum women in Lahore, Pakistan, and to provide epidemiological data to better inform clinical practices and patient education for managing this debilitating condition. A cross-sectional study was conducted from April to August 2023 involving 163 postpartum women aged between 20 and 40 years who were recruited from five private hospitals in Lahore using nonprobability convenience sampling. Participants underwent clinical examinations and were interviewed using a structured questionnaire that incorporated historical health data and the Numerical Pain Rating Scale (NPRS) to assess coccygeal pain intensity. Clinical examination revealed that 88.34% of the participants were diagnosed with coccydynia, confirming the prevalence of this condition among the sample. The mean age of the participants was 25.89 ± 4.33 years. The average body mass index (BMI) was 22.46 ± 4.44 , indicating a predominantly normal weight group. Common symptoms included pain worsening after prolonged sitting, reported by 85.89% of participants, and significant tenderness during tailbone palpation, reported by 82.82%. The prevalence of coccydynia in postpartum women highlights the need for focused attention to this condition in clinical practice. The findings emphasize the importance of targeted preventative measures and treatment strategies, specifically for postpartum women, to mitigate the impact of coccydynia. Further research is recommended to explore broader preventative strategies and refine treatment protocols to ensure better care for affected women.

Keywords

Coccydynia; Postpartum period; Pain measurement; Women's health; Pakistan

1. Introduction

Coccydynia, derived from the Greek term "kokkyx," meaning 'cuckoo,' reflects the tailbone's resemblance to a cuckoo's beak with its downward tip [1]. The coccyx, or tailbone, is a triangular structure composed of three to five fused vertebrae articulating with the sacrum's lowest segment. Although coccydynia most commonly affects middle-aged women, the exact incidence of this condition remains undetermined [2]. It disproportionately affects females and individuals with obesity [3]. This condition constitutes less than 1% of all back pain cases, yet its prevalence among women is approximately five

times greater than that observed in men [4,5,6]. The condition can arise from various causes, including infections, neoplasms, trauma, or degenerative diseases [3,7].

Women, particularly during and following childbirth, are susceptible to coccydynia due to increased pelvic stress and potential trauma during labor [8]. During the birthing process, the pelvic muscles, especially during the second stage of labor, undergo significant stress, contributing to tailbone pain, which can be exacerbated by daily activities [9]. Factors such as a short and straight sacrum, a more mobile coccyx, and a short perineum heighten trauma risk in females. Moreover, conditions such as prolonged labor and the use of birth-assisting instruments may aggravate this risk [7]. Consequently, affected women may adopt antalgic postures to minimize discomfort during routine activities, impacting their social, psychological, and professional lives [10,11]. The diagnosis of coccydynia involves a detailed patient history and physical examination. Moreover, straight leg raise (SLR) and per rectal (PR) tests are commonly employed [12]. The literature suggests that the PR test is more definitive for diagnosing coccydynia [13].

Although imaging techniques such as radiographs and MRIs can support diagnosis, they are secondary to physical examination findings [1]. Treatment primarily focuses on conservative approaches, including the use of ergonomically designed cushions, posture correction, thermotherapy, and pharmacological management with nonsteroidal anti-inflammatory drugs (NSAIDs) and topical agents [14,15]. In acute cases, cryotherapy is recommended, whereas chronic conditions may benefit from heat therapy and acupuncture [7,10]. Surgery remains a last resort for those who are unresponsive to conservative treatment [16].

This study aimed to determine the prevalence of coccydynia among postpartum women in Lahore, providing fresh epidemiological data to inform better clinical practices and patient education in managing this debilitating condition. Understanding the impact of childbirth-related factors on coccydynia prevalence can guide effective preventive and therapeutic strategies to improve the quality of life of affected women.

2. Methods

2.1. Study design and duration

This observational study was conducted from April to August 2023.

2.2. Ethics approval

The study received ethical approval from the Ethics Review Committee (ERC) of the Hussain College of Health Sciences, Pakistan (No. HCHS/2023/ERC/36), and adhered to the ethical principles for medical research involving human subjects as outlined in the Declaration of Helsinki by the World Medical Association [17]. Ethical approval was obtained from one hospital equipped with an established ethical review committee. Additionally, administrative permission was obtained from the other participating hospitals before data collection.

2.3. Sampling technique and sample size

Nonprobability convenience sampling was employed to recruit participants. The sample size was determined to be 163, which was calculated based on a 95% confidence interval, a margin of error of 5%, and a reported prevalence of coccydynia of 12% from the literature using the OpenEpi calculator [18].

2.4. Study setting

The study was conducted at five private hospitals in Lahore, the capital of Punjab Province, which varies in size, with bed capacities ranging from 50 to 200. These hospitals have fully functional gynecology and obstetrics wards catering to patients from diverse socioeconomic backgrounds.

2.5. Study participants

The study recruited women admitted to the gynecology ward during their postdelivery period.

2.6. Selection criteria

The women eligible for inclusion in the study were between 20 and 40 years old, delivered in the last 6 months, and provided informed consent to participate in the study. Women were excluded from the study if they had a history of spinal injuries or surgeries, preexisting musculoskeletal disorders—including coccydynia diagnosed prior to pregnancy—or chronic conditions such as arthritis or severe chronic back pain not related to pregnancy.

2.7. Data collection tool and procedure

After an extensive literature review, the data were collected via face-to-face interviews with a structured questionnaire developed by the principal investigator and vetted by a field expert [18,19]. The diagnosis of coccydynia was based on participants' histories and clinical examinations. We also employed the Numerical Pain Rating Scale (NPRS) to assess the current intensity of coccygeal pain among participants.

2.8. Statistical analysis

The data were analyzed using the Statistical Package for Social Sciences (SPSS) for Windows, version 25. We calculated frequencies, percentages, means, and standard deviations for the collected data.

3. Results

The mean age of the study participants was 25.89 ± 4.33 years. The average duration of education among the participants was 9.82 ± 5.33 years. The average weight of the participants was 59.50 ± 10.91 kilograms, and the average height was 5.34 ± 1.42 feet, resulting in a mean body mass index (BMI) of 22.46 ± 4.44 .

Table 1 shows the demographic and clinical characteristics of the 163 women assessed for coccydynia. A majority of the participants (80.98%) were housewives, with smaller proportions being employed (14.72%) or self-employed (4.29%). Most women experienced the onset of pregnancy-related coccydynia symptoms during their first pregnancy (57.06%). Regarding the method of delivery, the majority of patients underwent a C-section (66.26%), followed by a normal delivery (28.22%), and a few underwent an episiotomy (5.52%). The postpartum duration showed that most women (65.64%) were assessed within the first two months following delivery.

Table 2 shows the symptoms, diagnostic outcomes, and impact of coccydynia on the daily lives of the women. Among the 163 women, 88.34% of the participants were diagnosed with coccydynia through physical examination. Common symptoms included pain that worsened after prolonged sitting, reported by 85.89% of participants, and tailbone tenderness during palpation, reported by 82.82%. Moreover, 69.94% of women reported

pain when transitioning from seated positions. In terms of daily impact among 144 participants, 47.22% indicated mild pain. The most frequently reported position for pain was sitting, affecting 59.51% of the participants.

Table 1. Demographic and clinical characteristics of women assessed for coccydynia (n = 163).

Variables		Frequency (%)
Occupation	Self-employed	7 (4.29)
	Employed	24 (14.72)
	Housewife	132 (80.98)
Pregnancy at onset of symptoms	First	93 (57.06)
	Second	34 (20.86)
	Third	13 (7.98)
	Fourth or more	23 (14.11)
Method of delivery	Normal	46 (28.22)
	C-section	108 (66.26)
	Episiotomy	9 (5.52)
Postpartum duration (months)	1 – 2	107 (65.64)
	3 – 4	32 (19.63)
	5 – 6	24 (14.72)

Table 2. Symptoms, diagnostic confirmation, and impact of coccydynia on daily life (n = 163).

Questions/Symptoms	Yes (%)	No (%)
First pregnancy?	87 (53.37)	76 (46.63)
Did the participant report any complications related to the pregnancy?	39 (23.93)	124 (76.07)
Diagnosed with coccydynia through physical examination	144 (88.34)	19 (11.66)
History of pain associated with poor posture (sitting)	49 (30.06)	114 (69.94)
Pain experienced while transitioning into or out of a seated position	114 (69.94)	49 (30.06)
History of coccyx pain/injury	39 (23.93)	124 (76.07)
Pulling/stabbing sensation radiating to the sacrum, spine, buttocks, thigh	109 (66.87)	54 (33.12)
Pain worsens after prolonged sitting	140 (85.89)	23 (14.11)
Pain increases when leaning backward in a sitting position	83 (50.92)	80 (49.08)
Pain increases with bowel movements or sexual intercourse	70 (42.94)	93 (57.06)
Tenderness on tailbone during palpation	135 (82.82)	28 (17.18)
Position experiencing the worst pain	Sitting	97 (59.51)
	Standing	37 (22.70)
	Lying	13 (7.98)
	Not specific	16 (9.82)
Current intensity of coccyx pain was assessed using NPRS	No pain	11 (6.75)
	Mild pain	74 (45.40)
	Moderate pain	59 (36.20)
	Severe pain	19 (11.66)
	Worst Possible Pain	0 (0.00)
Coccydynia affects daily activities and quality of life (n = 144)	Not at all	36 (25.00)
	Mildly	68 (47.22)
	Moderately	27 (18.75)
	Severely	10 (6.94)
	Extremely	3 (2.08)

4. Discussion

Our study revealed a high prevalence of coccydynia among postpartum women, primarily those who underwent cesarean section. This result is significant because it highlights a specific postdelivery condition affecting a large percentage of new mothers. Coccydynia was more commonly reported in housewives, suggesting that daily activities and perhaps limited mobility could influence the onset and persistence of pain. Notably, the condition severely impacts quality of life, with most patients experiencing pain that worsens with prolonged sitting and changes in posture.

These findings align with those reported by Meer and colleagues, where coccydynia was predominantly observed post-C-section [17]. However, our results contrast with a French study that reported a higher incidence of coccydynia with vaginal deliveries, where women reported varying degrees of disability [18]. This divergence underscores the complex etiology of coccydynia, which may be influenced by various delivery methods and other risk factors, such as high body mass index, instrumental delivery, and multiple pregnancies [19]. Additional studies have highlighted poor posture as a significant contributor to tailbone pain [20,21]. Similarly, muscular spasms, sacrococcygeal joint hypomobility, and impaired pelvic floor muscle coordination have been identified as substantial factors in the development of coccydynia [22], corroborating our observations of related symptoms [23,24].

Women are five times more likely than men to develop tailbone pain, indicating that sex is a significant risk factor for musculoskeletal problems [25]. This prevalence may be linked to the method of delivery and the intensity of pain experienced during childbirth [4]. The influence of orthopedic conditions on delivery methods requires careful consideration by healthcare professionals to mitigate the risk of coccydynia in pregnant women [26].

This study's strength lies in its targeted approach, focusing on postpartum women, which allows for a detailed examination of coccydynia in this specific population. However, it is constrained by its cross-sectional design, which provides only a snapshot in time and is less effective at establishing causality. The reliance on self-reported data may introduce recall bias, and the hospital-based sample may not fully represent the general postpartum population. Future research could benefit from a longitudinal design and broader community sampling to enhance understanding and generalizability.

5. Conclusions

Our study revealed a significant prevalence of coccydynia among postpartum women in Lahore, Pakistan, underscoring the substantial impact this condition has on their postdelivery health. The findings reinforce the necessity for enhanced clinical strategies and educational initiatives aimed at preventing and managing coccydynia effectively in this population. Tailored interventions that address the specific needs and challenges faced by postpartum women are crucial for improving their quality of life and healthcare outcomes.

Author contributions: Conceptualization, MAUHC, QUAN, MHA and MU; methodology, MAUHC, QUAN, MHA and MU; software, QUAN, and MU; validation, QUAN, and MU; formal analysis, QUAN, and MU; investigation, MHA, and MU; resources, MAUHS, MHA and MU; data curation, QAUC, and MU; writing—original draft preparation, QUAN, MHA, and MU; writing—review and editing, MAUHC; visualization, QUAN, and MU; supervision, MAUHC; project administration, MHA. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no specific grant from the public, commercial, or not-for-profit funding agencies.

Ethics statement: The study received ethical approval from the Ethics Review Committee (ERC) of the Hussain College of Health Sciences, Pakistan (No. HCHS/2023/ERC/36).

Consent to participate: Written informed consent was obtained from all participants prior to data collection.

Data availability: The data supporting this study's findings are available from the corresponding author, Muhammad Ayaz, upon reasonable request.

Acknowledgments: None.

Conflicts of interest: The authors declare no conflicts of interest.

References

- [1] Lirette LS, Chaiban G, Tolba R, Eissa H. Coccydynia: an overview of the anatomy, etiology, and treatment of coccyx pain. *Ochsner J.* 2014;14(1):84-7.
- [2] White WD, Avery M, Jonely H, Mansfield JT, Sayal PK, Desai MJ. The interdisciplinary management of coccydynia: a narrative review. *Ann R Coll Surg Engl.* 2018;100:12-5. <https://doi.org/10.1002/pmrj.12683>
- [3] Kodumuri P, Raghuvanshi S, Bommireddy R, Klezl Z. Coccydynia - could age, trauma and body mass index be independent prognostic factors for outcomes of intervention?.
- [4] Arif A, Sardar S, Farah Gilani M, Muneer R, Naz A, Manzoor N, et al. Prevalence of coccydynia among postpartum women: prevalence of coccydynia among postpartum women. *Pak J Health Sci.* 2022;3(7):108-12. <https://doi.org/10.54393/pjhs.v3i07.418>
- [5] Mulpuri N, Reddy N, Larsen K, Patel A, Diebo BG, Passias P, et al. Clinical outcomes of coccygectomy for coccydynia: a single institution series with mean 5-year follow-up. *Int J Spine Surg.* 2022;16(1):11-9. <https://doi.org/10.14444/8171>
- [6] Sukun A, Cankurtaran T, Agildere M, Weber MA. Imaging findings and treatment in coccydynia - update of the recent study findings. *Rofo.* 2023. <https://doi.org/10.1055/a-2185-8585>
- [7] Maigne JY, Rusakiewicz F, Diouf M. Postpartum coccydynia: a case series study of 57 women. *Eur J Phys Rehabil Med.* 2012;48(3):387-92.
- [8] Kaushal R, Bhanot A, Luthra S, Gupta PN, Sharma RB. Intrapartum coccygeal fracture, a cause for postpartum coccydynia: a case report. *J Surg Orthop Adv.* 2005;14(3):136-7.
- [9] Garg B, Ahuja K. Coccydynia-A comprehensive review on etiology, radiological features and management options. *J Clin Orthop Trauma.* 2021;12(1):123-29. <https://doi.org/10.1016/j.jcot.2020.09.025>
- [10] Seker A, Sarikaya IA, Korkmaz O, Yalcin S, Malkoc M, Bulbul AM. Management of persistent coccydynia with transrectal manipulation: results of a combined procedure. *Eur Spine J.* 2018;27(5):1166-71. <https://doi.org/10.1007/s00586-017-5399-6>
- [11] Maigne JY, Doursounian L, Chatellier G. Causes and mechanisms of common coccydynia: role of body mass index and coccygeal trauma. *Spine.* 2000;25(23):3072-79. <https://doi.org/10.1097/00007632-200012010-00015>
- [12] Behera S, Mohanty T, Behera C. Clinical presentation and categorisation of chronic low back pain: a cross-sectional analysis of 1000 outpatients in Eastern India. *J Clin of Diagn Res.* 2023;17(8):RC01-7. <https://www.doi.org/10.7860/JCDR/2023/63367/18273>
- [13] Van De Pol G, Van Brummen HJ, Bruinse HW, Heintz APM, Van Der Vaart CH. Pregnancy-related pelvic girdle pain in the Netherlands. *Acta Obstet Gynecol Scand.* 2007;86(4):416-22. <https://doi.org/10.1080/00016340601151683>
- [14] Altman RD, Dreiser RL, Fisher CL, Chase WF, Dreher DS, Zacher J. Diclofenac sodium gel in patients with primary hand osteoarthritis: a randomized, double-blind, placebo-controlled trial. *J Rheumatol.* 2009;36(9):1991-99. <https://doi.org/10.3899/jrheum.081316>
- [15] Simon LS, Grierson LM, Naseer Z, Bookman AAM, Shainhouse ZJ. Efficacy and safety of topical diclofenac containing dimethyl sulfoxide (DMSO) compared with those of topical placebo, DMSO vehicle and oral diclofenac for knee osteoarthritis. *Pain.* 2009;143(3):238-45. <https://doi.org/10.1016/j.pain.2009.03.008>
- [16] Grosso NP, Van Dam BE. Total coccygectomy for the relief of coccygodynia: a retrospective review. *J Spinal Disord.* 1995;8(4):328-30. <https://doi.org/10.1097/00002517-199508040-00012>
- [17] Khaliq IH, Khaliq FH, Abdullah Y, Mahmood HZ, Sarfraz MD, Ahmad S, et al. Students' perceptions of the role of pharmacists in the healthcare system in Lahore, Pakistan. *Trop J Pharm Res.* 2018;17(4):687-93. <https://doi.org/10.4314/tjpr.v17i4.18>
- [18] Meer MJ, Atif MM, Afzal F, Aslam I, Khurshid A, Zulfikar H, et al. Causes and risk factors of coccydynia in postpartum women in DHQ Sargodha. *J Pharm Res Int.* 2022;34(31B):8-14. <https://doi.org/10.9734/jpri/2022/v34i31B36090>
- [19] Suresh V, Alagesan J, Indrani D. Coccydynia and disability on postpartum vaginal delivery women. *INTI Journal.* 2022;7:1-7.
- [20] Rani S, Habiba UE, Qazi WA, Tassadaq N. Association of breast feeding positioning with musculoskeletal pain in post partum mothers of Rawalpindi and Islamabad. *J Pak Med Assoc.* 2019;69(4):564-66.
- [21] Kumagai Yu, Biyajima M, Shimizu I, Ishii W. Coccyx subluxation: coccyx pain aggravated by the prone position. *J Gen Fam Med.* 2022;23(6):409-10. <https://doi.org/10.1002/jgf2.570>
- [22] Neville CE, Carrubba AR, Li Z, Ma Y, Chen AH. Association of coccygodynia with pelvic floor symptoms in women with pelvic pain. *PM R.* 2022;14(11):1351-59. <https://doi.org/10.1002/pmrj.12706>

-
- [23] Márquez-Carrasco ÁM, García-García E, Aragúndez-Marcos MP. Coccyx pain in women after childbirth. *Enfermería Clínica* (English Edition). 2019;29(4):245-47. <https://doi.org/10.1016/j.enfcle.2019.01.005>
 - [24] Sahaya PSM, Gayathiri N, Jissy PE. Prevalence of back-pain following caesarean section under spinal anesthesia. *Int J Reprod Contracept Obstet Gynecol*. 2023;12(9):2876-80. <https://doi.org/10.18203/2320-1770.ijrcog20232758>
 - [25] Mohammed RA. Management and treatment of coccydina (tail bone pain). *Eur J Mol Clin Med*. 2022;9(7):2496-505.
 - [26] Ziętek M, Ziętek P, Kotrych D, Szczuko M. Caesarean section for orthopedic indications. *J Clin Med*. 2023;12(23):7336. <https://doi.org/10.3390/jcm12237336>