Medical and Research Publications
International Open Access

Research Article **Journal of MAR Orthopedics (Volume 3 Issue 5)**

Inappropriate Use of Walking Aid in Hip Pathology Patients: Descriptive Cross-Sectional Study

Ahmed M Bashendi[1], Mohammed A Albashir[2], Hassan Elbahri[3], Mohamed E Awadelkarim*[4]

Corresponding Author: Mohamed E Awadelkarim, Assistant Professor of Orthopedic Surgery, National University-Sudan, Sudan.

1. Department of Orthopedic University of Medical Sciences & Technology – Khartoum, Sudan.

2. Department of Orthopedic, Gezira Orthopedic and Trauma Center- Gezira, Sudan.

3. Department of Orthopedic, International University of Africa – Khartoum, Sudan.

4. Assistant Professor of Orthopedic Surgery, National University-Sudan, Sudan.

Received Date: June 06, 2022

Published Date: July 01, 2022

Abstract

Background*: The correct use of walking aid for patients with hip pathology is still a source of confusion among the general public and medical professionals. Patients do not receive enough counseling regarding the correct use of walking aids. Patients with Hip disease who utilize their walking aids inappropriately may put more stress on their damaged hip and see no improvement in pain or function. A patient may subconsciously elect to use a walking stick with his/her dominant hand if he/she has unaware of the repercussions of his/her decision. The goal of this study was to see if patients used the correct hand to hold their walking aids.*

Methods*: This study is descriptive, analytic, cross-sectional, and hospital-based. Only patients with unilateral hip pathology using single-hand walking aids were included. Sixty-four correctly completed questionnaires were returned during the study period.*

Results*: Only 22 patients (34%) of the total stated that they had received formal education about using the Cane in hip osteoarthritis. All of the patients who were misusing their walking aids were not informed about it by a doctor or physiotherapist. Overall, the majority of the candidate (84 %) correctly used their walking aids, and 16 % used an incorrect technique.*

Conclusion*: The use of walking aids should be stressed in discussions with the patients, and those patients should be informed about the correct use of walking aids.*

Keywords: *Walking Cain, Hip, Osteoarthritis*

Introduction

The hip is a ball and socket synovial joint. Many conditions affect the hip joint and cause both local pains and referred pain to the back, buttocks, and lower extremities (1). From 1990 to 2016, the number of years spent living with Osteoarthritis (OA) related disability increased by 46 percent. With a 52 % increase in years lived with disabilities, OA is the second most quickly developing condition related to disability, only behind diabetes (2). People above 85 have a 25% lifetime risk of getting symptomatic hip osteoarthritis (3). In patients with hip osteoarthritis, poor health-related quality of life is recognized (4). Furthermore, the likelihood of requiring total hip arthroplasty (THA) for patients with hip OA is anticipated to be around 10% over a person's life (5).

As a result, preventing and delaying the progression of hip osteoarthritis is critical. A deep understanding of the hip joint biomechanics is crucial to guide the choice of an effective treatment method to ease the patients' pain and improve their quality of life.

For instance, the amount of force transmitted through the femoral head equals 2.5 to 3 times the body weight when a person attempts to take a step or rise from a sitting position (1). The hip is required to balance the moment arms of the body weight with the pull of the Gluteus Medius To maintain the pelvis level while walking. The short lever arm runs from the center of the femoral head to the tip of the greater trochanter, representing the hip abductors pull, while the long lever arm representing the body weight, extends slightly to the opposite side of the midline during single-leg stance. In a 3:1 lever situation, the force generated by a 150-pound individual can reach up to 450 pounds.

Using a walking stick in the contralateral hand to the affected hip reduces the force on it by one-half of the body weight (1). The usage of a walking stick reduces the hip abductor's pull. It thus reduces the force acting on the affected hip, making the Cane an appealing non-invasive method that can be utilized to manage patients presenting with hip pain. (6,7) McGibbon et al. (8) used a Moore-type endoprosthesis with femoral head pressure transducers implanted after a Garden III fracture to quantify hip contact pressures during unassisted, Cane-assisted, and load-carrying gait. They discovered that the ipsilateral posterior-superior contact pressure was lowered when carrying a load while holding a contralateral Cane. Nevertheless, the hip contralateral to the load had much greater pressure. Inai T et al. (9) looked at 15 healthy people who walked without a Cane and with a contralateral Cane in an experiment. The cadence was set to 80 steps per minute, and the step length was fixed to maintain the same walking speed in all conditions. They determined that contralateral Cane use reduces the hip moment impulse in the frontal plane and peak hip adduction moment in the stance limb by measuring them in all scenarios. These findings may shed light on how Cane's use slows hip osteoarthritis progression. By lowering weight-bearing pain and supporting weak abductor muscles, a Cane held in the opposite hand can help prevent a lurching stride (10). The aberrant preoperative lurching pattern may reappear if patients are urged to walk without a Cane before regaining enough hip abductor strength. The abduction moment of the afflicted hip dropped by 26%, whereas the contralateral hip rose by 28% when a Cane was held in the contralateral hand. The use of a Cane in THA rehabilitation is significant because it reduces the pressure on the hip, allowing the bone and soft tissue healing to occur. However, after satisfactory healing, continued Cane usage should be controlled to avoid overloading the nonoperative hip (10).

According to the American College of Rheumatology/Arthritis Foundation's osteoarthritis management guidelines, Patients with OA affecting one or more joints and causing a significant impact on ambulation, joint stability, or pain may consider using a Cane. (11) Patients presenting with unilateral hip pain should hold the walking stick with their hand on the opposite side of the affected hip joint (9).

In a previous study by Shepherd (12), He employed a four-question questionnaire to assess the usage of walking assistance in hip pathology patients. In his examination of 94 patients, he discovered that fifty (53%) of them were correctly using their aids, whereas forty-four (47%) were not. He also noted that 45 percent of his patients were given instructions on using the walking assistance.

He discovered that 28 (64%) of the 44 participants in the improper usage group used their dominant hand for assistance, compared to 16 (36%) in the non-dominant group. Furthermore, 29 (66%) claimed they had never been told which hand to use, compared to 15 (33%) who said they had been told. He concluded that many patients mishandled their walking aids, primarily with their dominant hand (7).

The correct use of walking aid is still a source of confusion among the general public and medical professionals. Patients do not receive enough counseling regarding the correct use of walking aids. Patients with Hip disease who utilize their walking aids inappropriately may put more stress on their damaged hip and see no improvement in pain or function. A patient may subconsciously elect to use a walking stick with his/her dominant hand if he/she has unaware of the repercussions of his/her decision.

Materials and Methods

Data were collected from patients with hip pathology and presented to outpatient clinics in the two centers from May 2020 to January 2021. Only Patients who have isolated hip pathology (i.e., no knee or ankle problem) and who were using only one side walking aid for movement were included in this study. Data were collected from the patients using an interview questionnaire. Based on their responses, the patients were grouped into “correct” and “incorrect” subgroups, according to evidence indicating the correct hand to utilize the Cane, which is the opposite side of the hip ailment. Sixty-four correctly completed questionnaires were returned during the allotted period. Thirty-four patients (53%) were males, while 30 (47%) were females. The mean age of participants was 63 years, and the standard deviation for age was 11.95. (Figure 1)

Overall, 54 patients (84%) correctly utilized their Canes, while 10 (16%) were not. Only 22 patients (34%) of the total stated that they had received formal education about using the Cane in hip osteoarthritis. (Figure 2) All of the patients who have received formal education about how to use the walking aid in hip osteoarthritis maintained a correct use of Caine at the time of assessment. Forty-two patients (66%) did not have any formal advice regarding the use of Cane during walking, and 24% (10 patients) of these patients were using their walking Caine incorrectly at the time of the assessment. (Table 1) Concerning the ten patients assigned to the incorrect usage group, Six patients (60%) had their walking sticks in their dominant hand compared to four (40%) in the non-dominant hand.

Ethical clearance was obtained from Sudan Medical Specialization Board ethical committee. Permissions were obtained from the hospital administrations. Informed consent is taken from all patients for ethical and confidentiality purposes.

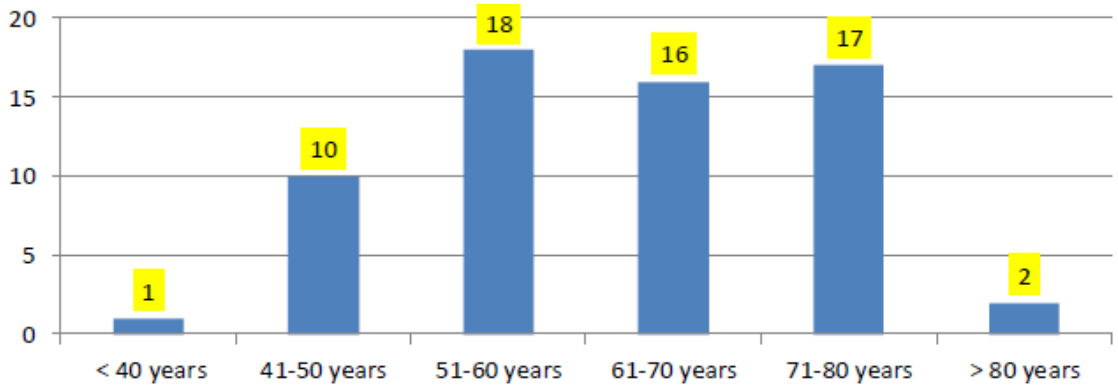

Figure 1: Age Ranges of the Study Participants

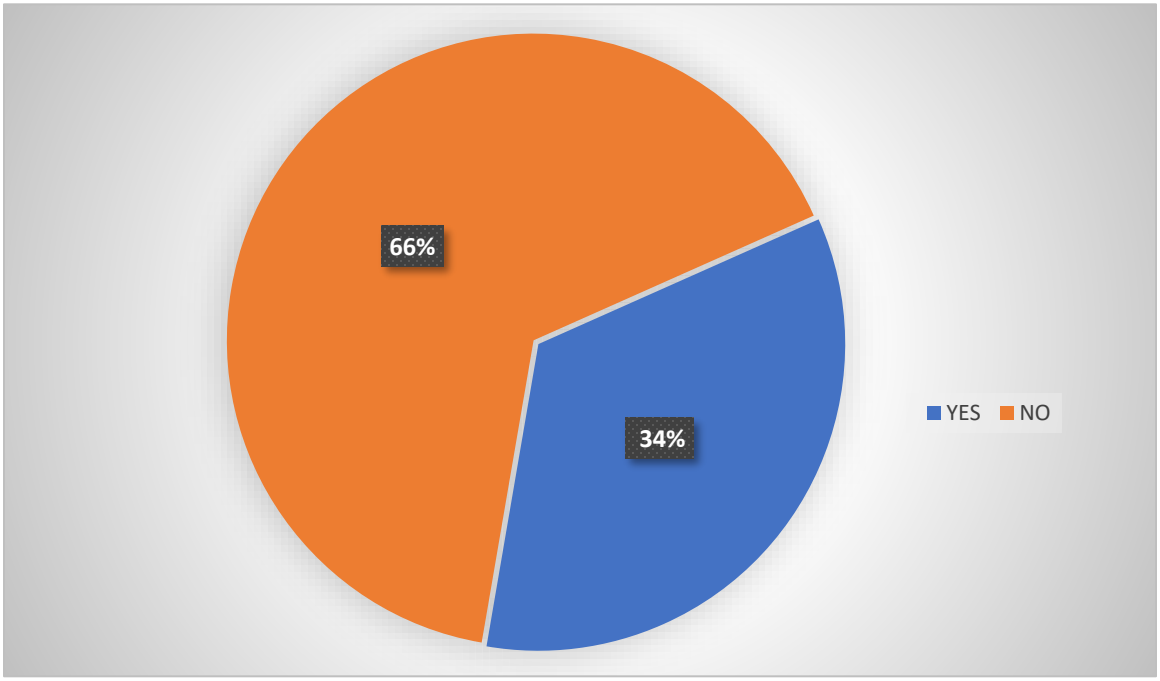

Figure 2: Percentage of patients received a formal education from medical personnel

Reception of formal education from medical personnel	Judgment on use of walking aids		
	Correct	Incorrect	Total
Yes	22 (100%)	0 (0%)	22
No	32 (76%)	10 (24%)	42
			64

Table 1: Impact of formal education on the percentage of correct use of walking aid

Discussion

According to research, holding a Cane in the contralateral hand to the affected hip when taking a step or standing from a sitting posture reduces the force operating on the hip joint to one-half of the body weight and reduces the force acting on the hip joint to one-sixth of what it is when not using a Cane (1, 6, 7). Those measurements were confirmed by the measurement of hip surface contact pressure. However, an increase in hip surface contact pressure is documented when Cane is used on the ipsilateral side of the hip pathology (8). Contralateral Cane use delays the progression of hip osteoarthritis by decreasing the hip moment impulse in the frontal plane and peak hip adduction moment in the stance limb (9). The use of walking aids is recommended by the OARSI and the American College of Rheumatology/Arthritis Foundation for patients with hip osteoarthritis. (11, 13) They are also utilized in post-arthroplasty rehab to lessen the load on the prosthetic hip and damaged abductor muscles by lowering the abductor muscle force required for pelvic stability. (10) After proper recovery, continued Cane use should be monitored to avoid stressing the nonoperative hip. In comparison to the previous studies. (12) In this study, we found a higher percentage of patients who use their Canes correctly (84 % in our result, while they were 53% in a study by Shephered) and a lower percentage of patients who did receive counseling about which hand to use with their walking aids (34% in our result, while they are 45% in Shephered study). In our society, there is a reluctance to use walking aids, especially in younger age patients. Without adequate counseling, only the patients with advanced symptoms are compelled to use the walking aids. Such patients are more likely to notice the effect of using the Cane on the correct hand on their symptoms. Therefore, they will use their Canes in the correct hand based on their own experiment even without any instructions about which hand to use. Hip pathologies may vary with the degree of symptoms, and walking aids are advised in the early stage of the disease.

Patients with mild symptoms are more likely to be inconsistent with the use of walking aids, and therefore they are most likely not to notice the harmful effect made by the incorrect use of walking aids. This study and the one conducted by Shephered both assess the incorrect use of walking aids in patients with hip pathology without specifying the degree of symptoms or the compliance to the walking aids. The higher percentage of correct use in our study (84%) could lead to the assumption that most of the study participants are of advanced hip pathology while most of the participants of the Shephered et al. study were of mild pathology. We discovered that 16% of the subjects misused their walking aid, putting additional strain on an already dysfunctional joint. Sixty percent of them carried the stick in their dominant hand, which is most likely a result of a lack of awareness about how to utilize walking aids properly. Forty percent of subjects were wrongly utilizing their non-dominant hand; this is usually the consequence of a conscious decision based on patient testing or disinformation. Two out of every three people (66 percent of all study participants) were not instructed or could not recall being told which hand to use. This finding reflects a significant defect in patient counseling. All the participants who could remember being told about the correct hand to carry the walking aid (34% of all the study participants) have used their walking aids correctly; this demonstrates the significant impact of knowledge on a patient's attitude.

In conclusion, it appears that all the patients who misuse their walking aids have not been informed by a doctor or physiotherapist about their use. Teaching patients which hand to use would be a simple measure to alleviate hip pain with few or no adverse effects. Ensuring that individuals with hip pain are properly using walking aids is a simple, non-invasive technique that can help reduce symptoms and delay the need for invasive intervention. Each Cane should come with a small educational brochure instructing the patient on which hand to use.

References

1. Brady LP. Hip pain: do not throw away the Cane. Postgrad Med. 1988;83(8):89–97.

2. Vos T, Abajobir AA, Abate KH, Abbafati C, Abbas KM, Abd-Allah F, et al. Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016. The Lancet. 2017;390(10100):1211–59.

3. Murphy LB, Helmick CG, Schwartz TA, Renner JB, Tudor G, Koch GG, et al. One in four people may develop symptomatic hip osteoarthritis in his or her lifetime. Osteoarthritis Cartilage. 2010 Nov;18(11):1372–9.

4. Salaffi F, Carotti M, Stancati A, Grassi W. Health-related quality of life in older adults with symptomatic hip and knee osteoarthritis: a comparison with matched healthy controls. Aging Clin Exp Res. 2005;17(4):255–63. 25

5. Culliford DJ, Maskell J, Kiran A, Judge A, Javaid MK, Cooper C, et al. The lifetime risk of total hip and knee arthroplasty: results from the UK general practice research database. Osteoarthritis Cartilage. 2012;20(6):519–24.

6. Blount WP. Do not throw away the Cane. J Bone Jt Surg Am. 1956;38(3):695–708.

7. Neumann DA. Biomechanical analysis of selected principles of hip joint protection. Arthritis Rheum Off J Am Coll Rheumatol. 1989;2(4):146–55.

8. McGibbon CA, Krebs DE, Mann RW. In vivo hip pressures during Cane and load-carrying gait. Arthritis Rheum Off J Am Coll Rheumatol. 1997;10(5):300–7.

9. Inai T, Takabayashi T, Edama M, Kubo M. Effect of contralateral Cane use on hip moment impulse in the frontal plane during the stance phase. Gait Posture. 2019 May;70:311–6.

10. Ajemian S, Thon D, Clare P, Kaul L, Zernicke Rf, Loitz-Ramage B. Cane-assisted gait biomechanics and electromyography after total hip arthroplasty. Arch Phys Med Rehabil. 2004;85(12):1966–71. 28

11. Kolasinski SL, Neogi T, Hochberg MC, Oatis C, Guyatt G, Block J, et al. 2019 American College of Rheumatology/Arthritis Foundation guideline for the management of osteoarthritis of the hand, hip, and knee. Arthritis Rheumatol. 2020;72(2):220–33.

12. Shepherd AJ. Incorrect use of walking aids in patients with hip pathology. Hip Int J Clin Exp Res Hip Pathol Ther. 2005 Mar;15(1):52–4.

13. Bannuru RR, Osani MC, Vaysbrot EE, Arden NK, Bennell K, Bierma-Zeinstra SMA, et al. OARSI guidelines for the non-surgical management of knee, hip, and polyarticular osteoarthritis. Osteoarthritis Cartilage. 2019;27(11):1578–89.