

Nocturnal Leg Cramps in Older Adults: Prevalence and Community Burden

Dr. Tejal Pardeshi (PT)¹, Dhanushi Dhandhukiya²

¹Associate Professor, Department of Community Physiotherapy, K. J. Somaiya College of Physiotherapy, Sion, Mumbai, India

²Undergraduate Student, K. J. Somaiya College of Physiotherapy, Mumbai, Maharashtra, India

Abstract-Nocturnal leg cramps (NLC) are sudden, painful, involuntary muscle contractions that commonly occur during rest or sleep and may substantially disturb sleep and daily wellbeing. This community-based cross-sectional study assessed the prevalence and characteristics of NLC among 100 adults aged over 60 years recruited through convenience sampling. Participants completed a structured questionnaire assessing NLC during the preceding 3 months, including sleep interruption, frequency, pain severity and intensity, anatomical location, duration, self-management practices, water intake and physical activity. Descriptive statistics were used to summarize the findings, and prevalence was reported with a 95% confidence interval. Sixty-five participants (65.0%) reported NLC (95% CI: 55.3–73.6%). Among those reporting NLC, 95.4% experienced sleep interruption. The most common frequency was 1–3 episodes per month (33.8%). Very painful cramps were reported by 46.2%, while 61.5% reported a pain intensity score >5. The calf was the predominant site (90.8%), and most episodes lasted 1–5 minutes (43.1%). Massage was the most commonly reported self-management strategy (53.1%). The findings indicate a substantial burden of NLC among older adults, particularly in relation to sleep interruption and pain, highlighting the need for greater recognition and appropriate community-based guidance.

1. INTRODUCTION

Nocturnal leg cramps (NLC) are sudden, painful, involuntary contractions of the lower-limb muscles that commonly occur during rest or sleep, particularly affecting the calf. They may cause considerable pain and sleep disruption, especially when recurrent [1],[8].

NLC are common among older adults. Previous studies have reported substantial prevalence in this population, with the calf being the most frequently affected site and sleep interruption being a common consequence [4],[6]. Recurrent cramps may adversely affect sleep and overall wellbeing [3].

Despite their frequency, NLC may remain under-recognized, and many older adults rely on self-management rather than seeking professional advice [3],[5]. Understanding their prevalence and clinical characteristics is therefore relevant to community-based geriatric and physiotherapy care.

Therefore, this study aimed to determine the prevalence of NLC among community-dwelling adults aged over 60 years and describe their clinical characteristics, sleep disturbance and self-management practices.

2. MATERIALS AND METHODS

2.1 Study Design and Setting - A community-based cross-sectional study was conducted among community-dwelling adults aged over 60 years.

2.2 Sample Size and Sampling - A total of 100 participants were recruited using convenience sampling, as specified in the study protocol.

2.3 Eligibility Criteria - Adults aged over 60 years who were willing to participate were included. Individuals not meeting the eligibility criteria were excluded.

2.4 Data Collection Tool - Data were collected in person using a structured Nocturnal Leg Cramps Questionnaire developed for the study. Participants reported NLC experienced during the preceding 3 months, including sleep interruption, frequency, pain severity and intensity, anatomical location, episode duration and self-management practices. Daily water intake and physical activity were also recorded.

2.5 Study Procedure- Ethical approval was obtained from the Institutional Ethics Committee before commencement of the study. Eligible participants were approached and provided with an explanation regarding the purpose and procedures of the study. Written informed consent was obtained from all participants prior to data collection. The structured Nocturnal Leg Cramps Questionnaire was

administered individually in person, and participants were asked to report their experiences during the preceding 3 months. The completed questionnaires were checked for completeness, following which the collected data were systematically entered, compiled and analysed.

2.6 Statistical Analysis - Data were entered and analysed using Microsoft Excel. Categorical variables were summarized as frequencies and percentages. NLC prevalence was calculated as the proportion of participants reporting NLC among the total sample, with a 95% confidence interval (CI) calculated using the binomial approximation. The study was reported in accordance with the STROBE guidelines.

3. RESULTS

A total of 100 community-dwelling older adults participated in the study. Sixty-five participants (65.0%) reported NLC during the preceding 3 months, giving an estimated prevalence of 65.0% (95% CI: 55.3%–73.6%).

Among participants reporting NLC (n=65), 62 (95.4%) experienced sleep interruption due to cramps. The most frequently reported occurrence was 1–3 episodes per month (33.8%). Very painful cramps were reported by 46.2%, while 61.5% reported an NRS pain score >5.

The calf was the predominant anatomical site (90.8%), and most episodes lasted 1–5 minutes (43.1%). Massage was the most commonly reported self-management strategy (53.1%), followed by self-stretching (23.4%) and walking (21.9%).

Among participants with NLC, 44.6% reported consuming 6–8 glasses of water daily, while 70.8% reported some form of physical activity. The complete distribution of NLC characteristics and lifestyle-related variables is presented in Table 1.

Table 1: Characteristics of nocturnal leg cramps among participants reporting NLC (n=65)

Characteristic	Category	n	%
Sleep interruption	Awakened from sleep	62	95.4
	Not awakened	3	4.6
Frequency of	Every night	6	9.2

cramps	More than once per week	16	24.6
	1–3 times per month	22	33.8
	Less than once per month	21	32.3
Pain severity	Not so painful	6	9.2
	Moderately painful	29	44.6
	Very painful	30	46.2
Anatomical location*	Calves	59	90.8
	Feet	26	40
	Thighs	15	23.1
	Front of leg	7	10.8
	Buttocks	4	6.2
Duration of episode	<1 minute	19	29.2
	1–5 minutes	28	43.1
	5–10 minutes	10	15.4
	10–30 minutes	7	10.8
	>1 hour	1	1.5
Self-management*	Massage	34	53.1
	Self-stretching	15	23.4
	Walking	14	21.9
	Drinking water	7	10.8
	No intervention	12	18.8
Daily water	2–4 glasses	13	20

intake	4–6 glasses	15	23.1
	6–8 glasses	29	44.6
	8–10 glasses	8	12.3
Physical activity	Yes	46	70.8
	No	19	29.2

*Multiple responses were permitted for anatomical location and self-management; therefore, percentages do not necessarily sum to 100%.

Note: Water intake and physical activity are presented descriptively among participants reporting NLC and should not be interpreted as risk or protective factors because no inferential comparison was performed.

4. DISCUSSION

The present study found a 65% prevalence of nocturnal leg cramps (NLC) among community-dwelling older adults, higher than the 46% prevalence reported by Maisonneuve et al. in adults aged ≥ 60 years attending primary care.⁶ Differences may reflect variations in population, setting and methodology; however, previous literature confirms that NLC are common in older adults.^{4, 8}

Sleep interruption was particularly prominent, with 95.4% of affected participants reporting awakening because of cramps. This finding is clinically relevant because recurrent NLC can disrupt sleep and affect wellbeing. Previous studies have similarly linked NLC frequency with sleep disturbance.^{3, 6} Pain was also substantial, with 46.2% reporting very painful cramps and 61.5% reporting an NRS score > 5 .

The calf was the predominant site (90.8%), consistent with previous research.⁶ Most episodes lasted 1–5 minutes, suggesting that although individual episodes were generally brief, their impact may be considerable when associated with pain or sleep interruption.⁸ Massage was the most commonly used self-management strategy (53.1%), followed by self-stretching and walking. Previous research has described varied management practices, while evidence suggests that calf and hamstring stretching before sleep may help reduce NLC frequency and severity in older adults.^{5, 7}

Water intake and physical activity were recorded descriptively, with 44.6% reporting 6–8 glasses of water daily and 70.8% reporting some physical activity. These findings do not establish associations or risk factors, as no inferential comparison was performed. From a community physiotherapy perspective, the high prevalence, pain and sleep disruption support incorporating brief enquiry about NLC into routine older-adult assessment and providing appropriate education and referral when symptoms are recurrent or severe.⁸

The study was limited by convenience sampling, a single community setting, small sample size, self-reported data and its cross-sectional design, which limits generalizability and prevents causal inference. Objective assessment of possible underlying contributors was not performed, and the descriptive analysis did not permit assessment of associations with factors such as BMI, physical activity or water intake. Larger community-based studies using standardized assessment and inferential analysis are warranted.

5. CONCLUSION

Nocturnal leg cramps were common among community-dwelling older adults, with 65% reporting NLC during the preceding 3 months. Sleep interruption, calf involvement and moderate-to-severe pain were prominent findings. These results highlight NLC as a potentially under-recognized community health concern warranting greater awareness and appropriate clinical attention.

6. PUBLIC HEALTH IMPLICATIONS

Routine enquiry about nocturnal cramps and sleep interruption during older-adult assessments, along with appropriate self-management education and referral for persistent or atypical symptoms, may help address the burden of NLC in community settings.

Author Contribution - Dhanushi Dhandhukiya, a physiotherapy student, contributed to participant recruitment, data collection and initial manuscript preparation under the guidance of her research guide, Dr. Tejal Pardeshi (PT). Dr. Tejal Pardeshi (PT) contributed to study conceptualization, research supervision, methodological guidance, data interpretation, critical revision and overall oversight of the study. Both authors reviewed and approved the final manuscript.

Conflict of Interest - The authors declare that they have no conflict of interest.

Funding - The authors received no financial support or funding for this study.

Data Availability - The data generated and analyzed during this study are available from the corresponding author on reasonable request, subject to applicable ethical and institutional requirements.

Acknowledgment- The authors sincerely thank all participants for their valuable time and cooperation in the study. The authors also acknowledge the support of K. J. Somaiya College of Physiotherapy, Mumbai, during the conduct of the study.

REFERENCES

- [1] L. Rabbitt, E. C. Mulkerrin, and S. T. O'Keeffe, "A review of nocturnal leg cramps in older people," *Age Ageing*, vol. 45, no. 6, pp. 776–782, 2016, doi: 10.1093/ageing/afw139.
- [2] H. Maisonneuve, J. Chambe, C. Delacour, J. Muller, F. Rougerie, D. M. Haller, et al., "Prevalence of cramps in patients over the age of 60 in primary care: a cross-sectional study," *BMC Fam Pract.*, vol. 17, p. 111, 2016, doi: 10.1186/s12875-016-0509-9.
- [3] M. A. Grandner and J. W. Winkelman, "Nocturnal leg cramps: prevalence and associations with demographics, sleep disturbance symptoms, medical conditions, and cardiometabolic risk factors," *PLoS One*, vol. 12, no. 6, p. e0178465, 2017, doi: 10.1371/journal.pone.0178465.
- [4] M. Gulich, P. Heil, and H. P. Zeitler, "Epidemiology and determinants of nocturnal calf cramps," *Eur. J. Gen. Pract.*, vol. 4, no. 3, pp. 109–113, 1998.
- [5] M. Lorenzo, M. Schaeffer, D. M. Haller, and H. Maisonneuve, "Treatment of nocturnal leg cramps by primary care patients over the age of 60," *Fam. Pract.*, vol. 35, no. 1, pp. 29–33, 2018, doi: 10.1093/fampra/cmz062.
- [6] M. A. Minetto, A. Holobar, A. Botter, R. Ravenni, and D. Farina, "Mechanisms of cramp contractions: peripheral or central generation?" *J. Physiol.*, vol. 589, no. 23, pp. 5759–5773, 2011.
- [7] J. M. Hallegraeff, C. P. van der Schans, R. de Ruiter, and M. H. G. de Greef, "Stretching before sleep reduces the frequency and severity of nocturnal leg cramps in older adults: a randomised trial," *Aust. J. Physiother.*, vol. 58, no. 1, pp. 17–22, 2012.
- [8] P. Sebo, D. M. Haller, B. Cerutti, and H. Maisonneuve, "A prospective observational study of the main features of nocturnal leg cramps in primary care," *Swiss Med. Wkly.*, vol. 149, p. w20048, 2019.
- [9] P. W. Tipton and Z. K. Wszolek, "Restless legs syndrome and nocturnal leg cramps: a review and guide to diagnosis and treatment," *Pol. Arch. Intern. Med.*, vol. 127, no. 12, pp. 865–872, 2017.
- [10] J. W. Bahk, H. Kim, K. Jung-Choi, M. C. Jung, and I. Lee, "Relationship between prolonged standing and symptoms of varicose veins and nocturnal leg cramps among women and men," *Ergonomics*, vol. 55, no. 2, pp. 133–139, 2012.
- [11] C. Delacour, J. Chambe, F. Lefebvre, C. Bodot, E. Bigerel, L. Epifani, et al., "Association between physical activity and nocturnal leg cramps in patients over 60 years old: a case-control study," *Sci. Rep.*, vol. 10, 2020.