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INTRODUCTION

- Osteoarthritis (OA) is a debilitating joint disease affecting about 251 million people worldwide.
- The total knee arthroplasty (TKA) is one of the most effective treatments for severe OA, but has considerable costs, complication risks, and access limitations for marginalized populations.
- Alternative treatments to TKA are in demand to help combat the growing prevalence of OA. In low-income countries such as Ghana, TKA surgeries are infrequent.
- This study investigates the efficacy of carboplasty in reducing OA-induced disability in Ghana.

METHODS

- 16 patients with severe knee OA were prospectively recruited to undergo carboplasty.
- Age, sex, body-mass index (BMI), Veterans RAND 12-item health survey (VR-12), Visual Analogue Scale (VAS), Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), and the Knee Injury and Osteoarthritis Outcome Score (KOOS) were measured at baseline and at three months, six months, and one year following carboplasty.

RESULTS

- 13 patients who completed follow-up had a mean age of 56.5 years (range, 39 to 80); 11 (84.6%) were female
- 3-month follow-up mean scores (95% CI; P value) for VR-12, VAS, WOMAC, and KOOS: 1.87 (1.42-2.32; <0.001), 29.46 (18.41-40.51; 0.001), 0.14 (0.05-0.23; <0.001), and 77.21 (69.04-85.38; 0.001), respectively (figure 1).
- 1-year follow-up mean scores (95% CI; P value) for VR-12, VAS, WOMAC, and KOOS : 2.38 (1.89-2.87; 0.022), 51.15 (35.86-66.44; 0.56), 0.23 (0.07-0.40; 0.006), 67.84 (59.29-76.39; 0.122), respectively, which trended towards baseline values.

Carboplasty is a novel procedure for knee osteoarthritis that introduces autologous **mesenchymal stem cells** into the chondral-bone interface using **PeCaboo**, a percutaneous cartilage-bone optimization system, with promising outcomes for reducing knee pain and increasing mobility. This minimally-invasive therapy can be performed by interventional physiatrists or orthopaedic surgeons and is designated for commercialization in the United States in 2022.

CONCLUSION

- In Ghana, carboplasty has benefits for patients with severe knee osteoarthritis.
- The procedure provides a 3-month relief of pain and dysfunction and can be performed repeatedly.
- Minimally invasive outpatient carboplasty can be a more economical therapy than TKA.
- Results from a large randomized-controlled trial could confirm the safety, efficacy, and cost-effectiveness of carboplasty.

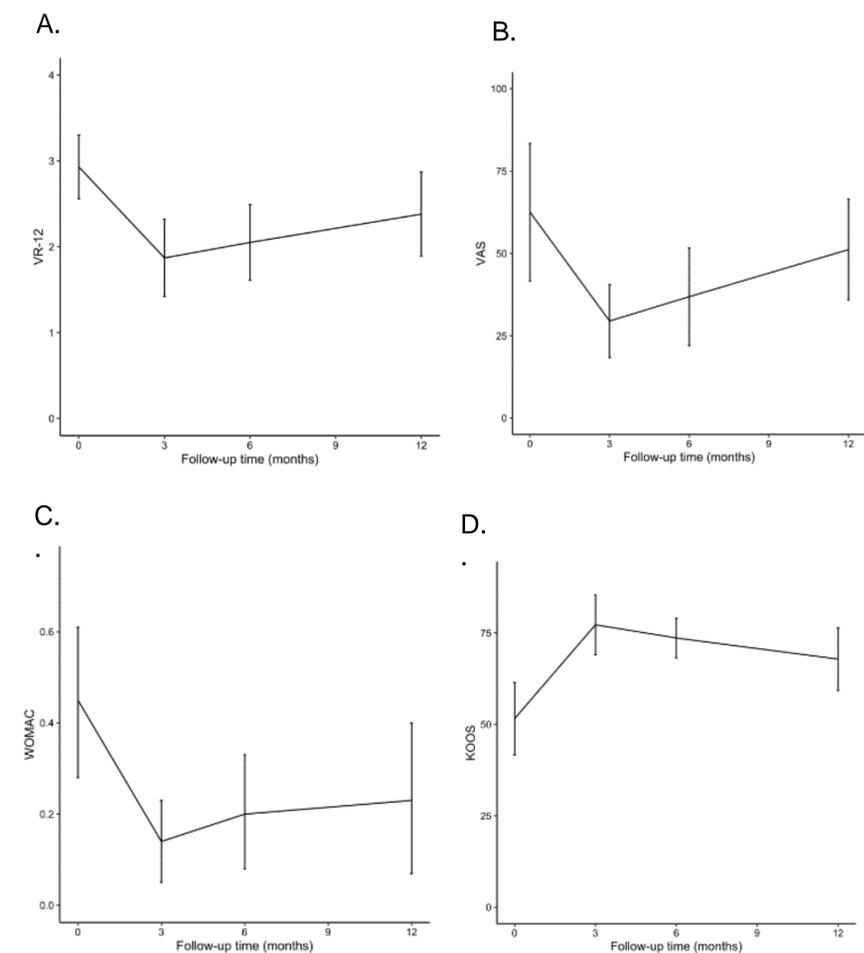


Figure 1. Shown are the VR-12 (A), VAS (B), WOMAC (C), and KOOS (D) scores at baseline and at 3 months, 6 months, and 1 year following carboplasty.