

## APPENDICES

### Appendix 1: Full Keyword Search Protocol

#### Appendix 1A: Full Keyword Search Protocol updated October 14, 2020

A medical librarian (LHY) searched the literature for records including the concepts of preoperative, perioperative, total hip arthroplasty (THA), total knee arthroplasty (TKA), and persistent postsurgical pain (PPSP). The librarian created search strategies using a combination of keywords and controlled vocabulary in Ovid Medline 1946- , Embase.com 1947- , Scopus 1823- , Cochrane Central Register of Controlled Trials (CENTRAL), The Cumulative Index to Nursing and Allied Health Literature (CINAHL) 1937 - , PsycINFO 1927 - , and Clinicaltrials.gov 1997- .

All search strategies were completed September 2019 and a total of 449 results were found. 200 duplicate records were deleted after using the de-duplication processes described in “De-duplication of database search results for systematic reviews in EndNote,” (Bramer, Giustini, de Jonge, Holland, & Bekhuis, 2016) resulting in a total of 249 unique citations included in the project library. Fully reproducible search strategies for each database can be found in the appendix.

\*All searches were updated by re-running the original searches from database conception to October 14, 2020, and deduplicating the total results against the original results to find 47 new results.

*Bramer, W. M., Giustini, D., de Jonge, G. B., Holland, L., & Bekhuis, T. (2016). De-duplication of database search results for systematic reviews in EndNote. Journal of the Medical Library Association: JMLA, 104(3), 240.*

#### Embase

Date Searched: 9/16/2019

Applied Database Supplied Limits: n/a

Number of Results: 169

Updated: 10/14/2020

Number of Results: 208

Full Search Strategy:

('preoperative period'/exp OR 'preoperative care'/exp OR 'preoperative treatment'/exp OR preoperative\*:ti,ab,kw OR 'perioperative period'/exp OR perioperative:ti,ab,kw OR 'intraoperative period'/exp OR 'perioperative care'/exp OR (intraoperative\* OR

peroperative\*):ti,ab,kw OR (pre NEAR/3 (operative\* OR surgery OR surgical)):ti,ab,kw OR ((before OR during) NEAR/3 (operative\* OR operation\* OR surger\*)):ti,ab,kw OR ('pre and postoperative' OR 'prior to surgery'):ti,ab,kw) AND ('total hip prosthesis'/exp OR 'total hip replacement'/exp OR 'total knee arthroplasty'/exp OR (('total hip' OR 'hip total' OR 'total knee' OR 'knee total') NEAR/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)):ti,ab,kw) AND ('persistent postsurgical pain'/exp OR 'chronic postsurgical pain'/exp OR (('chronic pain'/exp OR 'persistent pain'/exp) AND 'postoperative pain'/exp) OR 'persistent postoperative pain'/exp OR 'chronic postoperative pain'/exp OR 'chronic pain after surgery':ti,ab,kw OR 'persistent pain after surgery':ti,ab,kw OR ((chronic OR persistent) NEAR/3 ('postsurgical pain' OR 'post-surgical pain' OR 'post surgical pain' OR 'postoperative pain' OR 'post-operative pain' OR 'post operative pain')):ti,ab,kw OR ('chronic pain after surgery' OR 'persistent pain after surgery'):ti,ab,kw)

### Ovid Medline

Date Searched: 9/16/2019

Applied Database Supplied Limits: n/a

Number of Results: 76

Date Updated: 10/14/2020

Number of Results: 94

### Full Search Strategy:

(exp Preoperative Period/ or exp Preoperative Care/ OR preoperative\*.mp. OR exp Perioperative Period/ OR exp Perioperative Care/ OR perioperative.mp. OR exp Intraoperative Care/ or exp Intraoperative Period/ OR (intraoperative\* OR peroperative\*).mp. OR (pre ADJ3 (operative\* OR surgery OR surgical)).mp. OR ((before OR during) ADJ3 (operative\* OR operation\* OR surger\*)).mp. OR (pre and postoperative OR prior to surgery).mp.) AND (exp Arthroplasty, Replacement, Hip/ OR exp Arthroplasty, Replacement, Knee/ OR ((total hip OR hip total OR total knee OR knee total) ADJ4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)).mp.) AND ((exp Chronic Pain/ AND exp Pain, Postoperative/) OR chronic pain after surgery.mp. OR persistent pain after surgery.mp. OR ((chronic OR persistent) ADJ3 (postsurgical pain OR post-surgical pain OR post surgical pain OR postoperative pain OR post-operative pain OR post operative pain)).mp. OR (chronic pain after surgery OR persistent pain after surgery).mp.)

### Scopus

Date Searched: 9/17/2019

Applied Database Supplied Limits: n/a  
Number of Results: 100

Date Updated: 10/14/2020  
Number of Results: 113

Full Search Strategy:

((TITLE-ABS-KEY(preoperative\* OR perioperative OR intraoperative\* OR peroperative\*)) OR (TITLE-ABS-KEY((pre W/3 (operative\* OR surgery OR surgical))) OR (TITLE-ABS-KEY(before OR during) W/3 (operative\* OR operation\* OR surger\*))) OR (TITLE-ABS-KEY("pre and postoperative" OR "prior to surgery"))) AND ((TITLE-ABS-KEY(("total hip" OR "hip total" OR "total knee" OR "knee total") W/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*))) AND ((TITLE-ABS-KEY("chronic pain after surgery" OR "persistent pain after surgery")) OR (TITLE-ABS-KEY((chronic OR persistent) W/3 ("postsurgical pain" OR "post-surgical pain" OR "post surgical pain" OR "postoperative pain" OR "post-operative pain" OR "post operative pain")))) OR (TITLE-ABS-KEY("chronic pain after surgery" OR "persistent pain after surgery"))))

#### The Cochrane Library

Date Searched: 9/17/2019  
Applied Database Supplied Limits: n/a  
Number of Results:  
CENTRAL 31

Date Updated: 10/14/2020  
Number of Results:  
CENTRAL 34

Full Search Strategy:

([mh "Preoperative Period"] or [mh "Preoperative Care"] OR preoperative\*:ti,ab,kw OR [mh "Perioperative Period"] OR [mh "Perioperative Care"] OR perioperative:ti,ab,kw OR [mh "Intraoperative Care"] OR [mh "Intraoperative Period"] OR (intraoperative\* OR peroperative\*):ti,ab,kw OR (pre NEAR/3 (operative\* OR surgery OR surgical)):ti,ab,kw OR ((before OR during) NEAR/3 (operative\* OR operation\* OR surger\*)):ti,ab,kw OR ("pre and postoperative" OR "prior to surgery"):ti,ab,kw) AND ([mh

“Arthroplasty, Replacement, Hip”] OR [mh “Arthroplasty, Replacement, Knee”] OR ((“total hip” OR “hip total” OR “total knee” OR “knee total”) NEAR/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)):ti,ab,kw) AND (([mh “Chronic Pain”] AND [mh “Pain, Postoperative”]) OR “chronic pain after surgery”:ti,ab,kw OR “persistent pain after surgery”:ti,ab,kw OR ((chronic OR persistent) NEAR/3 (“postsurgical pain” OR “post-surgical pain” OR “post surgical pain” OR “postoperative pain” OR “post-operative pain” OR “post operative pain”)):ti,ab,kw OR (“chronic pain after surgery” OR “persistent pain after surgery”):ti,ab,kw)

### CINAHL

Date Searched: 9/17/2019

Applied Database Supplied Limits: n/a

Number of Results: 41

Date Updated: 10/14/2020

Number of Results: 50

Full Search Strategy:

((MH "Preoperative Period+") OR (MH "Preoperative Care+") OR preoperative\* OR (MH "Perioperative Care+") OR (MH "Intraoperative Period") OR (MH "Intraoperative Care+") OR (intraoperative\* OR peroperative\*) OR (pre N3 (operative\* OR surgery OR surgical)) OR ((before OR during) N3 (operative\* OR operation\* OR surger\*)) OR (“pre and postoperative” OR “prior to surgery”)) AND ((MH "Arthroplasty, Replacement, Hip") OR (MH "Arthroplasty, Replacement, Knee+") OR ((“total hip” OR “hip total” OR “total knee” OR “knee total”) N4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*))) AND (((MH "Postoperative Pain") AND (MH "Chronic Pain")) OR “chronic pain after surgery” OR “persistent pain after surgery” OR ((chronic OR persistent) N3 (“postsurgical pain” OR “post-surgical pain” OR “post surgical pain” OR “postoperative pain” OR “post-operative pain” OR “post operative pain”)) OR (“chronic pain after surgery” OR “persistent pain after surgery”))

### PsycINFO

Date Searched: 9/17/2019

Applied Database Supplied Limits: n/a

Number of Results: 15

Date Updated: 10/14/2020

Number of Results: 16

#### Full Search Strategy:

(preoperative\* OR perioperative OR (intraoperative\* OR peroperative\*) OR (pre N3 (operative\* OR surgery OR surgical)) OR ((before OR during) N3 (operative\* OR operation\* OR surger\*)) OR (“pre and postoperative” OR “prior to surgery”)) AND (((“total hip” OR “hip total” OR “total knee” OR “knee total”) N4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*))) AND (“chronic pain after surgery” OR “persistent pain after surgery” OR ((chronic OR persistent) N3 (“postsurgical pain” OR “post-surgical pain” OR “post surgical pain” OR “postoperative pain” OR “post-operative pain” OR “post operative pain”)) OR (“chronic pain after surgery” OR “persistent pain after surgery”))

#### ClinicalTrials.gov

Date Searched: 9/17/2019

Number of Results: 17

Date Updated: 10/14/2020

Number of Results: 21 (4 new)

(preoperative\* OR perioperative OR intraoperative\* OR peroperative\*) AND (“total knee” OR “total hip”) AND ((chronic OR persistent) AND (“postsurgical pain” OR “postoperative pain”))

#### **Appendix 1B: Full Keyword Search Protocol dated July 9th, 2021**

A medical librarian (LHY) searched the literature for records including the concepts of pre-operative, perioperative, total hip arthroplasty (THA), knee arthroplasty (TKA) and postsurgical pain and removing records with the concept ‘acute pain’ to broaden the original systematic review search completed 9/17/2018. The librarian created search strategies using a combination of keywords and controlled vocabulary in Embase.com 1947- , Ovid Medline 1946- , Scopus 1823- , Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Database of Systematic Reviews (CDSR), Cumulative Index of Nursing and Allied Health Literature (CINAHL Plus) 1937- , APA PsycINFO 1800 -, and Clinicaltrials.gov 1997- . All search strategies were completed July 9th, 2021, with no added limits and a total of 10,851 results were found. 5,403 duplicate records were deleted after using the de-duplication processes described in “De-duplication of database search results for systematic reviews in EndNote,” (Bramer, Giustini, de Jonge,

Holland, & Bekhuis, 2016) resulting in a total of 5,448 unique citations. This set of results were de-duplicated against the original systematic review search completed September 17, 2018 (*Appendix 1A*) which included 249 results to compile the 5,199 results included in the project library. Fully reproducible search strategies for each database can be found in the appendix. Bramer, W. M., Giustini, D., de Jonge, G. B., Holland, L., & Bekhuis, T. (2016). De-duplication of database search results for systematic reviews in EndNote. *Journal of the Medical Library Association: JMLA*, 104(3), 240.

## Full Search Strategies

### Embase

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 2,511

### Full Search Strategy:

((('preoperative period'/exp OR 'preoperative care'/exp OR 'preoperative treatment'/exp OR preoperative\*:ti,ab,kw OR 'perioperative period'/exp OR perioperative:ti,ab,kw OR 'intraoperative period'/exp OR 'peroperative care'/exp OR (intraoperative\* OR peroperative\*):ti,ab,kw OR (pre NEAR/3 (operative\* OR surgery OR surgical)):ti,ab,kw OR ((before OR during) NEAR/3 (operative\* OR operation\* OR surger\*)):ti,ab,kw OR ('pre and postoperative' OR 'prior to surgery'):ti,ab,kw) AND ('total hip prosthesis'/exp OR 'total hip replacement'/exp OR 'total knee arthroplasty'/exp OR (('total hip' OR 'hip total' OR 'total knee' OR 'knee total') NEAR/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)):ti,ab,kw) AND ('postoperative pain'/exp OR 'persistent postsurgical pain'/exp OR 'chronic postsurgical pain'/exp OR (('after surgery' OR postsurgical OR 'post-surg\*' OR 'post surg\*' OR postoperative OR 'post-operative' OR 'post operative') NEAR/3 pain):ti,ab,kw)) NOT ((acute NEAR/3 pain):ti,ab,kw)

### Ovid Medline

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 2,019

### Full Search Strategy:

((exp Preoperative Period/ or exp Preoperative Care/ OR preoperative\*.mp. OR exp Perioperative Period/ OR exp Perioperative Care/ OR perioperative.mp. OR exp Intraoperative Care/ or exp Intraoperative Period/ OR (intraoperative\* OR peroperative\*).mp. OR (pre ADJ3 (operative\* OR surgery OR surgical)).mp. OR ((before OR during) ADJ3 (operative\* OR operation\* OR surger\*)).mp. OR (pre and postoperative OR prior to surgery).mp.) AND (exp Arthroplasty, Replacement, Hip/ OR exp Arthroplasty, Replacement, Knee/ OR ((total hip OR hip total OR total knee OR knee total) ADJ4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)).mp.) AND (exp Pain, Postoperative/ OR ((after surgery OR postsurgical OR post-surg\* OR post surg\* OR postoperative OR post-operative OR post operative) ADJ3 pain).ti,ab,kf.)) NOT ((acute ADJ3 pain).ti,ab,kf.)

#### Scopus

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 4,027

#### Full Search Strategy:

((((TITLE-ABS-KEY(preoperative\* OR perioperative OR intraoperative\* OR peroperative\*)) OR (TITLE-ABS-KEY((pre W/3 (operative\* OR surgery OR surgical))) OR (TITLE-ABS-KEY(before OR during) W/3 (operative\* OR operation\* OR surger\*))) OR (TITLE-ABS-KEY("pre and postoperative" OR "prior to surgery")) AND ((TITLE-ABS-KEY(("total hip" OR "hip total" OR "total knee" OR "knee total") W/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)))) AND ((TITLE-ABS-KEY(("after surgery" OR postsurgical OR "post-surg\*" OR "post surg\*" OR postoperative OR "post-operative" OR "post operative") W/3 pain)))) AND NOT ((TITLE-ABS-KEY(acute W/3 pain)))

#### The Cochrane Library

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results

- CENTRAL 1203
- CDSR 3

#### Full Search Strategy:

(([mh "Preoperative Period"] or [mh "Preoperative Care"] OR preoperative\*:ti,ab,kw OR [mh "Perioperative Period"] OR [mh "Perioperative Care"] OR perioperative:ti,ab,kw OR [mh "Intraoperative Care"] OR [mh "Intraoperative Period"] OR

(intraoperative\* OR peroperative\*):ti,ab,kw OR (pre NEAR/3 (operative\* OR surgery OR surgical)):ti,ab,kw OR ((before OR during) NEAR/3 (operative\* OR operation\* OR surger\*)):ti,ab,kw OR (“pre and postoperative” OR “prior to surgery”):ti,ab,kw) AND ([mh “Arthroplasty, Replacement, Hip”] OR [mh “Arthroplasty, Replacement, Knee”] OR ((“total hip” OR “hip total” OR “total knee” OR “knee total”) NEAR/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)):ti,ab,kw) AND ([mh “Pain, Postoperative”] OR ((“after surgery” OR postsurgical OR “post surg\*” OR postoperative OR “post operative”) NEAR/3 pain):ti,ab,kw)) NOT ((acute NEAR/3 pain):ti,ab,kw)

#### CINAHLPlus

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 946

#### Full Search Strategy:

((MH "Preoperative Period+") OR (MH "Preoperative Care+") OR preoperative\* OR (MH "Perioperative Care+") OR (MH "Intraoperative Period") OR (MH "Intraoperative Care+") OR (intraoperative\* OR peroperative\*) OR (pre N3 (operative\* OR surgery OR surgical)) OR ((before OR during) N3 (operative\* OR operation\* OR surger\*)) OR (“pre and postoperative” OR “prior to surgery”))

AND

((MH "Arthroplasty, Replacement, Hip") OR (MH "Arthroplasty, Replacement, Knee+") OR ((“total hip” OR “hip total” OR “total knee” OR “knee total”) N4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)))

AND

((MH "Postoperative Pain") OR ((“after surgery” OR postsurgical OR “post-surg\*” OR “post surg\*” OR postoperative OR “post-operative” OR “post operative”) N3 pain))

NOT

(TI (acute N3 pain) OR AB (acute N3 pain))

#### APA PsycINFO

Date Searched: 7/8/2021

Applied Database Supplied Limits: none

Number of Results: 65

#### Full Search Strategy:



(preoperative\* OR perioperative OR (intraoperative\* OR peroperative\*) OR (pre N3 (operative\* OR surgery OR surgical)) OR ((before OR during) N3 (operative\* OR operation\* OR surger\*)) OR (“pre and postoperative” OR “prior to surgery”)) AND  
 (((“total hip” OR “hip total” OR “total knee” OR “knee total”) N4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*))) AND  
 (((“after surgery” OR postsurgical OR “post-surg\*” OR “post surg\*” OR postoperative OR “post-operative” OR “post operative”) N3 pain)) NOT  
 (TI (acute N3 pain) OR AB (acute N3 pain))

ClinicalTrials.gov

Date Searched: 7/9/2021

Number of Results: 81

Full Search Strategy:

((preoperative\* OR perioperative OR intraoperative\* OR peroperative\*) AND (“total knee” OR “total hip”) AND “postoperative pain”) NOT (acute pain)

### **Appendix 1C: Full Keyword Search Protocol dated February 6, 2022**

AG searched the literature for records including the concepts of pre-operative, perioperative, total hip arthroplasty (THA), knee arthroplasty (TKA) and postsurgical pain and removing records with the concept ‘acute pain’ to broaden the original systematic review search completed 9/17/2018. AG created search strategies using a combination of keywords and controlled vocabulary in Embase.com 1947- , Ovid Medline 1946- , Scopus 1823- , Cochrane Central Register of Controlled Trials (CENTRAL), Cochrane Database of Systematic Reviews (CDSR), Cumulative Index of Nursing and Allied Health Literature (CINAHL Plus) 1937- , APA PsycINFO 1800 -, and Clinicaltrials.gov 1997- . All search strategies were completed February 6, 2022, with no added limits and a total of 10,851 results were found. 5,403 duplicate records were deleted after using the de-duplication processes described in “De-duplication of database search results for systematic reviews in EndNote,” (Bramer, Giustini, de Jonge, Holland, & Bekhuis, 2016) resulting in a total of 5,448 unique citations. This set of results were de-duplicated against the original systematic review search

completed September 17, 2018 (*Appendix 1A*) which included 249 results to compile the 5,199 results included in the project library. Fully reproducible search strategies for each database can be found in the appendix.

Bramer, W. M., Giustini, D., de Jonge, G. B., Holland, L., & Bekhuis, T. (2016). De-duplication of database search results for systematic reviews in EndNote. *Journal of the Medical Library Association: JMLA*, 104(3), 240.

## Full Search Strategies

### Embase

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 2,511

### Full Search Strategy:

((('preoperative period'/exp OR 'preoperative care'/exp OR 'preoperative treatment'/exp OR preoperative\*:ti,ab,kw OR 'perioperative period'/exp OR perioperative:ti,ab,kw OR 'intraoperative period'/exp OR 'peroperative care'/exp OR (intraoperative\* OR peroperative\*):ti,ab,kw OR (pre NEAR/3 (operative\* OR surgery OR surgical)):ti,ab,kw OR ((before OR during) NEAR/3 (operative\* OR operation\* OR surger\*)):ti,ab,kw OR ('pre and postoperative' OR 'prior to surgery'):ti,ab,kw) AND ('total hip prosthesis'/exp OR 'total hip replacement'/exp OR 'total knee arthroplasty'/exp OR (('total hip' OR 'hip total' OR 'total knee' OR 'knee total') NEAR/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)):ti,ab,kw) AND ('postoperative pain'/exp OR 'persistent postsurgical pain'/exp OR 'chronic postsurgical pain'/exp OR (('after surgery' OR postsurgical OR 'post-surg\*' OR 'post surg\*' OR postoperative OR 'post-operative' OR 'post operative') NEAR/3 pain):ti,ab,kw)) NOT ((acute NEAR/3 pain):ti,ab,kw)

### Ovid Medline

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 2,019

### Full Search Strategy:

((exp Preoperative Period/ or exp Preoperative Care/ OR preoperative\*.mp. OR exp Perioperative Period/ OR exp Perioperative Care/ OR perioperative.mp. OR exp Intraoperative Care/ or exp Intraoperative Period/ OR (intraoperative\* OR peroperative\*).mp. OR (pre

ADJ3 (operative\* OR surgery OR surgical)).mp. OR ((before OR during) ADJ3 (operative\* OR operation\* OR surger\*)).mp. OR (pre and postoperative OR prior to surgery).mp.) AND (exp Arthroplasty, Replacement, Hip/ OR exp Arthroplasty, Replacement, Knee/ OR ((total hip OR hip total OR total knee OR knee total) ADJ4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)).mp.) AND (exp Pain, Postoperative/ OR ((after surgery OR postsurgical OR post-surg\* OR post surg\* OR postoperative OR post-operative OR post operative) ADJ3 pain).ti,ab,kf.)) NOT ((acute ADJ3 pain).ti,ab,kf.)

#### Scopus

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 4,027

#### Full Search Strategy:

((TITLE-ABS-KEY(preoperative\* OR perioperative OR intraoperative\* OR peroperative\*)) OR (TITLE-ABS-KEY((pre W/3 (operative\* OR surgery OR surgical))) OR (TITLE-ABS-KEY(before OR during) W/3 (operative\* OR operation\* OR surger\*))) OR (TITLE-ABS-KEY("pre and postoperative" OR "prior to surgery"))) AND ((TITLE-ABS-KEY(("total hip" OR "hip total" OR "total knee" OR "knee total") W/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*))) AND ((TITLE-ABS-KEY(("after surgery" OR postsurgical OR "post-surg\*" OR "post surg\*" OR postoperative OR "post-operative" OR "post operative") W/3 pain))) AND NOT ((TITLE-ABS-KEY(acute W/3 pain)))

#### The Cochrane Library

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results

- CENTRAL 1203
- CDSR 3

#### Full Search Strategy:

(([mh "Preoperative Period"] or [mh "Preoperative Care"] OR preoperative\*:ti,ab,kw OR [mh "Perioperative Period"] OR [mh "Perioperative Care"] OR perioperative:ti,ab,kw OR [mh "Intraoperative Care"] OR [mh "Intraoperative Period"] OR (intraoperative\* OR peroperative\*):ti,ab,kw OR (pre NEAR/3 (operative\* OR surgery OR surgical)):ti,ab,kw OR ((before OR during) NEAR/3 (operative\* OR operation\* OR surger\*)):ti,ab,kw OR ("pre and postoperative" OR "prior to surgery"):ti,ab,kw) AND ([mh

“Arthroplasty, Replacement, Hip”] OR [mh “Arthroplasty, Replacement, Knee”] OR ((“total hip” OR “hip total” OR “total knee” OR “knee total”) NEAR/4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)):ti,ab,kw) AND ([mh “Pain, Postoperative”] OR ((“after surgery” OR postsurgical OR “post surg\*” OR postoperative OR “post operative”) NEAR/3 pain):ti,ab,kw)) NOT ((acute NEAR/3 pain):ti,ab,kw)

#### CINAHLPlus

Date Searched: 7/9/2021

Applied Database Supplied Limits: none

Number of Results: 946

#### Full Search Strategy:

((MH "Preoperative Period+") OR (MH "Preoperative Care+") OR preoperative\* OR (MH "Perioperative Care+") OR (MH "Intraoperative Period") OR (MH "Intraoperative Care+") OR (intraoperative\* OR peroperative\*) OR (pre N3 (operative\* OR surgery OR surgical)) OR ((before OR during) N3 (operative\* OR operation\* OR surger\*)) OR (“pre and postoperative” OR “prior to surgery”))

AND

((MH "Arthroplasty, Replacement, Hip") OR (MH "Arthroplasty, Replacement, Knee+") OR ((“total hip” OR “hip total” OR “total knee” OR “knee total”) N4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)))

AND

((MH "Postoperative Pain") OR ((“after surgery” OR postsurgical OR “post-surg\*” OR “post surg\*” OR postoperative OR “post-operative” OR “post operative”) N3 pain))

NOT

(TI (acute N3 pain) OR AB (acute N3 pain))

#### APA PsycINFO

Date Searched: 7/8/2021

Applied Database Supplied Limits: none

Number of Results: 61

#### Full Search Strategy:

(preoperative\* OR perioperative OR (intraoperative\* OR peroperative\*) OR (pre N3 (operative\* OR surgery OR surgical)) OR ((before OR during) N3 (operative\* OR operation\* OR surger\*)) OR (“pre and postoperative” OR “prior to surgery”))  
AND  
(((“total hip” OR “hip total” OR “total knee” OR “knee total”) N4 (endoprosthesis OR prosthesis OR system\* OR Arthroplast\* OR replacement\*)))  
AND  
(((“after surgery” OR postsurgical OR “post-surg\*” OR “post surg\*” OR postoperative OR “post-operative” OR “post operative”) N3 pain))  
NOT  
(TI (acute N3 pain) OR AB (acute N3 pain))

ClinicalTrials.gov

Date Searched: 7/9/2021

Number of Results: 81

Full Search Strategy:

((preoperative\* OR perioperative OR intraoperative\* OR peroperative\*) AND (“total knee” OR “total hip”) AND “postoperative pain”) NOT (acute pain)

## Appendix 2. Risk of Bias (ROB) Assessment Tool and ROB Assessment

The sample population adequately represents the population of interest?	Yes	No	Unclear
Is the population of interest adequately described for key characteristics (age, gender, reason for surgery)?			
Sampling frame and recruitment adequate (sample data include all patients undergoing the surgery in the reported period)?			
Inclusion and Exclusion criteria for the study adequately described?			
Based on the answers to the above, the sample adequately represents the population of interest?	Yes (if all 3 are met) Partly (if 1-2 or 3 are met, 1 or 0 unclear) No (If none is met) Unclear/Unknown (>1 out of 3 answers unclear)		
The data represents the sample?	Yes	No	Unclear
Dropouts: % of patients completing the study and reasons to loss of follow up are provided (flowchart or similar)?			
Follow-up rate adequate (> 75% responders providing outcome data for the first follow-up)?			
There are no important differences between key characteristics/outcomes in those participants who completed vs dropouts?			
Based on the answers above, the data represents the sample?	Yes (if all 3 are met) Partly (if 1-2 or 3 are met, 1 or 0 unclear) No (If none is met) Unclear/Unknown (>1 out of 3 answers unclear)		
The outcome of interest (chronic pain) is adequately measured to limit potential bias?	Yes	No	Unclear
Clear definition of chronic pain is provided?			
The outcome measure and method used are adequate to limit misclassification bias?			
PPSP outcomes data reported completely? (Compared to what is set in the methodology)?			
Based on the answers above, the outcome of interest (chronic pain) is adequately measured to limit potential bias?	Yes (if all 3 are met) Partly (if 1-2 or 3 are met, 1 or 0 unclear) No (If none is met)		

	Unclear/Unknown (>1 out of 3 answers unclear)		
Other potential sources of bias?			
Other potential serious sources of bias (i.e., selective outcome reporting, use of non-validated scales, lack or inappropriateness of sample size calculation, exclusion of important patient subgroups)			

### Appendix 3: Protocol for Data Extraction

If the study reported PPSP (outcome) at various time points, the data for the time interval closest to 6 months after surgery was selected

If the study had various time frames for evaluating acute post-operative pain (risk factor), the time closest to surgery was chosen

If pain was evaluated in multiple scenarios (e.g., during rest, during coughing, during movement) the values for pain at rest were selected

If studies did not provide a binary outcome of PPSP, and instead provided NRS/VAS score categories or severity categories (e.g., <3, 4-7, 8-10; or mild, moderate, severe), then values pain score categories  $\leq 3$  (or mild pain) were assigned as *no PPSP*, and pain score categories in the range of 4-10 (or moderate-severe) were assigned as PPSP.

For the purposes of anesthetic techniques, both spinal and epidural anesthesia were grouped under the neuraxial anesthesia category

For preoperative pain, both hip joint pain and knee joint pain were grouped under preoperative pain at surgical site (vs pain elsewhere)

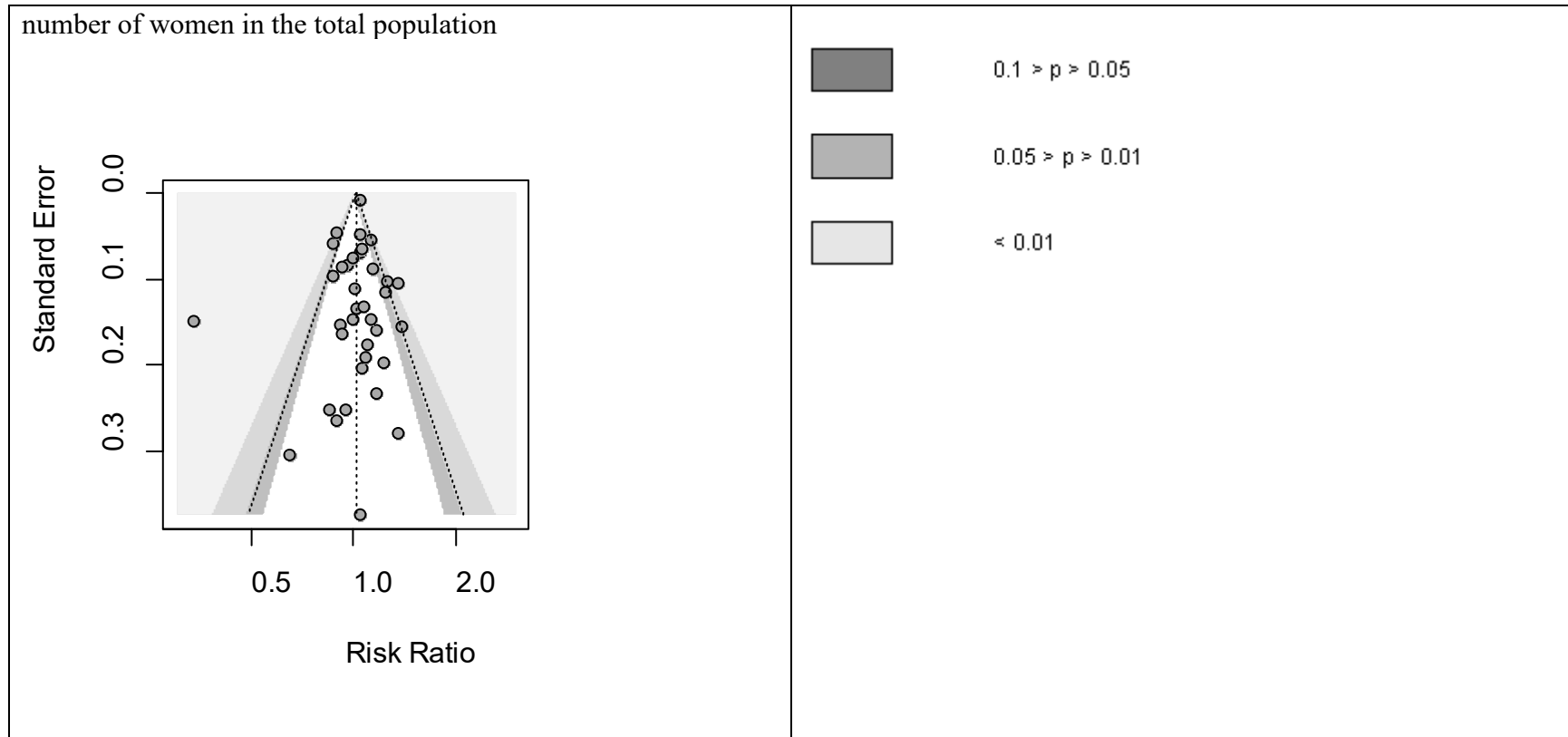
For employment status, the retired and unemployed categories were group together under unemployed category

For studies reporting literacy as a risk factor for PPSP, any amount for formal education starting at 1<sup>st</sup> grade – college was grouped under the literate category and only people with no formal education were grouped under illiterate.



#### Appendix 4. Publication bias (i.e., small studies vs big studies) is shown as funnel plots.

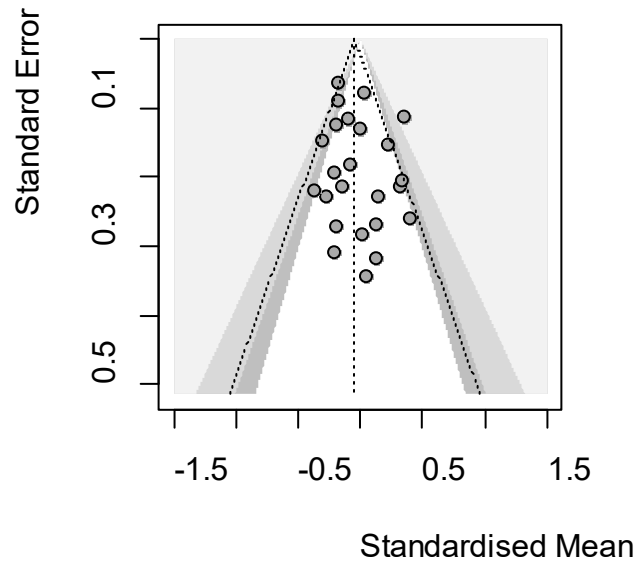
For categorical variables



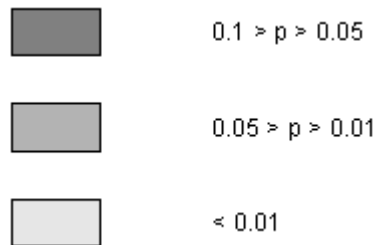
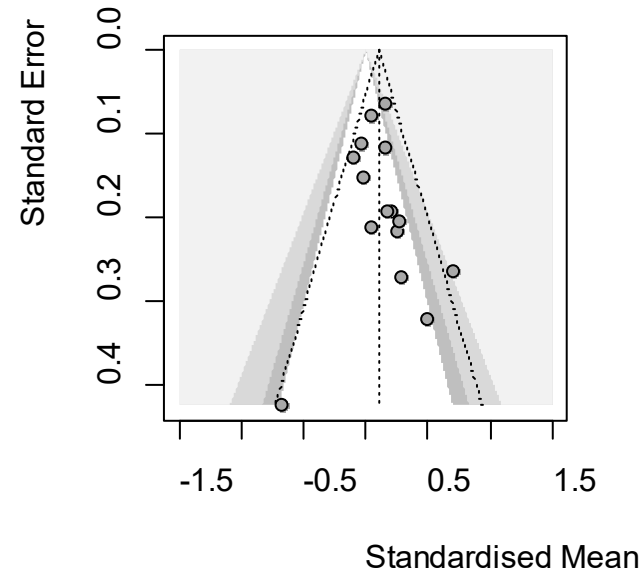
The vertical line in the middle of the funnel shows the average effect size in random-effects estimate. The plot also includes the idealized funnel-shape that we expect our studies to follow in dotted lines. X axis represents the effect size of each study (expressed as the risk ratio of all categorical variables considered in the meta-analysis), Y axis represents the standard error (from large to small).

For continuous variables

Age (in years)

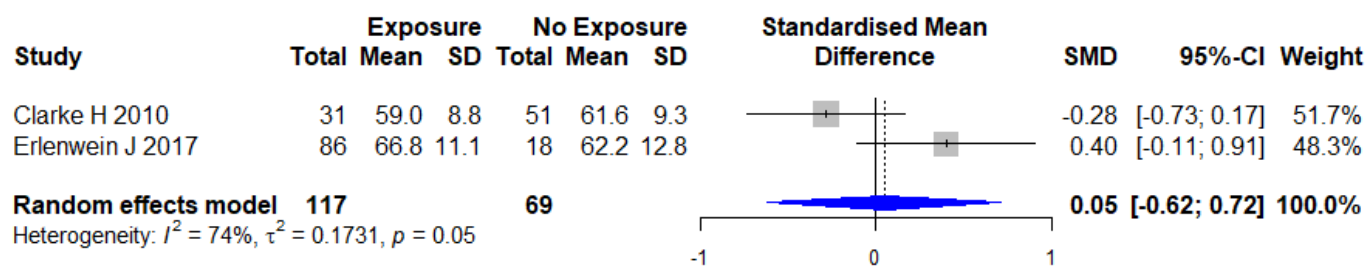


BMI (Kg/m2)



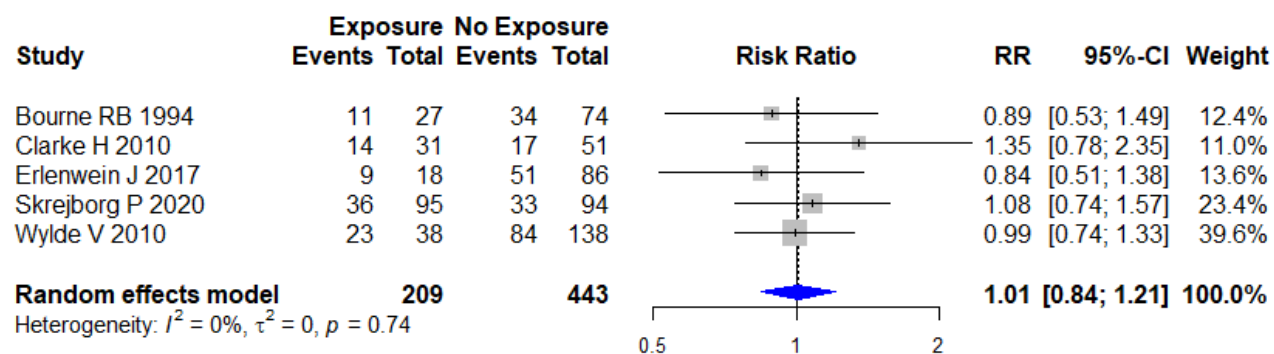
The vertical line in the middle of the funnel shows the average effect size in random-effects estimate. The plot also includes the idealized funnel-shape that we expect our studies to follow in dotted lines. X axis represents the effect size of each study (expressed as the standardized mean difference of all continuous variables considered in the meta-analysis), Y axis represents the standard error (from large to small)

# **Appendix 5. Forest plot for association between age and PPSP in Total Hip joint replacement surgeries.**



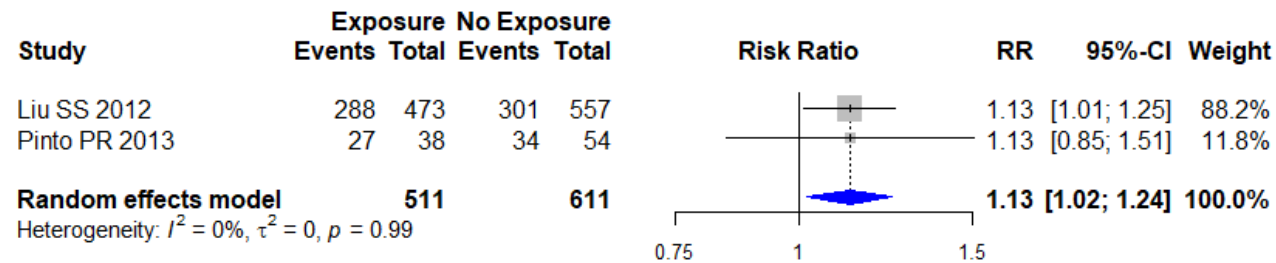
\* Higher/positive SMD represents the difference in Age (in years) between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups

**Appendix 6. Forest plot for association between proportion of women in study population and PPSP in Total Hip joint replacement surgeries.**



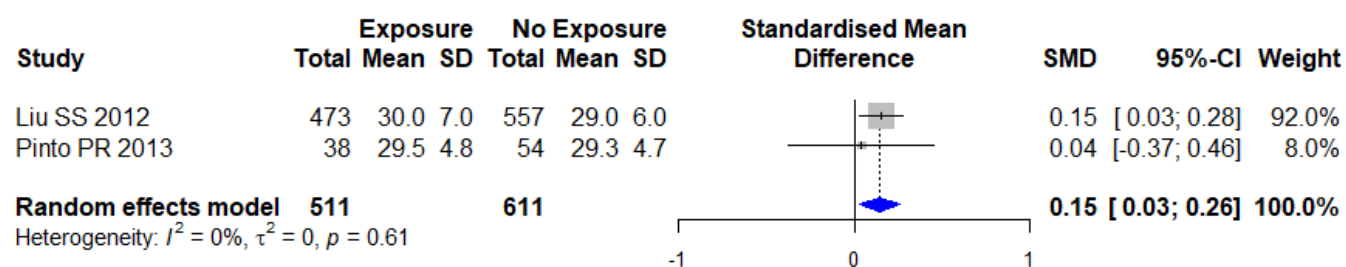
\* RR>1 represents higher, RR<1 represents lesser, while RR=1 represents similar occurrence of PPSP in women, the horizontal box and whisker plots are the group RRs  $\pm$  95% confidence intervals, the blue diamond is the combined RR of groups

**Appendix 7. Forest plot for association between proportion of women in study population and PPSP in Total knee and hip joint replacement surgeries taken together.**



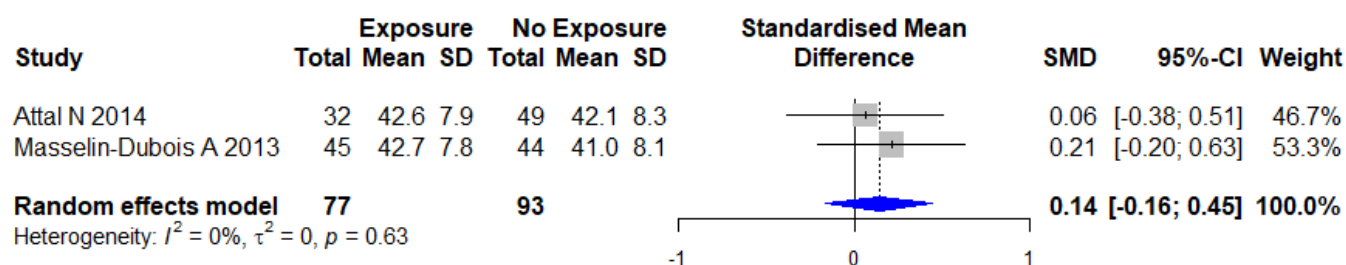
\* RR>1 represents higher, RR<1 represents lesser, while RR=1 represents similar occurrence of PPSP in women, the horizontal box and whisker plots are the group RRs  $\pm$  95% confidence intervals, the blue diamond is the combined RR of groups

**Appendix 8. Forest plot for association between Body mass index (BMI) and PPSP in Total Knee and Hip joint replacement surgeries analyzed together.**



\* Higher/positive SMD represents the difference in BMI units between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups

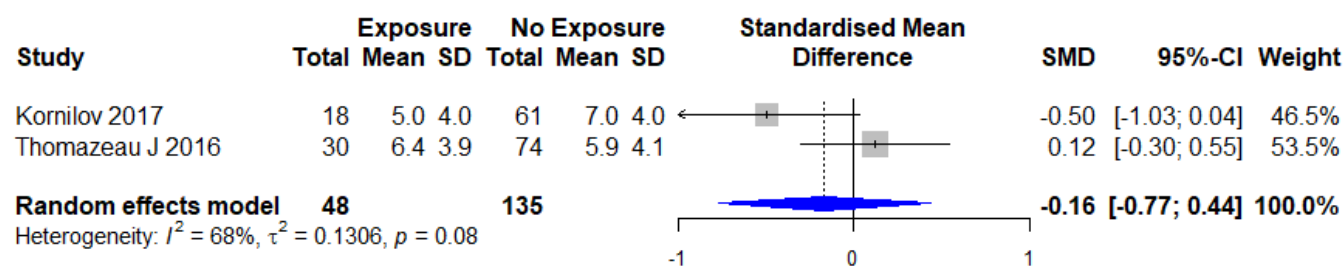
**Appendix 9. Forest plot for association between Trait anxiety and PPSP in Total Knee joint replacement surgeries analyzed together.**



\* Higher/positive SMD represents the difference in Trait anxiety units between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups.

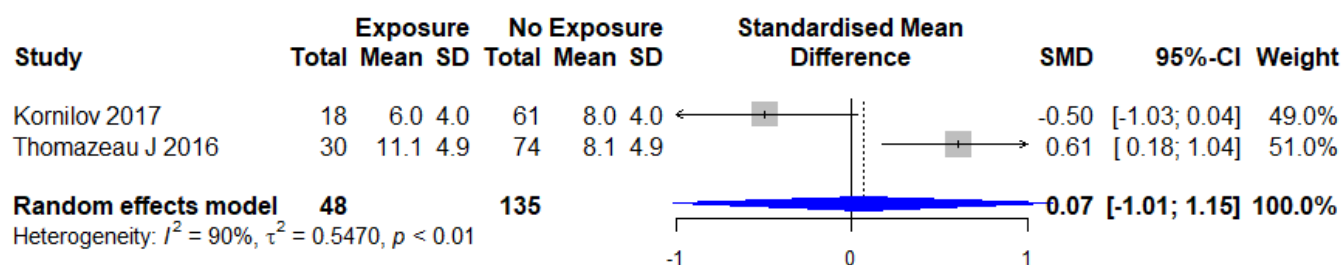


**Appendix 10. Forest plot for association between Depression scored in Hospital Anxiety and Depression Scale (HADS) and PPSP in Total Knee joint replacement surgeries analyzed together.**



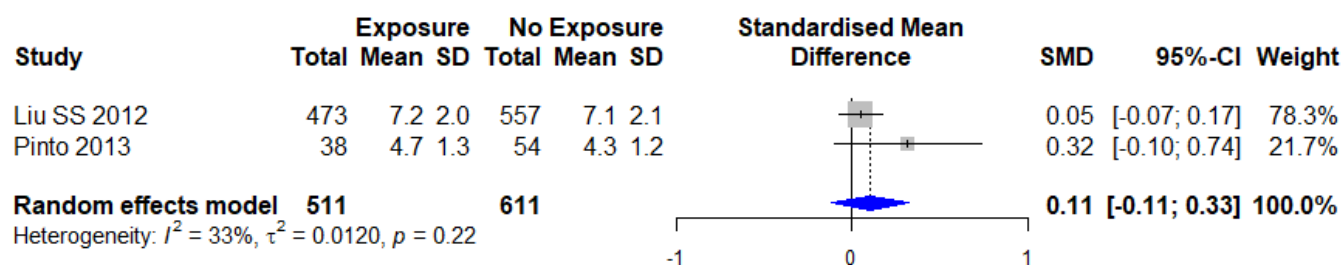
\* Higher/positive SMD represents the difference in Depression scored in Hospital Anxiety and Depression Scale (HADS) units between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups.

**Appendix 11. Forest plot for association between Anxiety scored in Hospital Anxiety and Depression Scale (HADS) and PPSP in Total Knee joint replacement surgeries analyzed together.**



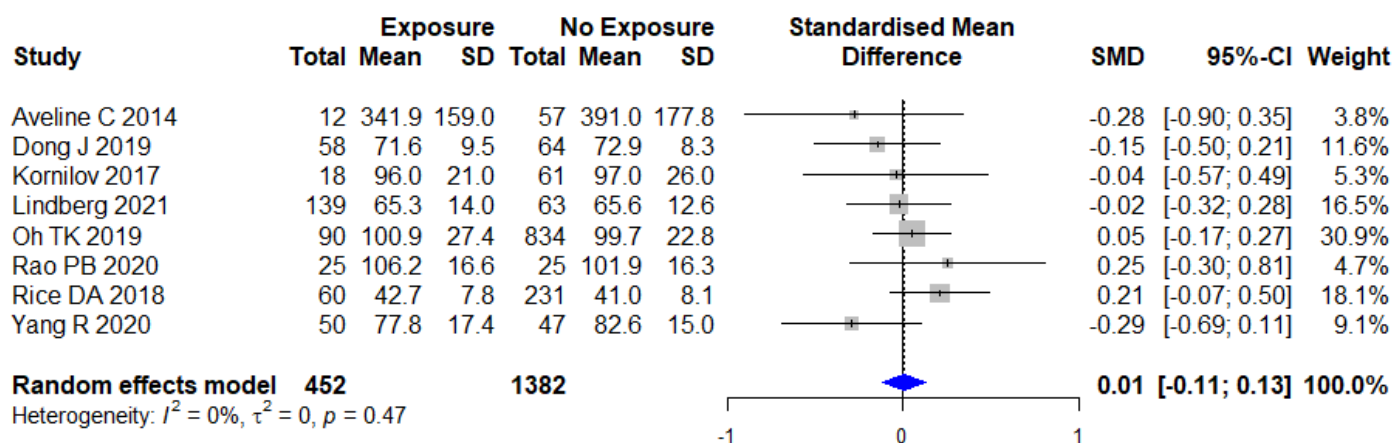
\* Higher/positive SMD represents the difference in Anxiety scored in Hospital Anxiety and Depression Scale (HADS) units between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups.

**Appendix 12. Forest plot for association between preoperative NRS pain score (0-10) and PPSP in Total Knee and Hip joint replacement surgeries analyzed together.**



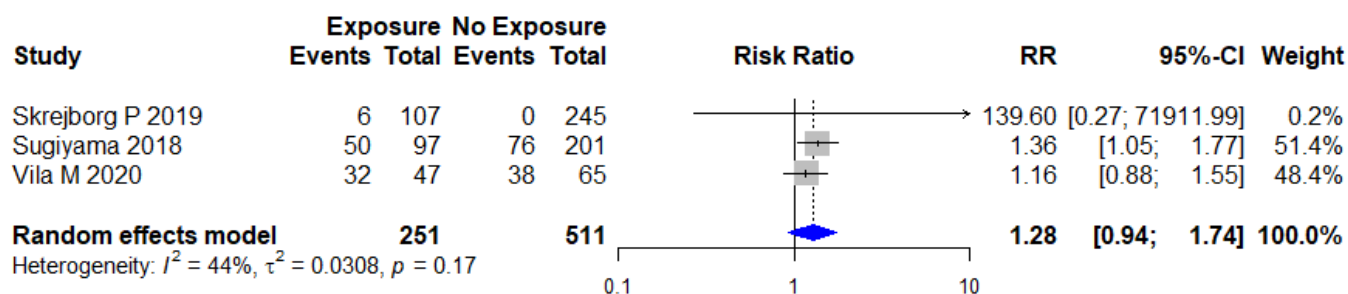
\* Higher/positive SMD represents the difference in preoperative NRS pain score (0-10) units between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups.

**Appendix 13. Forest plot for association between duration of surgery (mins) and PPSP in Total Knee joint replacement surgeries analyzed together.**



\* Higher/positive SMD represents the difference in duration of surgery (mins) between patients who developed PPSP versus who did not, the horizontal box and whisker plots are the group SMDs  $\pm$  95% confidence intervals, the blue diamond is the combined SMD of groups.

**Appendix 14. Forest plot for association between proportion of preexisting pain at other sites of the body in study population and PPSP in Total Knee joint replacement surgeries.**



\* RR>1 represents higher, RR<1 represents lesser, while RR=1 represents similar occurrence of PPSP in population with preexisting pain at other sites of the body, the horizontal box and whisker plots are the group RRs  $\pm$  95% confidence intervals, the blue diamond is the combined RR of groups