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Building Bridges, Not Dependencies: Empowering Local Surgeons as the Future of Global Arthroplasty Outreach

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ABSTRACT

Background: Short-term medical missions have provided episodic access to total knee arthroplasty (TKA) in low- and middle-income countries, but concerns persist regarding sustainability and continuity of care. We hypothesized that a Honduran surgeon-led TKA program would achieve clinically meaningful improvements in patient-reported outcomes with complication rates within national registry-reported benchmarks.

Methods: We retrospectively analyzed consecutive primary TKAs performed from October 2023 to June 2025. Of 120 knee arthroplasties, 20 were excluded (two revisions, three without research consent, seven with incomplete baseline evaluation, and eight without complete follow-up), leaving 100 primary TKAs with paired data at 9 to 15 months (mean age 68 years; 80.0% women). Comorbidity burden was assessed using the Goldman cardiac risk index (99.0% class I to II). The primary outcome was change in the Knee Injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS Jr.). Secondary outcomes included the proportion achieving the minimal clinically important difference ($\geq$ 14.0 points), the proportion reaching KOOS Jr $\geq$ 71.0 (national registry-reported benchmark), and 90-day complications. Multivariable linear regression evaluated predictors of KOOS Jr improvement.

Results: The mean KOOS Jr. score improved from 33.2 $\pm$ 12.6 to 88.6 $\pm$ 9.6 (mean improvement, 55.3 points; $P < 0.001$). All patients achieved the minimal clinically important difference, and 92.0% reached KOOS Jr. $\geq$ 71.0. There were five patients (5.0%) who had a 90-day complication; periprosthetic joint infection and reoperation rates were both 2.0%. Lower baseline KOOS Jr. predicted greater improvement; Goldman class was not associated with KOOS Jr. change.

Conclusions: A locally led TKA program in Honduras produced large functional gains and low complication rates comparable to national registry-reported benchmarks, supporting investment in sustainable, surgeon-led arthroplasty capacity in low-resource settings.

Level of Evidence: IV.

The global burden of osteoarthritis (OA) continues to rise, ranking among the leading causes of years lived with disability worldwide [1]. Total hip and knee arthroplasty are among the most cost-effective surgical interventions available [2,3], yet access remains profoundly inequitable. In most low- and middle-income countries (LMICs), high implant costs, limited numbers of trained surgeons, and inadequate perioperative infrastructure make joint arthroplasty inaccessible to most patients. The result is a persistent and avoidable gap in global musculoskeletal care. Historically, short-term medical missions (STMMs) have attempted to fill this gap by providing episodic access to arthroplasty in underserved regions. While these missions have restored mobility and reduced pain for many individuals, their systemic impact has been limited. Christie et al. emphasized that "global surgery without partnerships is not global health" [4], highlighting the need for sustainability and local collaboration. Cost-effectiveness analyses show that when travel, logistics, and opportunity costs are included, mission-based care is often several-fold more

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expensive than equivalent procedures performed locally [5,6]. Outcomes are commonly reported as case counts rather than longitudinal results; systematic reviews reveal that fewer than 60.0% of patients receive documented follow-up after STMMs [7,8]. Because many teams lack local infrastructure for rehabilitation or revision surgery, patients who develop complications are often left without recourse. Local surgeons have voiced concerns that foreign brigades can inadvertently displace domestic providers, foster dependency, and discourage government investment in surgical systems [9]. Despite published guidelines for ethical engagement, gaps in education, informed consent, and quality assurance persist [10,11–14]. Orthopedic-specific quality frameworks (eg, adaptation of Blue Distinction criteria for TJA centers) have been proposed to standardize mission-based arthroplasty care [15]. In contrast, models that empower local surgeons address these shortcomings directly. Capacity building has been repeatedly identified as the cornerstone of ethical global health practice [16]. Partnerships that prioritize training, infrastructure development, and shared responsibility not only deliver safe, effective care but also strengthen local health systems. The Hagámoslo Juntos Foundation (HJF) in Tegucigalpa, Honduras, illustrates this approach. Since 2021 the foundation has performed more than 120 joint arthroplasties, led entirely by Honduran surgeons fellowship-trained in adult reconstruction. Patients contribute proportionally to their care costs based on income, while donor funds bridge the gap, creating a hybrid model that fosters dignity and avoids dependency. Outcomes are tracked using Knee Injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS Jr.) at standardized intervals mirroring high-income country registries. Local leadership ensures continuity of care, complication management, and investment in nursing education, rehabilitation, and supply-chain resilience, extending impact far beyond the operating room. Comparable examples demonstrate the power of local empowerment. Operation smile transitioned to predominantly locally staffed missions, reducing costs and expanding reach. Operation Walk Boston's long-term collaboration in the Dominican Republic increased arthroplasty volume fivefold through sustained training and mentorship [17]. The Surgical Implant Generation Network (SIGN) Fracture Care network has shown how training and equipping local surgeons can transform musculoskeletal care capacity globally [18]. This 'local mission' approach—prioritizing durable in-country capacity over episodic service—has been proposed as a model to improve surgical access in middle-income countries [19]. Comparative studies report that locally led programs achieve follow-up rates above 90.0% versus fewer than 60.0% for most missions [7] and provide revision and rehabilitation services at roughly half the per-case cost [5,6] (Table 1). Beyond efficiency, the ethical argument is compelling. The STMMs have been criticized for paternalism and colonialist dynamics. Empowerment aligns with principles of accompaniment, mutual respect, and sustainability outlined in Project for Quality Medical Donations) and National Academy of Medicine guidelines [10,11]. In arthroplasty, American Association of Hip and Knee Surgeons (AAHKS) Global Outreach and Walk Strong embody these principles by prioritizing training and equitable implant access. In this study, our objective was to evaluate the outcomes of a locally led arthroplasty program in Honduras by assessing patient-reported functional improvement and 90-day complication rates and to determine whether a surgeon-led model in a low-resource setting can deliver safe, effective, and sustainable TKA. We hypothesized that patients would achieve clinically meaningful functional gains and safety outcomes comparable to national registry-reported benchmarks.

Methods

We performed a retrospective cohort study of consecutive patients undergoing primary total knee arthroplasty (TKA) through the HJF between October 1, 2023, and June 30, 2025. During this period, 120 knee arthroplasties were performed by the program. There were two revision TKA procedures excluded, leaving 118 primary TKAs. Of these, three primary cases were excluded because patients did not provide informed consent for research use of their data, seven were excluded due to incomplete baseline evaluation (including missing KOOS Jr. scores or key clinical variables), and eight were excluded because complete 9 to 15-month follow-up KOOS Jr. data were not available. The final analytic cohort therefore consisted of 100 primary TKAs with complete preoperative and 9 to 15-month postoperative patient-reported outcome measures. No patients were excluded on the basis of clinical outcomes or complications.

All procedures were performed at a single private hospital in Tegucigalpa, Honduras, by Honduran arthroplasty surgeons fellowship-trained in adult reconstruction. Cases included unilateral or staged bilateral primary TKA. We used a standardized preoperative and postoperative clinical and radiographic evaluation protocol and excluded patients whose pathology was not end-stage degenerative OA or who had not yet reached the minimum follow-up time at the time of data extraction. Recorded variables included age, sex, coronal deformity, flexion contracture, laterality, and bilateral procedure status. Preoperative comorbidity burden was assessed using the Goldman cardiac risk index, which is recorded prospectively as part of the routine preanesthetic evaluation at our institution. The American Society of Anesthesiologists physical status and Charlson comorbidity index were not collected consistently and therefore could not be analyzed. All TKAs were performed using a single, off-the-shelf implant system (World Knee System; Signature Orthopaedics, Sydney, Australia). A posterior-stabilized, cemented symmetrical femoral component, an all-polyethylene spherical patella, and an all-polyethylene tibial component made of standard ultra-high-molecular-weight polyethylene were used in all cases. Cemented fixation was used for the femoral, patellar, and tibial components in every patient, and no cementless or hybrid constructs were implanted. Perioperative care followed standardized protocols that included spinal anesthesia, antibiotic prophylaxis, thromboprophylaxis, and early

Table 1
Comparison of STMMs Versus Empowerment Models in Arthroplasty.

Dimension	STMMs	Empowerment
Cost per surgery	$3,000 to $5,000	$1,400 to $1,800
Follow-up	<60%	>90%
Outcomes	Short-term PROM gains	Comparable with long-term safety
System impact	Episodic relief	Durable training, trust
Sustainability	Low	High

STMMs, Short Term Medical Missions; PROM, patient reported outcome measures.

mobilization with local physical therapy services. Patient-reported outcomes were assessed using the Knee Injury and Osteoarthritis Outcome Score for Joint Replacement (KOOS Jr.; 0 to 100 scale, higher scores indicating better function). A validated Spanish translation of the KOOS Jr. was used. Patients completed the KOOS Jr. on paper forms at clinic visits. Most patients filled out the questionnaires independently; in a minority of cases, family members assisted by reading the questions aloud for patients who had limited vision or reading difficulty, but patients still wrote down their own answers. In the few cases in which a patient could not read or write, local clinic staff read the questions and recorded responses based on the patient's verbal answers. All patients were Spanish-speaking, and no interpreter was required. Assessments were collected prospectively before surgery and at routine postoperative visits from 9 to 15 months. Complications were defined as any adverse event between surgery and last follow-up and were prospectively captured at every face-to-face visit and through review of operative reports, inpatient records, and follow-up clinic notes (consistent with CMS hospital-level risk-standardized complication definitions for elective primary TKA/THA) [20]. For descriptive purposes, complications were categorized as early (occurring within 90 days postoperatively) and as events occurring at any time during follow-up. The 90-day events were further categorized as surgical or medical complications. The primary outcome was change in KOOS Jr. between baseline and 9 to 15 months. Secondary endpoints included the proportion of patients achieving the minimal clinically important difference (MCID; $\geq$ 14-point improvement), the proportion attaining KOOS Jr. $\geq$ 71 (Centers for Medicare & Medicaid Services national registry-reported functional benchmark), 90-day complication rates, and complication, reoperation, and revision rates through final follow-up.

Data Analyses

Continuous data are reported as means and SDs, and categorical variables are reported as counts and percentages. Preoperative and postoperative KOOS Jr. scores were compared with paired *t*-tests and verified using Wilcoxon signed-rank tests. Effect size for KOOS Jr. improvement was calculated as Cohen's *d*, defined as the mean difference divided by the standard deviation of the paired differences, to quantify the magnitude and consistency of within-patient change. The 95% confidence intervals (CIs) were computed for mean change values. In a secondary analysis, we used multivariable linear regression to explore predictors of KOOS Jr. improvement, with change in KOOS Jr. as the dependent variable and age, sex, bilateral TKA, time from surgery to follow-up, preoperative KOOS Jr. score, and Goldman cardiac risk class as

Figure 1. Radiographic and clinical presentation of a representative patient undergoing total knee arthroplasty (TKA) through the Hagámoslo Juntos Foundation. (A) Preoperative antero-posterior and lateral radiographs demonstrate advanced tricompartmental osteoarthritis (OA) with varus deformity. (B) Immediate postoperative radiographs show a well-aligned, cemented TKA with restoration of mechanical axis and balanced flexion–extension gaps. (C) Preoperative clinical photograph illustrates significant varus deformity and flexion contracture of the right knee.

Table 2
Baseline Characteristics of the Study Cohort.

Characteristic	Value
Age, years	67 ± 7.0 (range 40 to 82)
Women, n (%)	80 (80.0)
Bilateral TKA, n (%)	8 (8.0)
Coronal deformity, n (%)	
Varus	81 (81.0)
Valgus	9 (9.0)
Windswept	7 (7.0)
Neutral	3 (3.0)
Flexion contracture, n (%)	
Present	25 (25.0)
Absent	75 (75.0)
Goldman cardiac risk class, n (%)	
Class I	61 (61.0)
Class II	38 (38.0)
Class III	1 (1.0)
Class IV	0 (0.0)
KOOS Jr. total score, mean ± SD	
Preoperative	33.3 ± 12.6
Nine to 15 months follow-up	88.6 ± 9.6

Knee Injury and Osteoarthritis Outcome Score for Joint Replacement.
TKA, total knee arthroplasty; KOOS Jr., Knee Injury and Osteoarthritis Outcome Score for Joint Replacement.

covariates. Statistical significance was set at $P < 0.05$. Analyses were performed in Statistical Package for Social Sciences (SPSS) version 28 (IBM Corp., Armonk, New York, USA).

Results

There were 100 primary TKAs performed in 96 patients during the study period. The mean age was 68 years, and 80.0% of patients were women. Most patients presented with varus alignment, and approximately 10.0% had a flexion contracture (Figure 1). There were 5.0% of patients who underwent staged bilateral procedures. Comorbidity burden was low by Goldman classification: 61 patients (61.0%) were Goldman class I, 38 (38.0%) were class II, and one (1.0%) was class III; no patients were classified as class IV (Table 2). All 100 knees had complete paired KOOS Jr. data available at baseline and at 9 to 15 months postoperatively. The mean preoperative KOOS Jr. score was 33.2 ± 12.6, increasing to 88.6 ± 9.6 at 9 to 15 months, yielding a mean improvement of 55.3 points (95% CI, 52.3 to 58.3; $P < 0.001$). The effect size for KOOS Jr. improvement was 3.1, indicating a substantial within-patient change. All patients met or exceeded the MCID ($\geq$ 14 points), and 92.0% achieved a KOOS Jr. score $\geq$ 71 at follow-up, thereby meeting or exceeding the Centers for Medicare & Medicaid Services (CMS) national registry-reported functional benchmark. In the multivariable linear regression model, worse baseline KOOS Jr. was the only independent predictor of greater improvement. For each one point higher preoperative KOOS Jr. score, the magnitude of improvement decreased by 0.98 points ($\beta = -0.98$; 95% CI, −1.14 to −0.82; $P < 0.001$). Age, sex, bilateral TKA status, and time from surgery to follow-up were not associated with change in KOOS Jr. Goldman cardiac risk class was not associated with KOOS Jr. improvement; the regression coefficient for Goldman class was 2.10 points per one-class increase (95% CI, −1.77 to 5.96; $P = 0.29$), indicating no relationship between higher preoperative cardiac risk classification and functional gains in this cohort. Complications are summarized in detail in Table 3. Within 90 days, 4 surgical complications occurred (4.0%), including two early periprosthetic joint infections (PJIs) and two other events such as wound-related issues and an intraoperative fracture, all of which were managed nonoperatively or with minor intervention (Figure 2). There were two patients (2.0%) who developed PJI within the first postoperative month. Both initially underwent irrigation and debridement, with implant retention performed by HJF surgeons at approximately 3 and 5 weeks, respectively. There were no 90-day medical complications, hospital readmissions, or emergency department visits related to the index arthroplasty. Beyond 90 days, there were no new infections, medical complications, hospital readmissions, or emergency department visits. However, both patients who had early PJI subsequently required additional surgery. There was one patient who underwent removal of all components and placement of an

Table 3
Postoperative Complications, Readmissions, Reoperations, and Revisions Through 9 to 15 Months. All Complications, Readmissions, Reoperations, and Revision Surgeries Were Performed and Managed Entirely by the Hagámoslo Juntos Foundation Surgical team.

Category	Event	N	%	Details
0 to 90 days				
	Any 90-days complication	5	5	Includes all surgical and medical events
	Medical complications	1	1	Minor; resolved locally
	Surgical complications (total)	4	4	Includes PJI, wound issues, stiffness
	Early PJI	2	2	Both occurred <30 days
	I&D (DAIR) procedures	2	2	Both required direct inpatient admission
	Readmissions (for I&D)	2	2	Both readmissions related to early PJI
	ED visits	0	0	None
90 days to 15 months				
	New infections after 90 days	0	0	None
	Reoperations (nonrevision)	0	0	No additional events
	Revisions (all-cause)	2	2	Detailed below
	One-stage revision	1	1	Definitive revision with antibiotic cement
	Two-stage revision (stage 1: spacer)	1	1	Final reimplantation pending
	Readmissions	0	0	No late readmissions
	ED visits	0	0	None
	Deaths	0	0	None
Total (0 to 15 months)	Cumulative PJI	2	2	Both managed locally
	Cumulative reoperations (DAIR)	2	2	Both <90 days
	Cumulative revisions	2	2	One one-stage; one spacer

Both I&D procedures required formal direct inpatient admission, consistent with local hospital policy. No emergency department visits or late (>90-days) medical complications occurred.
PJI, periprosthetic joint infection; I&D, irrigation and debridement; DAIR, debridement, antibiotics, and implant retention; ED, emergency department (ed).

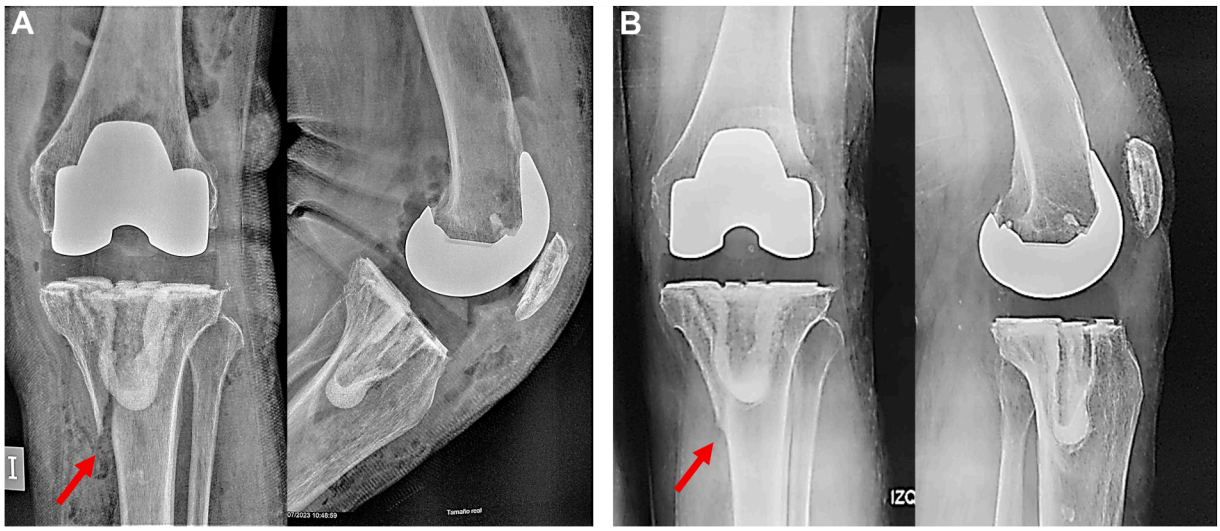

Figure 2. Radiographic evolution of an intraoperative fracture managed successfully within the Hagámoslo Juntos Foundation program. (A) Immediate postoperative antero-posterior and lateral radiographs demonstrating an intraoperative proximal tibia fracture (red arrow). (B) Two-year follow-up antero-posterior and lateral radiographs showing fracture healing (red arrow) with maintained alignment and stable prosthetic components.

antibiotic cement spacer as the first stage of a planned 2-stage revision at approximately 4.5 months; at the time of analysis, the patient remained in the interim period with a spacer awaiting planned reimplantation. The second patient underwent a definitive one-stage revision TKA using antibiotic-loaded cement at approximately 5 months postoperatively. There were no other reoperations or deaths. Overall, the cumulative PJI rate was 2.0% through the entire follow-up period, the cumulative revision rate was 2.0%, and the cumulative reoperation rate was 2.0% at 9 to 15 months. All complications and reoperations were managed locally by the HJF surgical team.

Discussion

This study demonstrates that a locally led arthroplasty program in Honduras can deliver functional outcomes that are comparable to those reported by large national registry benchmarks while simultaneously building sustainable local capacity. The mean KOOS Jr. improvement of 55.3 points represents a substantial and clinically meaningful gain, far exceeding the MCID range of 14 to 28 points reported in validation and registry datasets [21–24]. In Michigan Arthroplasty Registry Collaborative Quality Initiative, a $\geq$ 23-point gain is considered clinically meaningful [21]; the American Joint Replacement Registry–tiered success model shows 25 to 30-point improvements at 1 year with 85 to 90% MCID attainment [25]. The Orthopaedic Experience & Innovation multicenter study documented a 24.6-point average gain (51.7 to 76.3) [22], and Function and Outcomes Research for Comparative Effectiveness in Total Joint Replacement reported similar 25 to 28-point deltas across more than 11,000 patients [24]. Our larger observed change is best explained by lower baseline scores rather than superior technique or more intensive rehabilitation. Preoperative function strongly predicts absolute improvement [22–24,26]. Typical U.S. registry baselines cluster around KOOS Jr. approximately 50 to 55, whereas our patients began at 33.2 ± 12.6, reflecting later presentation and limited access to early intervention in an LMIC setting. Even so, the final mean score of 88.6 ± 9.6 is at least comparable to the upper range of registry reports (76 to 79) [21,22,25], suggesting that when standardized perioperative protocols and appropriate implants are available, locally led programs can approach the same functional plateau observed in high-income systems. Achievement of the CMS functional benchmark (KOOS Jr. $\geq$ 71 at 9 to 15 months) provides additional context. In the American Joint Replacement Registry, approximately 80 to 90%

Table 4
Comparative KOOS Jr. Outcomes Across Studies.

Study/Source	Cohort (n)	Pre-operative KOOS Jr (Mean ± SD)	1-year KOOS Jr (Mean ± SD)	Δ KOOS Jr (Mean Change ±SD)	% ≥ 71 (CMS Benchmark)	% ≥ MCID	Notes
OEI Consortium (2023)	956	51.7 ± 11.7	76.3 ± 14.5	24.6 (±—)	n/r	≈85–90	MCID ≈28 at 1 year (4)
MARCQI Registry (2021)	51,606	≈52 (est.)	≈75 (est.)	18.7 to 27.0 (±—)	≈85	≈90	Implant-design variation (1)
AJRR Analysis (2022)	>20,000	≈50–55 (est.)	≈77 (est.)	25 to 30 (±—)	80 to 90	85 to 90	Tiered success (2)
FORCE-TJR (2023)	11,602	≈52 (est.)	≈77 (est.)	25 to 28 (±—)	n/r	n/r	Age-adjusted outcomes (8)
Holtz et al. (2025)	1,142	≈53 (est.)	≈78 (est.)	≈25 (±—)	n/r	n/r	MCID linked to satisfaction (6)
Hagámoslo Juntos Foundation (2025)	100	33.3 ± 12.6	88.6 ± 9.6	55.3 ± 15.4	>90	100	Locally led, 9 to 15 months follow-up

n/r, not reported; est., estimated from published ranges; KOOS Jr., Knee Injury and Osteoarthritis Outcome Score for Joint Replacement; CMS, Centers for Medicare & Medicaid Services; MCID, minimal clinically important difference; OEI, Orthopaedic Experience & Innovation; MARCQI, Michigan Arthroplasty Registry Collaborative Quality Initiative; AJRR, American Joint Replacement Registry; FORCE-TJR, Function and Outcomes Research for Comparative Effectiveness in Total Joint Replacement.

of patients reach that threshold [25]; in our cohort, 94.6% of patients assessed within the CMS window met this benchmark. While direct comparison must be interpreted cautiously given differences in patient demographics, comorbidities, and rehabilitation infrastructure, the similarity in functional outcomes supports the concept that high-quality outcomes need not be limited to high-resource environments. Patient satisfaction in large studies correlates closely with functional improvement. Holtz et al. [23] found that attainment of the KOOS Jr. MCID predicted satisfaction after arthroplasty. Given that all patients in our cohort achieved at least the MCID and more than 90% surpassed the CMS threshold, patient-perceived benefit in this Honduran cohort is consistent with that observed in high-income registries (Table 4). Our complication profile also supports the feasibility of locally led arthroplasty in a resource-limited setting. Similar patient-reported improvements after arthroplasty in low-resource settings have been reported by visiting surgical teams [27]. The cumulative PJI rate of 2.0% and revision rate of 2.0% through 9 to 15 months fall within the range reported in contemporary registry and cohort studies, though direct comparison is limited by differences in follow-up duration and case mix [21,25,28]. Importantly, all complications, including two PJIs requiring irrigation and debridement, one planned 2-stage revision, and one one-stage revision, were identified, treated, and followed locally by the HJF team. There were no patients who required transfer abroad for management. For a developing health system, these findings demonstrate acceptable early safety and highlight local infrastructure capable of managing complex complications and revisions, addressing a key gap often seen with mission-based models. Economic evaluation further supports the value of local empowerment. The mean procedural cost (approximately $1,400) in this program is less than half of many mission-based arthroplasty efforts ($3,000 to $5,000) when travel, logistics, and opportunity costs are included [5,6]. Analyses from high-income countries consistently identify TKA as one of the most cost-effective interventions in modern medicine [2,3]. When adapted to LMICs through sustainable, locally led models, the value proposition may be even stronger because investments in infrastructure, team training, and supply chains benefit not only the initial cohort, but also future patients. Ethically, this model advances the global discourse on responsible outreach. The Project for Quality Medical Donations and National Academy of Medicine frameworks emphasize partnership, continuity, and capacity building as central pillars of global health practice [10,11]. By maintaining in-country capacity for follow-up, rehabilitation, and revision surgery, the HJF model directly addresses critiques of STMMs, including dependency, lack of continuity, and displacement of local providers. Furthermore, this approach facilitates bidirectional learning: local surgeons expand expertize in complex reconstruction, while visiting partners gain experience with resource-aware decision-making. This mirrors the ethos of sustainable programs such as Operation Walk Boston [17], the SIGN Fracture Care International network [18], and local mission models that prioritize development of domestic surgical teams [16,17]. Beyond individual patient outcomes, the foundation's initiatives in perioperative nursing education, structured rehabilitation pathways, and supply-chain management illustrate how global arthroplasty outreach can evolve from episodic charity to systems-level strengthening. These efforts echo recommendations from recent global surgery reviews that call for volunteerism to transition toward institution-building and self-sufficiency [16]. In this context, arthroplasty becomes a platform not only for restoring mobility but also for investing in long-term health system resilience.

Several potential limitations merit acknowledgment. This analysis reflects a single-center experience with a moderate sample size and approximately 1 year of follow-up; longer-term implant survivorship and durability of functional gains cannot yet be assessed. Comorbidities were not recorded systematically, limiting our ability to adjust for patient-level risk factors. Complications were documented prospectively by the clinical team, but were not independently adjudicated. In addition, all procedures used a single implant system and standardized protocols, which may not be generalizable to all LMIC environments. Nevertheless, the magnitude and consistency of functional improvement, complete follow-up for all included patients, and acceptable rates of infection and revision provide support for the conclusion that locally led arthroplasty can achieve outcomes comparable to international standards when appropriate training, systems, and ethical frameworks are in place.

In summary, the Honduran Hagámoslo Juntos Foundation achieved clinically meaningful KOOS Jr. improvements and acceptable early complication and revision rates through a sustainable, local, surgeon-led TKA program. Outcomes traditionally associated with high-income health systems were approached in a resource-limited environment via standardized protocols, continuous follow-up, and ethical partnership. These results support a shift in global arthroplasty outreach toward empowering local surgeons and health systems rather than relying on episodic short-term missions.

Declaration of generative AI and AI-assisted technologies in the writing process

During the preparation of this work, Dr. José C. Alcerro used ChatGPT (OpenAI) exclusively to improve the clarity and grammar of the English language, as Spanish is his native language. After using this tool, both authors carefully reviewed and edited the content to ensure accuracy, and take full responsibility for the final version of the manuscript.

CRediT authorship contribution statement

Jose C. Alcerro: Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Michael J. Christie:** Writing – review & editing, Validation, Supervision, Methodology.

References

[1] Wang Z, Xiao Z, Sun C, Xu G, He J. Global, regional and national burden of osteoarthritis 1990–2021: a systematic analysis of the GBD study 2021. BMC Musculoskelet Disord 2024;25:1021.
[2] Daigle ME, Weinstein AM, Katz JN, Losina E. The cost-effectiveness of total joint arthroplasty: a systematic review. Best Pract Res Clin Rheumatol 2012;26:649–58.
[3] Ferket BS, Feldman Z, Zhou J, Oei EH, Bierma-Zeinstra SMA, Mazumdar M. Impact of total knee replacement practice: cost-effectiveness analysis in knee osteoarthritis. BMJ 2017;356:j1131.
[4] Christie BM, Christie MC, Christie MJ. Global surgery without partnerships is not global health: Walkstrong. J Arthroplasty 2025;40:1655–7.
[5] Egle JP, McKendrick A, Mittal VK, Sosa F. Short-term surgical mission to the Dominican Republic: a cost–benefit analysis. Int J Surg 2014;12:1045–9.
[6] Rovers J, Andreski M, Becker M, Gray J. Short-term medical service trips: what is the cost of patient care and student training? Int Health 2021;13:594–7.
[7] Leversedge C, Castro S, Appiani LM, Kamal R, Shapiro L. Patient follow-up after orthopaedic outreach trips: do we know whether patients are improving? World J Surg 2022;46:2299–309.
[8] Sykes KJ. Short-term medical service trips: a systematic review. Am J Public Health 2014;104:e38–48.

[9] Faktor KL, Payán DD, Ramirez AJ, May FP. Impact and sustainability of foreign medical aid: honduran providers' perspectives. Ann Glob Health 2023;89:17.
[10] Lasker JN, Aldrink M, Balasubramaniam R, Caldron P, Compton B, Evert J, et al. Guidelines for responsible short-term global health activities: developing common principles. Glob Health 2018;14:18.
[11] Compton B, Colatrella B, Hamilton L, Monahan JT, Sam P, Taylor K. Improving short-term medical engagements with low to middle income countries. NAM Perspect 2022;2:e210021.
[12] Andrews S. Identification of current best practices for short-term medical mission trips and adherence to current common principles and guidelines. Christian J Glob Health 2019;6:1–13.
[13] Dainton C, Gorman C, Cherniak W, Lopez L, Chu CH. Reliability of the service trip audit tool to assess the quality of short-term medical missions. Int Health 2021;13:606–14.
[14] Stenquist DS, Ready LV, Ghazinouri R, Beagan C, Wisdom A, Katz JN. Development of patient education materials for TJR during an international surgical brigade. JAAOS Glob Res Rev 2020;4:e20.00074. https://doi.org/10.5435/JAAOSGlobal-D-20-00074.
[15] Dempsey KE, Ghazinouri R, Diez D, Alcantara L, Beagan C, Aggouras B, et al. Enhancing the quality of international orthopaedic medical mission trips using the blue distinction criteria for TJA centers. BMC Musculoskelet Disord 2013;14:275.
[16] Leversedge C, McCullough M, Appiani LMC, Đình MP, Kamal RN, Shapiro LM. Capacity building during short-term surgical outreach trips: a review of what guidelines exist. World J Surg 2023;47:50–60.
[17] Dempsey KE, Ghazinouri R, Diez D, Alcantara L, Beagan C, Aggouras B, et al. Enhancing the quality of international orthopedic medical mission trips using the blue distinction criteria for knee and hip replacement centers. BMC Musculoskelet Disord 2013;14:275. https://doi.org/10.1186/1471-2474-14-275.
[18] Young S, Lie SA, Hallan G, Zirkle LG, Engesæter LB, Havelin LI. Low infection rates after 34,361 intramedullary nail operations in 55 low- and middle-income countries: validation of the Surgical Implant Generation Network (SIGN) online surgical database. Acta Orthop 2011;82:737–43. https://doi.org/10.3109/17453674.2011.636680.
[19] Nagengast ES, Munabi NCO, Xepoleas M, Auslander A, Magee 3rd WP, Chong D. The local mission: improving access to surgical care in middle-income countries. World J Surg 2021;45:962–9.
[20] Centers for Medicare & Medicaid Services (CMS). Hospital-level risk-standardized complication rate following elective THA/TKA (Quality ID #470 v7.0). Baltimore, MD: Centers for Medicare & Medicaid Services; 2022.
[21] Cornish ER, Zheng H, Markel DC, Hallstrom BR, Hughes RE. Variation in KOOS Jr improvement across total knee implant designs: a cohort study from MARCQI. Acta Orthop 2021;92:723–30.
[22] Orthopaedic Experience & Innovation Consortium. Interpreting the KOOS Jr: MCID values vary over time. J Orthop Exp Innov 2023;3:45–53.
[23] Guild GN, Bradham AA, Gresham N, Schwab JM, Alva A, Bradbury TL. Does achieving the MCID in KOOS Jr predict satisfaction after total knee arthroplasty? Arthroplasty Today 2025;11:101–7.
[24] Ayers DC, Yousef M, Yang W, Zheng H. Age-related differences in PROMs 1 year after TKA: results from FORCE-TJR. J Arthroplasty 2023;38:1152–60.
[25] Carender CN, Glass NA, De A, Bozic KJ, Callaghan JJ, Bedard NA. Outcomes vary significantly using a tiered approach to define success after TKA. J Arthroplasty 2022;37(9 Suppl A):S615–24.
[26] Bido J, Yang YH, Collins JE, Dong Y, Driscoll DA, Alcantara LA, et al. Predictors of patient-reported outcomes of total joint arthroplasty in a developing country. J Arthroplasty 2017;32:1756–62.
[27] Hu DA, Harold RE, Pereira ECS, Cavalcante ET, Barros MpMdSB, Medeiros de Souza SN, et al. Patient-reported outcomes after THA in a low-resource country by a visiting surgical team. Arthroplasty Today 2021;10:41–5. https://doi.org/10.1016/j.artd.2021.05.023.
[28] American Joint Replacement Registry (AJRR). 2024 Annual Report. Rosemont, IL: AJRR; 2024.