

The Impact of Home Health Care on Cost Effectiveness Compared to Other Post-Acute Settings in Individuals Status Post Total Joint Arthroplasty: A Systematic Review

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Outline

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Purpose

- ▶ To determine the cost effectiveness of home health care (HHC) compared to other post-acute care (PAC) settings in individuals status post total joint arthroplasty (TJA)



Background

- ▶ Hip and knee replacements are the most common procedure for Medicare patients¹
- ▶ In 2014, over 400,000 total hip and total knee replacements were performed¹
- ▶ Resulted in over 7 billion dollars in hospitalization alone¹
- ▶ By 2030, projected increase to 3.48 million TKAs and 572,000 THAs²
- ▶ Post-surgery physical therapy settings presently vary between outpatient, inpatient, and rehab



Implications

- ▶ With the expected increase of patients undergoing TJA procedures, a need to determine the most cost effective PAC route is needed
- ▶ It is currently unclear which post-acute settings deliver the greatest value to an episode of care



Methods

- ▶ Databases:
 - ▶ PubMed
 - ▶ Medline
 - ▶ Health Source: Nursing/Academic Edition
 - ▶ CINAHL
- ▶ Two reviewers independently assessed each study
 - ▶ MINORS scale



MINORS

Article Authors	MINORS Score	
Mahomed N et al ³	21/24	Mean: 14.6/24 Range: 10/24 – 21/24
Sigurdsson E et al ⁴	20/24	
Ramos NL et al ⁵	14/24	
Sabeh KG et al ⁶	13/24	
Ponnusamy KE et al ⁷	13/24	
Bozic KJ et al ⁸	11/24	
Slover JD et al ⁹	10/24	

Methods

- ▶ Search Terms

- ▶ ("Total Joint Replacement" OR "Total Joint Arthroplasty" OR "Total Hip Replacement" OR "Total Hip Arthroplasty" OR "Total Knee Replacement" OR "Total Knee Arthroplasty") AND (Home-health* OR home health* OR home care OR home-based rehab* OR home intervention*) AND (Cost* Effect* OR Cost* OR cost-benefit* OR cost value analysis)

- ▶ Search Limits

- ▶ English, published 2008-2018, human subjects, and peer reviewed scholarly journals



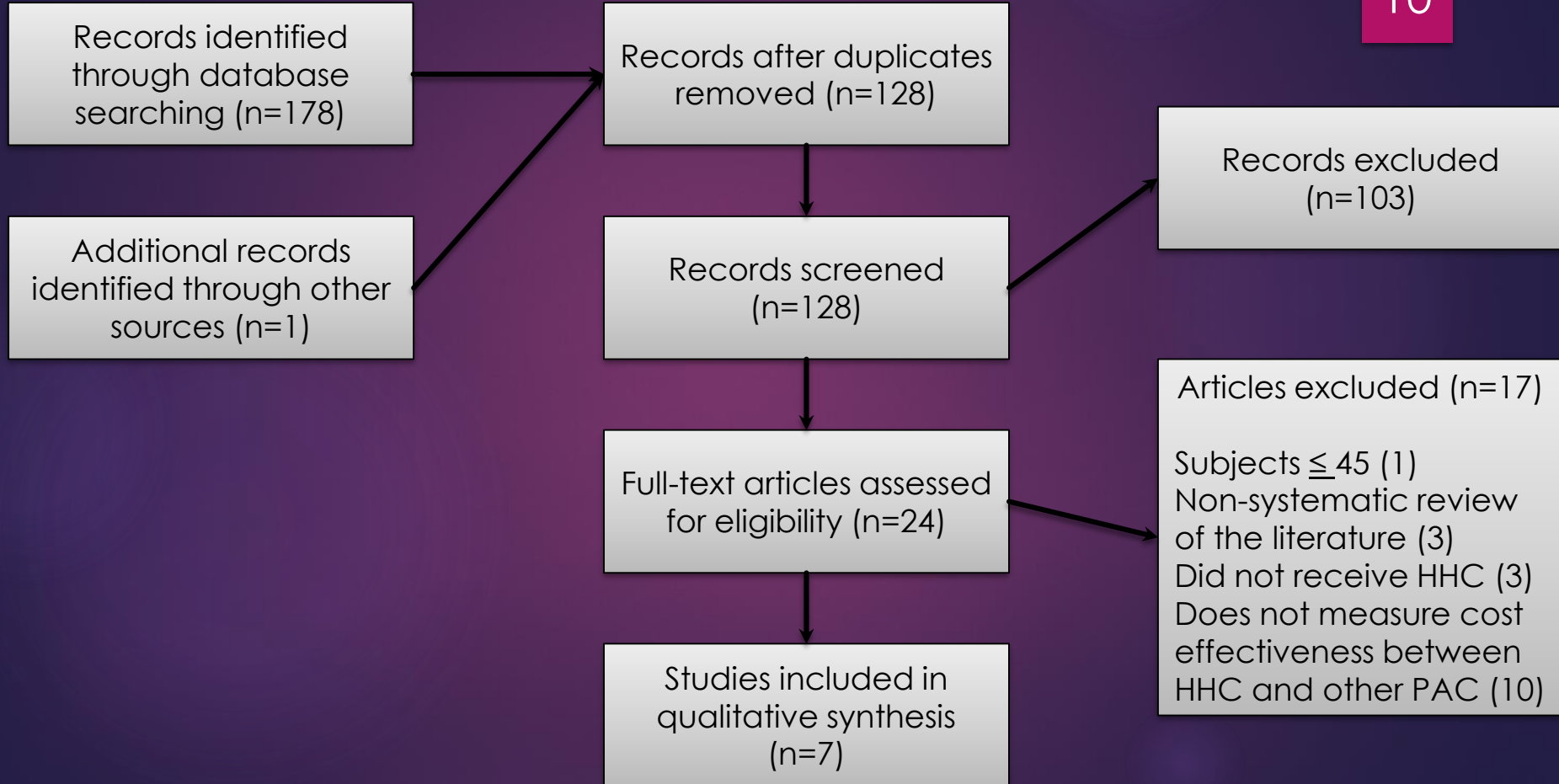
Eligibility Criteria

- ▶ Adults ≥ 45 years of age
- ▶ Underwent a TJA
- ▶ HHC vs. other PAC settings
- ▶ Must examine at least one cost-effectiveness outcome measure



PRISMA

10



Results

- ▶ Sample size
 - ▶ Range: 50-468,075
 - ▶ Total: 729,983
- ▶ Primary Outcomes
 - ▶ Cost of Post-Acute Care Routes³⁻⁹
- ▶ Secondary Outcomes
 - ▶ Length of Stay^{3,5,7,9}
 - ▶ Physical Function & Quality of Life^{3,4}
 - ▶ Readmission Rates^{5,7,8}
 - ▶ Comorbidities^{3,5,7}



Results

Article	Home Health	Skilled Nursing	Inpatient Rehab
Mahomed N et al ³	\$11,082	N/A	\$14,531
Sigurdsson E et al ⁴	\$8,550	N/A	\$11,952
Ramos NL et al ⁵	\$4,000	\$7,560	\$11,000
Sabeh KG et al ⁶	\$11,592	\$14,544	\$25,284
Ponnusamy et al ⁷	\$5,785	\$8,480	12,510
Bozic KJ et al ⁸	\$5,054	\$13,387	\$7,135
Slover JD et al ⁹	\$4657	\$11,719	N/A*

Results

- ▶ Economic Evaluation
 - ▶ All seven studies found that HHC costs were lower than any other PAC route that was examined³⁻⁹
- ▶ Readmission Rate
 - ▶ Two studies found HHC was comparable to SNF but was significantly lower than IRF^{5,7}
- ▶ Patient Comorbidities
 - ▶ Three studies found those discharged to IRF had significantly higher comorbid conditions compared to HHC or SNF^{3,5,7}



Results

- ▶ Length of Stay
 - ▶ Inconsistent across studies^{3,5,7,9}
- ▶ Functional Outcomes
 - ▶ One study found it to be more cost effective when analyzing the OHS⁴
 - ▶ All other functional outcomes (WOMAC, SF-36, patient satisfaction) were comparable no matter what the discharge setting³



Conclusion

- ▶ Findings consistently showed that a discharge to home health costs significantly less than an IRF or SNF
- ▶ Moderate evidence suggesting that discharge to HHC is shown to be more cost effective than discharge to a SNF or IRF



Limitations

- ▶ Inconsistent sample characteristics
- ▶ Unclear protocols
- ▶ Lack of long-term follow up
- ▶ Inadequate reporting of comorbidities
- ▶ Lack of uniform outcome measures



Future Research

- ▶ Future research should aim at providing PAC discharge recommendations for middle age and older populations post total joint arthroplasty
- ▶ There is a need to obtain more RCT's on this subject
- ▶ Also, determining the effect of comorbidities, caregiver status/availability, and home environment on discharge disposition for patients
 - ▶ i.e. *Do post acute care routes affect the functional outcomes of patients status-post total joint arthroplasty who have similar comorbid conditions?*



Clinical Relevance

- ▶ Discharge home is a safer and more cost-effective option for patients after TJA compared to other PAC settings
- ▶ PTs should recommend a discharge to HHC after TJA compared to other PAC settings based on:
 - ▶ Decreased episode of care cost
 - ▶ Existing evidence in comparable functional outcomes (WOMAC, SF-36, and Oxford Hip Score)



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Appendix

Tests and Measures Psychometrics

Test	ICF-Domain	Populations	MCID	Reliability	Validity	Sensitivity & Specificity
WOMAC	Body Function Activity, Participation	Musculoskeletal Conditions	TKA: 11.5 ¹⁰ (6 & 12 months) THA: 25.91, 29.26 ¹¹ (stiffness, pain)	THA & TKA Test-retest: 0.79 ¹²	THA & TKR Construct validity: 0.80 ¹³ (pain subscale to physical function)	Physical Function: 0.51, 0.88 ¹⁴
SF-36	Body Function Activity, Participation	Musculoskeletal and Neuromuscular Conditions	Not established	Test-retest: 0.80 ¹⁵	Concurrent Validity: 0.81 ¹⁶	Physical Function: 0.34, 0.97 ¹⁴
OHS	Body Structure, Body Function, Activity	Arthritis, Joint Condition, Pain Management	Osteoarthritis: 6.11 ¹⁷	Test-retest: Adequate, ICC > 0.70 ¹⁸ (THR)	Excellent correlation with WOMAC global, pain, and functional subscales (Spearman's $\rho = 0.82, 0.81, 0.87$) ¹⁹	Not established

Questions?

