



A Comparison of Joint Replacement Disparities in VA and Non-VA Settings: A Systematic Review

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EXECUTIVE SUMMARY

The purpose of this systematic review was to compare what is known about disparities in total joint replacement (TJR) surgery in VA settings with disparities in civilian health care settings.

BACKGROUND

The leading cause of disability in the United States is osteoarthritis. There is no known cure. Consequently, osteoarthritis is managed with a variety of treatments to reduce disability, improve function, and alleviate symptoms. When conservative treatments fail, surgical intervention is indicated. The most effective surgical option for moderate to severe osteoarthritis in the knee or hip is total joint replacement (TJR). TJR is often considered appropriate in cases where other non-surgical treatments have not brought adequate relief. TJR in the management of end-stage osteoarthritis is widely utilized and is considered the fastest growing elective surgery in the nation, if not the world.

Although TJR is highly successful at treating advanced hip or knee osteoarthritis, there is substantial evidence that disparities exist in TJR utilization in non-VA settings, with racial and ethnic disparities being the most documented. This report compares what is known about disparities in TJR in the VA context with disparities in non-VA settings.

The review focused on three key questions:

Key Question #1: What is the evidence about the existence and magnitude of disparities in joint replacement surgery in VA? How does this compare to published studies from non-VA US populations?

Key Question #2: What is the evidence about the patient level, provider level, and system level factors that contribute to disparities in joint replacement surgery in VA? How does this compare to published studies from non-VA populations?

Key Question #3: What is the evidence regarding VA or non-VA interventions to reduce disparities in joint replacement surgery?

METHODS

We searched PubMed from 1966 through July 2011 using standard search terms. We limited the search to PubMed articles involving human subjects and published in the English language. Titles, abstracts, and articles were reviewed in duplicate by physicians trained in the critical analysis of literature. We used a standardized screening form to screen abstracts and a data abstraction form to extract data from full articles. All data were narratively summarized.

Data about study characteristics, patient characteristics, and outcomes were extracted by a trained research associate under the supervision of the Principal Investigators--one a general surgeon, the other a general internist. Both are experienced reviewers. We assessed study quality for clinical trials using the Jadad criteria, and used a modified version of the Newcastle Ottawa Scale (NOS) for non-randomized studies.

DATA SYNTHESIS

We constructed evidence tables showing key study and patient characteristics, methodological quality, and outcomes. We analyzed studies to compare their characteristics, methods, and findings. We compiled a summary of findings for each question based on qualitative synthesis of the findings.

PEER REVIEW

A draft version of this report was reviewed by seven technical experts, as well as by VA clinical leadership. We addressed reviewer comments and incorporated our responses in the final report (Appendix E).

RESULTS

We screened 299 titles, rejected 155, and performed a more detailed review on 144 articles. From these, we identified 75 articles that addressed one or more of the key questions: 25 addressed key question #1, 38 addressed key question #2, and one addressed key question #3.

Key Question #1

What is the evidence about the existence and magnitude of disparities in joint replacement surgery in VA? How does this compare to published studies from non-VA US populations?

Data supporting existence of disparities in joint replacement surgery in VA are not very robust because they come from just three studies, two of which focus on racial disparities and one of which focuses on gender disparities. The magnitude of the racial disparities in VA as documented in these studies is about the same as the magnitude based on more extensive data from non-VA US populations (about 1.5-3 fold). The quality of evidence for this conclusion is low, based on sparseness and age of data. Thus we expect further research, both into racial and gender disparities, to have an important impact on our estimate of the magnitude of disparities.

The literature on racial disparities in total joint replacement outside the VA is more robust than within the VA. Studies of non-VA US populations consistently find that black patients receive fewer total knee replacement (TKR) operations than whites, and men receive fewer TKR operations than women. The quality of evidence for this conclusion is high; thus future research is unlikely to change our confidence about the estimate of effect. However, future research is still necessary to evaluate these disparities over time and assess whether they are increasing or decreasing.

There are fewer studies that examine whether differences in TKR rates represent true disparities based on clinical need. Those that have examined this issue conclude in general, but not consistently, that there are disparities based on clinical need between blacks and nonblacks. The quality of evidence for this conclusion is moderate. Further research is likely to affect our confidence in the estimate of disparities and may change the estimate.

Data about differences in utilization and disparities for total hip replacement in both non-VA US and VA populations are scant, and no conclusions can be drawn. The quality of evidence is therefore very low.

Data about differences in utilization for other races (Hispanic, Asian) are scant, and no conclusions can be drawn. The quality of evidence is therefore very low.

Key Question #2

What is the evidence about the patient level, provider level, and system level factors that contribute to disparities in joint replacement surgery in VA? How does this evidence compare to published studies from non-VA populations?

Only three studies combine both VA and non-VA patients and examine racial disparities in joint replacement, but they are not able to directly compare actual disparities across VA and non-VA sites. In these studies, there were no racial differences in clinical appropriateness for TJR or differences in perceived arthritis severity or susceptibility for worsening. African American patients were less likely than whites to perceive benefits of and more likely to recognize barriers to TJR. There was no difference in clinical appropriateness for patients at a county hospital compared with patients at a nearby VA. Studies found that County hospital patients were nearly 3-fold more likely to be referred to a surgeon compared with VA patients, but this association was not significant when self-reported referral data were used. The quality of evidence for this conclusion is low because all data came from a single cohort, and replication of the results in other patient populations is needed in order to have stronger confidence in the conclusion.

Evidence about the patient-, provider-, and system- level factors that contribute to disparities in joint replacement surgery in the VA comes from a series of small studies recruiting patients from one or two VA medical centers. The studies find generally that black patients, compared with whites, have lower expectations about the effectiveness of joint replacement, less familiarity with the procedure, and may be more likely to view prayer and other techniques as useful for managing arthritis pain. There is some evidence that blacks may be less likely to be referred to specialists for joint replacement or to have TJR recommended by a specialist; however, some of these differences may be explained by patient preferences. One study examining communication between patients and orthopedic surgeons in the VA found little difference by race.

Although the individual studies are of high quality, the overall quality of evidence for the above conclusions is low because the studies were small and limited to a few sites. It is also likely that further research into important mediators (such as patient preference) and research with different patient cohorts will have an important impact on conclusions about the reasons for these joint disparities. The age of the data is also a limiting factor: a majority of the studies come from patient cohorts recruited over 10 years ago, and 8 of those studies come from a single VA medical center.

Data about reasons for disparities for other races (Hispanic, Asian) are scant, and no conclusions can be drawn. The quality of evidence is therefore very low.

Evidence in non-VA settings suggests that minority patients (African Americans being the most studied) may have less knowledge about joint replacement surgery, perceive fewer health benefits, and have greater fear about the surgery, similar to findings within VA. These patients may be less likely to be referred to a surgeon and are less likely to consider surgery. When they do present for surgery, African Americans have more advanced disease. Disease severity, socioeconomic factors, or degree of comorbidities do not appear to account for all of these

differences. Minority patients may be less likely to be treated in high volume centers or by high volume providers, which is a system-level factor that has not been studied within VA.

Key Question #3

What is the evidence regarding VA or non-VA interventions to reduce disparities in joint replacement surgery?

There has been only one published VA study of an intervention to improve disparities. It focused on expectations and examined only total knee replacement. It found that, after watching an informational video, African Americans, but not Caucasians, had statistically significant improvements in their expectations for pain and function post-operatively. Other potential causes of disparities have not been the subjects of interventions, and no study has yet assessed changes in the actual delivery of joint replacement surgery.

The quality of evidence for this key question is very low, due to sparseness of data; thus any estimate of effect is uncertain.

ABBREVIATIONS TABLE

Table 1. Abbreviations

| Abbreviation | Definition |
|---------------------|--|
| OA | Osteoarthritis |
| THR | Total Hip Replacement |
| TKR | Total Knee Replacement |
| TJR | Total Joint Replacement (TJR is also used for Total Joint Arthroplasty, which is sufficiently similar) |