

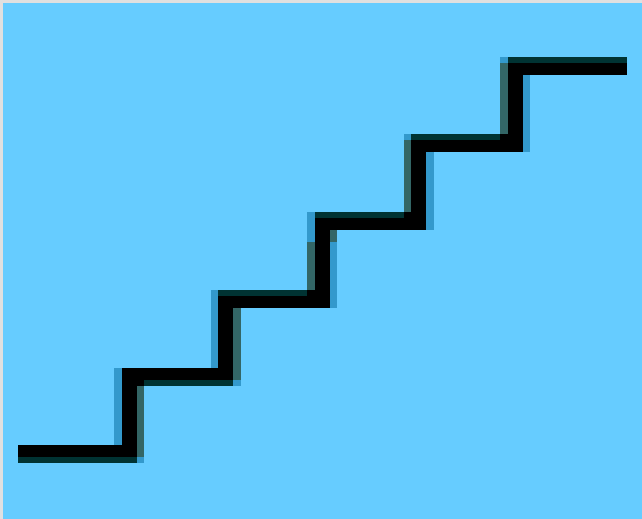


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# An Introduction to Writing a Systematic Review of the Literature for Nursing Practice: A Step by Step Practical Workshop



Dr Josette Bettany-Saltikov  
& Dr Katherine Sanderson



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# Introduction

## Workshop Aims:

- To debate what constitutes a systematic review
- To provide an overview of the process of planning, undertaking and writing a systematic review



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# Learning Outcomes

By the end of the workshop you will be able to:

- Discuss the meaning of a 'systematic' review & explain the difference between a narrative and systematic review
- Explain the principles of writing an introduction / background for a systematic review
- Develop an answerable question for a systematic review and write the objectives
- Write the systematic review selection criteria



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# Learning Outcomes

- Summarise and explain the methodology of a systematic review including the structured search selection process, assessment of quality, data extraction and data analysis
- Explain the importance of writing a peer-reviewed protocol
- Summarise the key principles in writing up the results and discussion section of a systematic review



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# Systematic or Narrative Review: What`s the difference?

- Identify what you think distinguishes a systematic review from a narrative review
- What do you think are the advantages/ disadvantages of a systematic review?



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# Questions?



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# Overview of the systematic review process

Research question and Title

Background

Objectives

Criteria for considering studies in the review

Search strategy for including studies in the review

Methods

Data Synthesis (results)

Discussion

# Research Question



- Absolutely Crucial
- Needs to contain all elements of PICO, PEO, PIO
- **P**-Types of participants
- **I**-Types of interventions
- **C**-Types of comparatives groups
- **O**-Types of Outcome measures
- Types of study (designs)
- **OR**
- **P**- Participants
- **E**- Exposure (or I issue)
- **O**-Outcomes
- Types of study designs
- Before FINALISING your question do make sure that you have checked that there are enough primary research papers on the topic





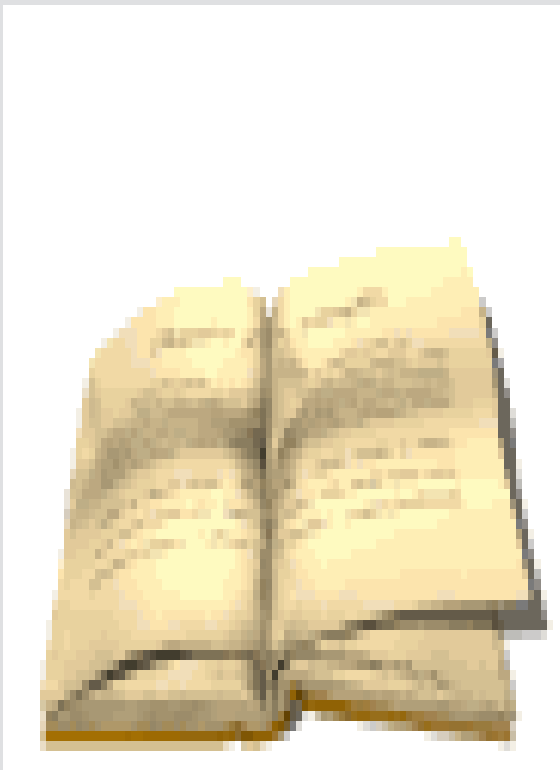
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# Title

- Title should be indicative of the content
- Needs to be a statement not a question
- Make use of key words
- Should reflect research question
- PICO/ PEO/PIO
- Research question and title should have the same or similar key words





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## Before you start

- Need to make sure no other systematic review identical to yours has recently been conducted
- Need to make sure there is a need for review
- Importance of writing a protocol (or plan)
- Importance of a critical colleague panel or supervisor



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# Background



Needs to highlight importance of problem

How do we do this?

Operational definitions

Cite research papers with stats of incidence

Describe signs and symptoms of illness/problem

Patients/Clients?

Course of disease/pathophysiology



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# Background

Intervention-how is disease usually managed?

What are general outcome measures?

Effects on patients life?

Once you have discussed the problem it`s incidence, effect on patient`s life and management, *we need to show that there is a gap in the reviews that have so far been done*

This is very imp as this shows that there is a need for further reviews *you need to show (with refs), how even though all this research (reviews) have been done in this area no-one has yet done what YOU are going to do.*



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# Example

## Braces for Idiopathic scoliosis in adolescents (Protocol)

Negrini S, Minozzi S, Bettany-Salnikov J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T,  
Maruyama T, Romano M, Vasiliadis ES



This is a reprint of a Cochrane protocol, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2007, Issue 4

<http://www.thecochranelibrary.com>



Braces for Idiopathic scoliosis in adolescents (Protocol)  
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# Objectives

- This needs to be stated clearly and concisely
- eg: To examine the effectiveness of Nursing interventions in patients with RA
- Do you see any problems with this?



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# Example

## Braces for idiopathic scoliosis in adolescents (Protocol)

Negrini S, Minozzi S, Bettany-Salnikow J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Vasiladis ES



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<http://www.thecochranelibrary.com>



Braces for idiopathic scoliosis in adolescents (Protocol)  
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# Criteria for including studies in the review

Should follow from research question as discussed previously:  
PICO or PEO (PIO)

## Types of participants that will be included



- You need to describe your population (patient group)
- diagnosis
- severity of disease
- age range
- others
- who will be excluded?





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# Types of Intervention/s

- Define intervention you will be using
- If using more than one intervention-need to say what criteria will be used to include studies
- Ideally all papers should be selected that meet selection criteria (as assessed by more than 1 person)
- need to describe which types of intervention will be excluded.





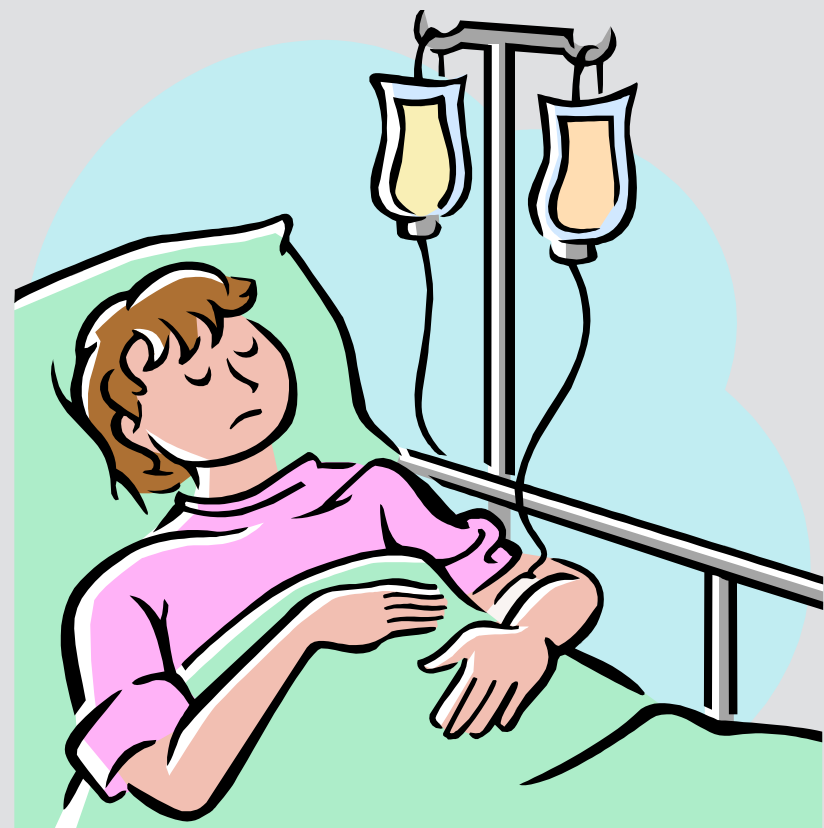
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# Types of Exposure or Issue

- Nurses/ family Experiences of Witness resuscitation
- Experiences of Domestic violence
- Experiences of Living with a particular condition eg MS
- Patient/Nurses experiences of a critical care environment?





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# Types of outcome measures



- **Need to state what type of outcome measures will be included:**
- example: **body structures and functions**- weight, pain, fatigue
- **activities**- like functional abilities- dexterity
- **participation:** phys independence, QOL
- **Process measures**- compliance, rom, strength
- Others-eg rates of domestic violence
- If qualitative review- eg- **experiences** of subjects



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# Types of Studies



- Need to state which type of study designs you will be including:
- e.g. RCT.
- CCT
  
- or other designs (OD) such as patient series, cohort or maybe only qualitative studies



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# Example

## Braces for idiopathic scoliosis in adolescents (Protocol)

Negrini S, Minozzi S, Bettany-Salnikow J, Zaina F, Chockalingam N, Grivas TB, Kotwicki T, Maruyama T, Romano M, Vasiliadis ES



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Braces for idiopathic scoliosis in adolescents (Protocol)  
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**TABLE 1: Criteria for considering studies in the review based on the PEO structure.****“Family presence during Resuscitation and / or Invasive Procedures: The lived experience of patients, family members and health care professionals”.**

	<b>INCLUSION CRITERIA</b>	<b>EXCLUSION CRITERIA</b>
<b>POPULATION 1.</b> <i>Patient:</i>	Adult patients >18 years undergoing cardiopulmonary resuscitation / invasive procedure.	No children <18 years, patients undergoing chemotherapy, patients suffering from chronic illness or who have a DNAR (do not attempt resuscitation). No lay person, onlooker, hospital porter, ward clerk.
<b>POPULATION 2.</b> <i>Family Member:</i>	Spouse, partner, close friend, carer or parent, sibling, son, daughter.	Bystander
<b>POPULATION 3.</b> <i>Health care professional:</i>	Named nurse, charge nurse, nurse practitioner, sister, consultant, specialist, doctor, priest or clergyman, surgeon, Physiotherapist, Social worker or occupational therapist.	Ward clerk, porters, house-keepers.
<b>EXPOSURE:</b> <i>Witness cardiopulmonary resuscitation after patient suffers a cardiac arrest:</i> <b>OR</b> <i>Invasive procedures performed whilst undergoing resuscitation or as a life saving measure.</i>	Secondary setting i.e. hospital Intensive care unit (ITU), Paediatric Intensive Care Unit (PICU), Maternity Departments, Coronary care unit (CCU), High dependency unit (HDU), Accident and Emergency departments. Patients home, ambulance or community setting.	Hospice setting Rehabilitation establishment.
<b>OUTCOME:</b> <i>Psychological issues, experience, perception, views, feelings.</i>	Experience, perception, views from all members of the population group toward resuscitation / invasive procedures.	PHYSICAL EFFECTS: Insomnia, tachycardia, guilt, desperation.
<b>TYPES OF STUDY:</b> <i>Qualitative:</i>	Phenomenological, grounded theory, descriptive, ethnography.	Letters Commentaries Reviews Discussion papers (To be obtained for background).



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# Search Strategy



- The aim is to try and find everything out there to answer your specific question
- Needs to specify key words and which databases and other sources will be selected
- Based on components of review question



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# Search strategy

1. Need to write down **specific key words** from research question
  2. Need to say **which databases with dates that they will search** (re: you need to find all the work in the area that you can)
  3. Need to **check the refs of all the papers** you find to make sure you have not missed any relevant work
  4. **Grey Literature**: conference presentations, unpublished work
  5. **Hand searching**
  6. **Personal communications**: Authors of papers (if possible)
- \*Really good SOURCE for finding studies]  
[Centre for Reviews and dissemination](#)





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# Search Strategy



- Examples of Possible sources of literature:
  - electronic databases, medline, embase, psychlit, cinahl
  - specialist trial registers: cochrane
- Needs to be very detailed
- Written in format that can be easily duplicated



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# Example

**Research Question:** Family Presence during Resuscitation / Invasive Procedures: The lived experience of patients, family members and health care professionals.

Population1	Population2	Population3	Exposure	Outcome
Adult patient >18 years of age.	Family member	Healthcare professional	Resuscitation and/or Invasive procedure	Experience/s

Database searched: CINAHL

**Components of Research Question and Keywords**

<b>STRING 1:</b> <i>Population 1 Patient/ Problem</i>	<b>STRING 2:</b> <i>Population 2 Family member/ Problem</i>	<b>STRING 3:</b> <i>Population 3 Health care professional / Problem</i>	<b>STRING 4:</b> <i>Exposure/ Witness Resuscitation and/or Invasive Procedures</i>	<b>STRING 5:</b> <i>Outcome</i>
--	--	--	---	------------------------------------

<b>Boolean Operators</b>	<b>AND</b>	<b>AND</b>	<b>AND</b>	<b>AND</b>	<b>AND</b>
<b>OR</b>	Adult\$	Family\$	Nurse\$	Witness	Experience\$
<b>OR</b>	Patient	Family member	Charge nurse	Observe	'lived experience'
<b>OR</b>	Client	Relative	Emergency nurse	View	View
<b>OR</b>	Invalid	Spouse	Nurse practitioner	Onlooker	Perception
<b>OR</b>		Partner	Ward sister	'witness resuscitation'	Observation
<b>OR</b>		Close friend	Doctor	'cardiopulmonary resuscitation'	
<b>OR</b>		Sibling	Consultant	Resuscitation	
<b>OR</b>		Son	Junior doctor	Resus\$	
<b>OR</b>		Daughter	Specialist	CPR	
<b>OR</b>		Next of kin	Registrar	'invasive procedure'	
<b>OR</b>		Significant other	Priest		
<b>OR</b>			Clergyman		
<b>OR</b>			Physiotherapist		
<b>OR</b>			Occupational therapist		
<b>OR</b>			Health care professional		

# Search

## Strategy List

- Patient
- Client
- Invalid
- COMBINE 1 or 2 or 3 or 4**
- Family\$
- Family member
- RelaAdult\$
- tive
- Spouse
- Partner
- Close friend
- Sibling
- Son
- Daughter
- Next of kin
- Significant other
- COMBINE 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16**
- Nurse\$
- Charge nurse

- Emergency nurse
- Nurse practitioner
- Ward sister
- Doctor
- Consultant
- Junior doctor
- Specialist
- Registrar
- Priest
- Clergyman
- Physiotherapist
- Occupational Therapist
- Health care professional
- COMBINE 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 or 27 or 28 or 29 or 30 or 31 or 32**
- Witness
- Observe
- View
- Onlooker
- ‘witness resuscitation’
- ‘cardiopulmonary resuscitation’
- Resuscitation
- Resus\$
- CPR

- ‘invasive procedure’
- COMBINE 34 or 35 or 36 or 37 or 38 or 39 or 40 or 41 or 42 or 43**
- Experience\$
- ‘lived experience’
- View
- Perception
- Observation
- COMBINE 45 or 46 or 47 or 48 or 49**
- COMBINE 5 AND 17 AND 33 AND 44 AND 50**



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# Methods of Review

Need to give details of the following 3 separate stages

1. The process of selection for inclusion in review
2. How the assessment of methodological quality will be carried out
3. Data extraction strategy



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# Before you start

- A standardized form needs to be made for ALL steps
- This is imp to standardize assessments between one paper and another (i.e. improves inter and intra rater reliability)



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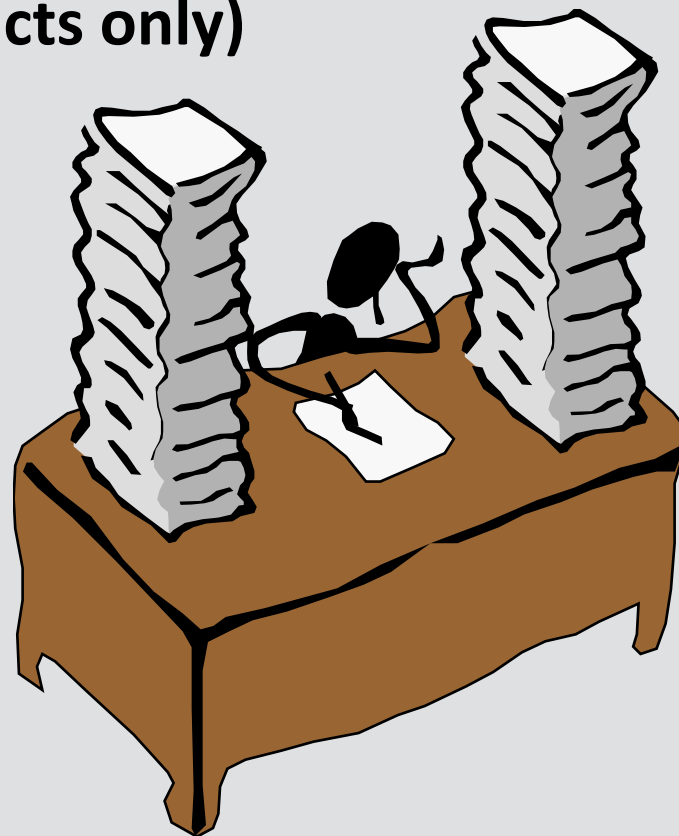
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# Stage 1-

## Selection of studies for inclusion in review- (Titles and abstracts only)

- At this point you have a large collection of abstracts, articles and papers from your review
- 1st step -this selection is based on titles and abstracts **ONLY considering the criteria of:**
  - **type of study,**
  - **Participants**
  - **Intervention,**
  - **Comparative groups**
  - **Outcome measures using the FORM**
  - Remember PICO



**TABLE 5. First selection of papers based on title and abstract only.**

<b>Abstract Number:</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
<b>POPULATION</b>												
Adult Patients Age >18 OR												
Family member OR												
Health care professionals												
<b>EXPOSURE</b>												
Witnessing cardiopulmonary resuscitation and / or invasive procedures												
<b>OUTCOME</b>												
Patient experience of exposure												
Family member experience of exposure												
Health care professionals experience of exposure												
<b>TYPE OF STUDY</b>												
Qualitative Research												
<b>*ACTION</b>												

**\*ACTION - RATIONALE:-      Y – YES: FITS CRITERIA**  
**N – NO: DOES NOT FIT CRITERIA**  
**U – UNSURE: READ PAPER**





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## Stage 1- Selection of studies for inclusion in review-



- 1st selection can result in ,  
exclusion,inclusion or no  
decision



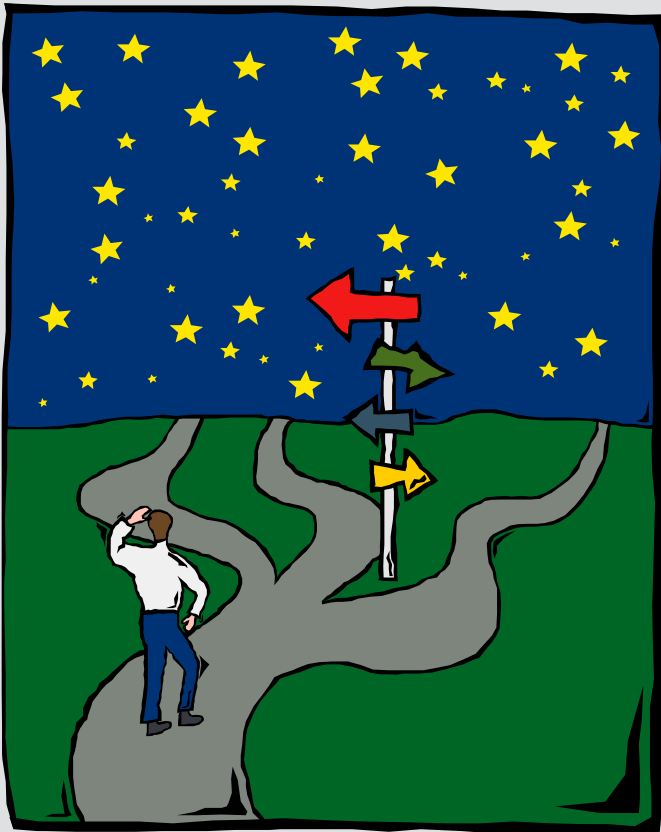
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## Stage 1-

# Step 2 Selection of studies for inclusion in review full papers



- done using full reports
- considering criteria above
- using standardized forms



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## Stage 2-Assessment of Methodological Quality

- Choose appropriate framework (related to study design eg RCT, CCT, Qualls)
- If you are only including one study design in your study- use 1 quality assessment tool
- 3 different designs require 3 different assessment tools



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# Frameworks

1. CASP
2. McMaster University Framework
3. SIGN-Scottish Intercollegiate guidelines network  
<http://www.sign.ac.uk/methodology>
4. Crombie- Surveys-other



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## Stage 3-Data extraction

- Think about what data you need to extract from your included studies to answer your question
- Pilot the draft data extraction form on a few papers





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Examples of study characteristics you could include-

## Use PICO or PEO or PIO

- **Population**
  - no of patients
  - Diagnosis
  - Severity of disease
- **Intervention/exposure/issue**
  - type of experimental treatment
  - features of interventions eg duration, freq, setting, no of drop-outs
- **[Comparative Group (if relevant)]**
- **Outcome**



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# Outcome and process measures (Outcomes)

- **measurable outcomes specified initially**
  - **Quantitative outcomes** eg strength, rom, temperature, no of bacteria
  - **Qualitative outcomes** measures- experiences of abuse, illness, deformity
- Can also include (depending on your study):
  - continuous variables\_means and SD
- And/or
- dichotomous variables\_eg yes/no

**5.3.TABLE 11. Sample of Data Extraction Form  
OUTCOMES:**

<b>Date of data extraction :</b>	19 <sup>th</sup> March, 2008
<b>Reviewer:</b>	Name of Reviewer
<b>Bibliographical details of study:</b>	Full reference of article including author, year and source.
<b>Purpose of study :</b>	This is outlined by the author of the article.
<b>Study Design :</b>	Type of Qualitative study utilised for purpose of the article.
<b>Population (Sample) :</b> Number – Age – Ethnicity –	This section outlines the description of the study sample, characteristics as identified.
<b>Exposure :</b>	Witnessed resuscitation and/or invasive procedures
<b>Outcomes:</b>	All outcomes of the population groups in question as below and measured in relation to the identified themes.

**PATIENTS EXPERIENCE OF RESUSCITATION AND / OR INVASIVE PROCEDURES**

Pg.	Col	Line	Data extracted	Sub-themes

**HEALTH CARE PROVIDERS EXPERIENCE OF RESUSCITATION AND / OR INVASIVE PROCEDURES**

Pg.	Col	Line	Data extracted	Sub-themes

**FAMILY MEMBERS' EXPERIENCE OF RESUSCITATION AND / OR INVASIVE PROCEDURES**

Pg.	Col	Line	Data extracted	Sub-themes



## DATA Extraction Form

### Details of Study 1:

**TITLE:** Randomised study  
(Authors: Carapetis et al)  
**SOURCE:** *Annals of the Royal Society of Medicine*

**Reviewer's Name:** Fiona E...

**Purpose of the study:** to assess the impact of catheterisation using sterile technique on the risk of urinary tract infection (UTI) in hospital outpatients.

**Study Design:** Randomised controlled trial

### POPULATION:

**Sample size:** 156 participants

**Criteria of diagnosis (Catheterisation):** without clinical signs or symptoms

**Any Secondary diagnosis:** None reported

**Inclusion / Exclusion Criteria:**  
Inclusion: All patients aged 16 years or over  
Exclusion: Patients with a urinary tract infection at the time of catheterisation

**Type of Catheterisation:** Single-lumen catheter

**Reason for catheterisation:** Hospital surgical ward

**Setting:** Hospital surgical ward

### INTERVENTION:

**Experimental Intervention/s:** Hand washing, non-sterile gloves, tap water meatal washing, KY jelly, Catheter held in plastic sheath.

**Duration of Intervention/s:** 10 minutes

**Adverse Effects:** None reported

**Control Treatment/s:** Hand scrubbing, Gown, Sterile gloves, Sterile pack, No-touch technique, Savlon meatal cleansing, Sterile drapes, Sterile lignocaine gel, insertion with forceps

**Drop-outs:** None Reported

### OUTCOMES:

#### CAUTI:

**Number of UTI's (in Experimental and Control groups):**

**Bacteriuria (Urine sample):** not specified

**Symptomatic UTI:** not specified

**Combined Results:** Experimental: 9  
Control: 7

### INTERVENTION:

**Experimental Intervention/s:** Hand washing, non-sterile gloves, tap water meatal washing, KY jelly, Catheter held in plastic sheath.

**Duration of Intervention/s:** 10 minutes

**Adverse Effects:** None reported

**Control Treatment/s:** Hand scrubbing, Gown, Sterile gloves, Sterile pack, No-touch technique, Savlon meatal cleansing, Sterile drapes, Sterile lignocaine gel, insertion with forceps

**Drop-outs:** None Reported

**Statistical significance:**  $P > 0.1$

**UTI Rate according to Gender:** UTI was present in 11.9% of females and in 8.3% of males  
( $P > 0.1$ )

1.3% of males



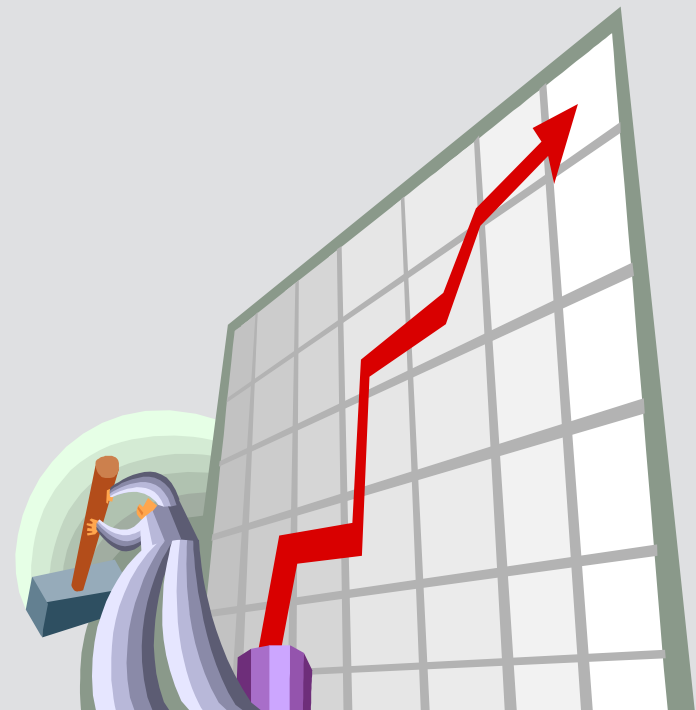
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# Results (Data Synthesis)

- In this section you need to say how you will synthesise your data
- **Quants**-tables and figures
- **Quals**- If your review is on a qualitative topic then you can present them under themes that answer your question.





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## Results (Data Synthesis):

This section could include the following

1. The Results of the search
2. The results of studies included based on titles and abstracts only
3. The results of studies included based on reading the whole paper





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## Results (Data Synthesis)

4. A PICO (or PEO) description of all the studies included in your review
5. A summary of the assessments of the methodological quality of each paper
6. A summary of the results of the data extracted from each paper



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# Section 1: The Results of the Search

You can use a number of different ways:

- Either in words
- Table



<b>Database or method (examples)</b>	<b>No of articles found from search</b>	<b>No of articles discarded due to irrelevant title</b>	<b>No of articles duplicated from another database</b>	<b>No of articles to review by title and abstract</b>
<b>Cinahl (1982-2004)</b>				
<b>Medline (1980-2004)</b>				
<b>Hand searched articles</b>				
<b>Grey Literature</b>				
<b>Reference lists Etc.....</b>				

<b>RESULTS OF ELETRONIC DATABASE SEARCH</b>					
<b>DATABASE</b>	<b>No of Articles Found from search</b>	<b>No of Articles Discarded (Irrelevant Title)</b>	<b>No of Articles Duplicated from other Databases</b>	<b>No of Articles to review by Title and Abstract</b>	
<b>Journals @ Ovid Full text</b>	<b>1363</b>	<b>1338</b>	<b>18</b>	<b>7</b>	
<b>Ovid MEDLINE(R) (1950 – Aug 2008)</b>	<b>63</b>	<b>43</b>	<b>3</b>	<b>17</b>	
<b>and Ovid MEDLINE(R) (In-Process &amp; Other...)</b>	<b>(Combined results of both Ovid MEDLINE Databases)</b>				
<b>CINAHL</b>	<b>20</b>	<b>6</b>	<b>14</b>	<b>0</b>	
<b>AMED</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	
<b>EMBASE</b>	<b>35</b>	<b>7</b>	<b>27</b>	<b>1</b>	
<b>EBM Reviews</b>	<b>34</b>	<b>12</b>	<b>20</b>	<b>2</b>	
<b>BNI</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	



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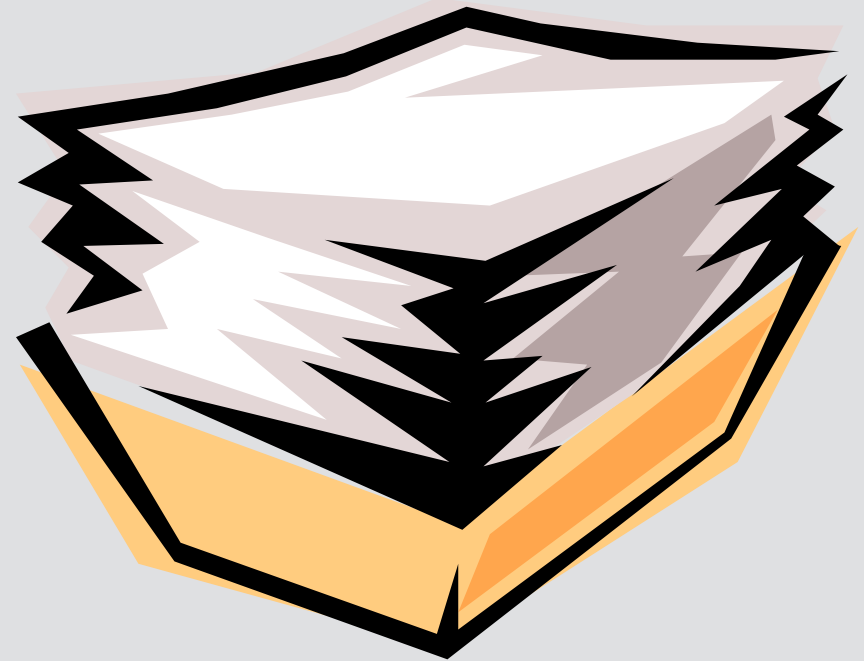
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## Section 2: Results of included studies based on titles and abstracts only

You can use a number of  
different ways:

- Either in words
- Table (made from your  
form)
- See handout





Study	•C1- Women >18	•C2 DV experience	•C3 Advocacy	•C4 Peer Group	•C5 Health Group GP	•C6 Qualitat ive	Action •Include •Exclude •Read full study
Addy (1996)							
Feder et al (2004)							
etc							
Etc							





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## Section 3: Results of Inclusion of studies based on reading the full article

You can use a number of different ways:

- Either in words
- Table (made from your form)
- See handout



<b>Study</b>	●C1-	●C2	●C3	●C4	●C5	●C6	<b>Action</b> ●Include or ●Exclude
<b>Addy 1996)</b>							
<b>Feder et al (2004)</b>							
Etc...							
Etc....							



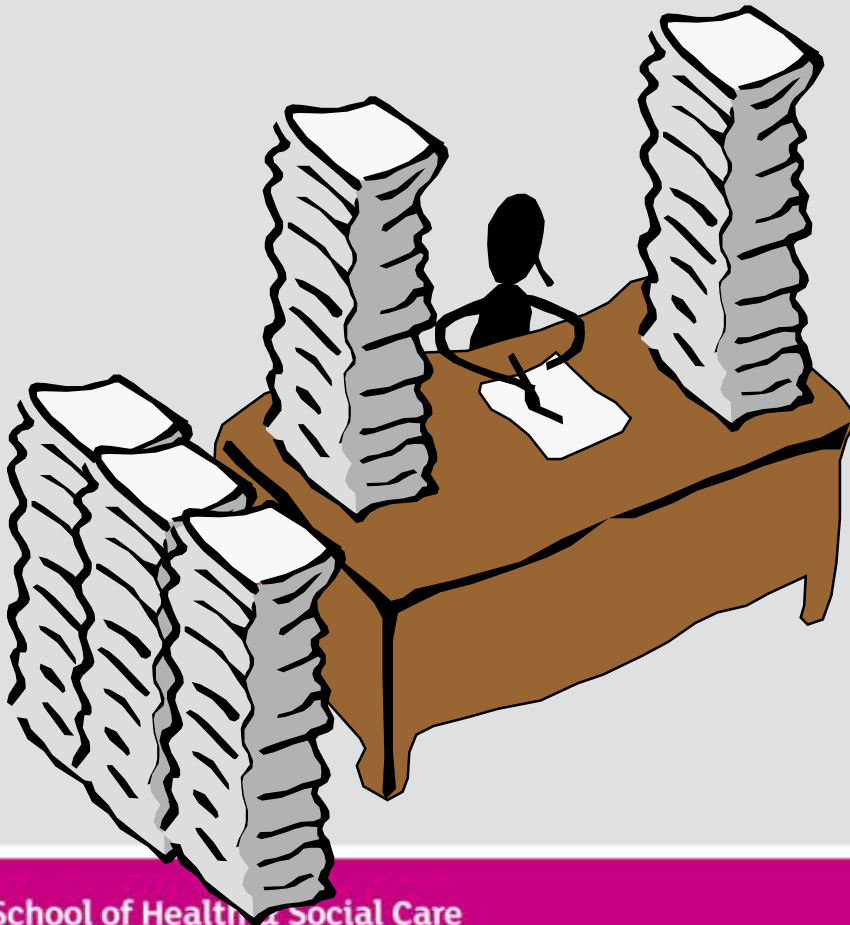


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## Section 4: A Description of all the studies included in your review



- This can be done either in essay format
- Or in tabular format
- Using either the PICO or PEO framework
- Make sure you include the results of the studies

<b>Study</b>	<b>Population</b>	<b>Intervention</b>	<b>Comparative group</b>	<b>Outcomes</b>	<b>results</b>
<b>Addy (1996)</b>					
<b>Feder et al (2004)</b>					
<b>Etc...</b>					
<b>Etc...</b>					

<b>Study</b>	<b>Population</b>	<b>Exposure or Issue</b>	<b>Outcomes</b>	<b>Results</b>
<b>Addy(1996)</b>				
<b>Feder et al (2004)</b>				
<b>Etc..</b>				
<b>Etc..</b>				



**Table 6.4 List of Included Studies**

Study No	CITATION	Table	Page
1	Carapeti, E.A., Andrews, S.M. and Bentley, P.G. (1994) <b>Randomized study of sterile versus non-sterile urethral catheterisation.</b> <i>Ann R Coll Surg Eng</i> : 76, pg59-60.	6.4.1	52
2	Cheung, K., Leung, P., Wong, Y., To, Oi-king., Yeung, Y., Chan, M., Yip, Y., and Kwok, C. (2008) <b>Water versus antiseptic periurethral cleansing before catheterisation among home care patients: A randomized controlled trial.</b> <i>Journal of Infection Control</i> , 36, pg 375-380.	6.4.2	53
3	Webster, J., Hood, R.H., Burridge, C.A., Doidge, M.L., Philips, K.M. and George, N. (2001) <b>Water or Antiseptic for Periurethral Cleaning before urinary Catheterization: A Randomized Controlled Trial.</b> <i>Journal of Infection control</i> , 29, pg 389 – 394.	6.4.3	54
4	Moore, K.N., Burt, J. and Voaklander, D., C. (2006) <b>Intermittent catheterization in the rehabilitation setting: a comparison of Clean and Sterile Technique.</b> <i>Clinical Rehabilitation</i> , 20, pg 461 – 468.	6.4.4	55
5	Pickard, W.G. and Grundy, D.J. (1996) <b>A Comparison of two methods of Sterile urethral catheterisation in spinal injured adults,</b> <i>Paraplegia, International Medical Society of Paraplegia</i> , 34, pg 30-33.	6.4.5	56
6	Schiøtz, H. A. (1995) <b>Antiseptic catheter gel and urinary tract infection after short-term postoperative catheterisation in women.</b> <i>Arch Gynecology Obstetrics</i> 258, pg 97-100.	6.4.6	57
7	Cohen, A. (1985) <b>A microbiological comparison of a Povidone-iodine lubricating gel and a control as catheter lubricants.</b> <i>Journal of Hospital Infection</i> , 6 (supplement), pg 155-161.	6.4.7	58
8	Harrison, L. H. (1980) <b>Comparison of a Microbicidal Povidone-iodine gel and a placebo gel as catheter lubricants.</b> <i>The Journal of Urology</i> , 124, pg 347-349.	6.4.8	59

## TABLE 6.4.1 Study Summary

**STUDY 1** Carapeti, E.A., Andrews, S.M. and Bentley, P.G. (1994) **Randomized study of sterile versus non-sterile urethral catheterisation.** *Ann R Coll Surg Eng*: 76, pg59-60.  
(Citation)

**POPULATION** 156 patients were included in the study and were randomly allocated to the sterile or clean/non-sterile technique group. 74 patients were catheterised using the sterile technique and the other 82 patients were catheterised using the non-sterile/clean technique (control group). Patients who already had indwelling catheters, with pre-existing UTI and those undergoing surgery of the lower urinary tract were excluded from the study.

**INTERVENTION** Sterile catheterisation involved scrubbing, gowning up, use of sterile gloves and a sterile catheterisation pack, cleaning of the urethral meatus with Savlon solution, lubrication with sterile lignocaine gel and the insertion of a sterile catheter into the urethra by the use of forceps; this was a strict aseptic "surgical" procedure.

**COMPARATIVE GROUP** Clean/non-sterile catheterisation involved washing of hands once only (with soap and water) and no use of gowns or sterile gloves. The meatal area was cleansed only if needed with tap water. No sterile catheterisation packs were used, however the catheter was lubricated with KY jelly and then introduced into the urethra by a non-touch technique by holding the catheter from the plastic sheath at all times. A catheter urine sample was taken immediately after catheter insertion in both groups and then another sample on the 3<sup>rd</sup> postoperative day; both samples were sent for culture.

**OUTCOMES** UTI was defined as bacteriuria  $\geq 10^5$  with or without clinical symptoms (dependent variable). The incidence of UTI was the measure.

**RESULTS** Statistical analysis was performed using the  $\chi^2$  test. There was no statistically significant difference between the two groups regarding the incidence of UTI. UTI was more commonly seen in females than males but it was not statistically significant ( $P > 0.1$ ). However, the sterile technique was found to be twice as expensive as the clean technique. In conclusion the authors suggest that strict sterility is not necessary in short-term urethral catheterisation and that using the sterile technique was found to be time consuming and expensive.



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## Section 5: Results of the quality of included studies

- Again you can do this either in essay format or in tabular format
- Q= question
- Best to write it in full



<b>Study</b>	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8 Etc...
<b>Addy (1996)</b>								
<b>Feder et al (2004)</b>								
<b>Etc..</b>								
<b>Etc..</b>								

**TABLE 6.5.1 RESULTS of the QUALITY of INCLUDED STUDIES 1 & 2  
(McMaster University Review Form)**

STUDY		QUESTIONS		
		STUDY PURPOSE	LITERATURE	STUDY DESIGN
No	TITLE	Was the purpose stated clearly?	Was relevant background Literature reviewed?	RC Trial, Cohort, Single case Design, Before & after Case-Control, Cross-Sectional study
1	Carapeti et al (1994)	To assess the rate of UTI after short-term preoperative urethral catheterisation using two different insertion techniques – sterile and non-sterile – and to compare costs.	Very brief background; however it clearly justifies the need of the study; 'urethral catheterisation remains the most common cause of nosocomial infection in medical practice'. Statistically UTI account for 40% of all nosocomial infection all associated with indwelling catheterisation. Clearly indicated that there are no studies investigating the effect of insertion technique prior to this study.	<b>Prospective RC Study:</b> included all patients undergoing surgery and who needed to be catheterized; randomisation by Throw of a coin; No stratification and no blinding reported. Study group: Sterile catheter Insertion Control group: Non-sterile/ Clean catheter insertion.  No indication of reason for catheterisation.
2	Cheung et al (2008)	To assess the risk of acquiring symptomatic urinary tract infections (UTI) through the conventional practice of using 0.05% chlorhexidine gluconate (CHG) versus sterile water for periurethral cleansing before catheterisation.	Previous similar research was lacking; some hospital based studies had shown that nonsterile catheterisation had the same risk of CAUTI as the sterile technique. More patients requiring catheterisation in the home or nursing home (Aging population and shorter hospital stay). This study aimed to establish that nonsterile technique was also equally effective in elderly patients in the care-home setting. Its cost-saving implications and along with its potential to inspire further relevant research are pointed out.	A <b>randomized controlled study</b> where subjects were randomly allocated to either the sterile water group or the 0.05% chlorhexidine Gluconate (CHG) group. The method of randomisation is described as simple (as suggested by Simon). No stratification and no blinding reported. Biases that may have been operating and the direction of their influence on the results: Selection was on a voluntary basis and randomisation was possibly too simple; these along with the small sample size render the sample not representative.

# TABLE 6.5.1 RESULTS of the QUALITY of INCLUDED STUDIES 1 & 2 (McMaster University Review Form)

Questions		1	2	3	4	5	6	7	8
Study Purpose	1. Was the purpose stated clearly?	Y	Y	Y	Y	Y	Y	Y	Y
Literature	1. Was relevant background Literature reviewed?	Y	Y	Y	Y	Y	Y	Y	Y
Study Design	1. RC Trial (r), Cohort study (c) ?	Y(r)	Y(r)	Y(r)	Y(r)	Y(r)	Y(c)	Y(r)	Y(c)
	1. Was the study design appropriate for the study question?	Y	Y	Y	Y	Y	Y	Y	Y
Sample	1. Was the sample described in detail?	Y	Y	Y	N	N	N	Y	Y
	1. How was sampling done? (Stratification, Blinding)	N	N	N	N	N	N	U	Y
	1. Was there similarity between the groups?	Y	N	Y	N	U	U	U	Y
	1. Was sample size justified? (Power analysis)	N	N	Y	Y	N	N	N	N
	1. Was there ethical approval?	N	Y	Y	Y	U	U	U	U
Outcomes	1. Was informed consent obtained?	N	Y	N	Y	U	U	Y	U
	1. Were the outcome measures reliable?	Y	Y	Y	Y	U	Y	Y	Y
Intervention	1. Were the outcome measures valid?	Y	Y	Y	Y	N	Y	Y	Y
	1. Was Intervention described in detail?	Y	Y	Y	Y	Y	N	Y	Y
	1. Was Contamination avoided?	Y	Y	Y	N	Y	U	Y	Y
	1. Was Co-intervention avoided?	N	N	N	N	U	U	Y	N
Results	1. Could the intervention be replicated in practice?	Y	Y	Y	Y	Y	Y	Y	Y
	1. Reported in terms of statistical significance?	Y	Y	Y	Y	Y	Y	Y	Y
	1. Were the analysis method(s) appropriate?	Y	Y	Y	Y	N	Y	Y	Y
	1. Was Clinical importance reported?	Y	Y	Y	Y	Y	N	U	Y
Conclusions	1. Were Drop-outs reported?	Y	Y	Y	Y	Y	Y	Y	Y
1. Were Conclusions appropriate given study methods and results?		Y	N	Y	Y	N	N	Y	Y
<b>NUMERICAL SCORE (Number of YES answers out of 21)</b>		<b>16</b>	<b>16</b>	<b>18</b>	<b>16</b>	<b>10</b>	<b>9</b>	<b>16</b>	<b>17</b>

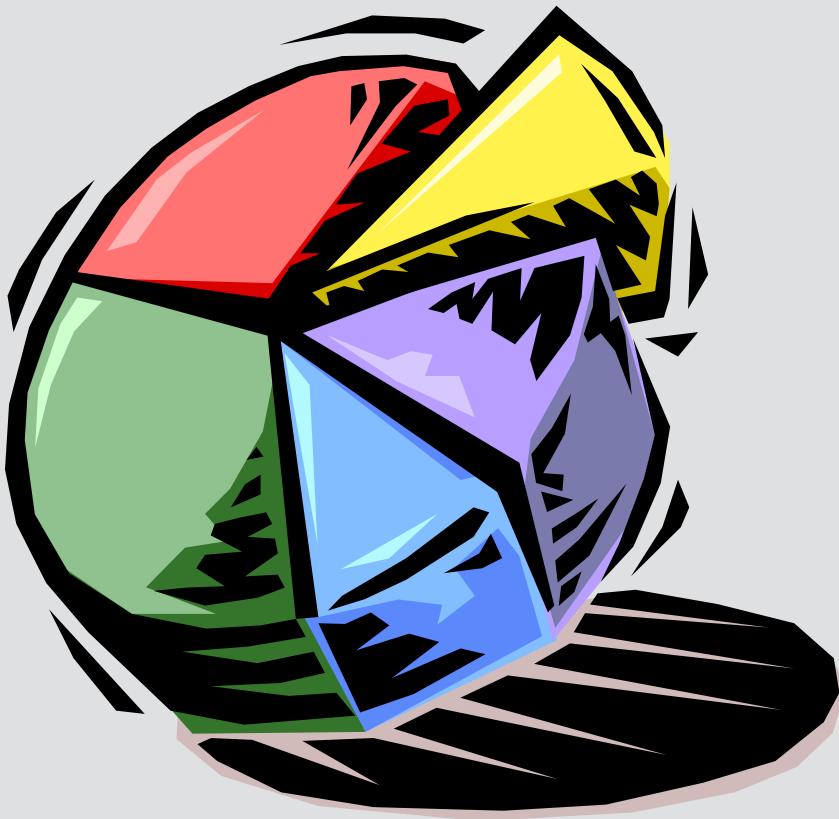


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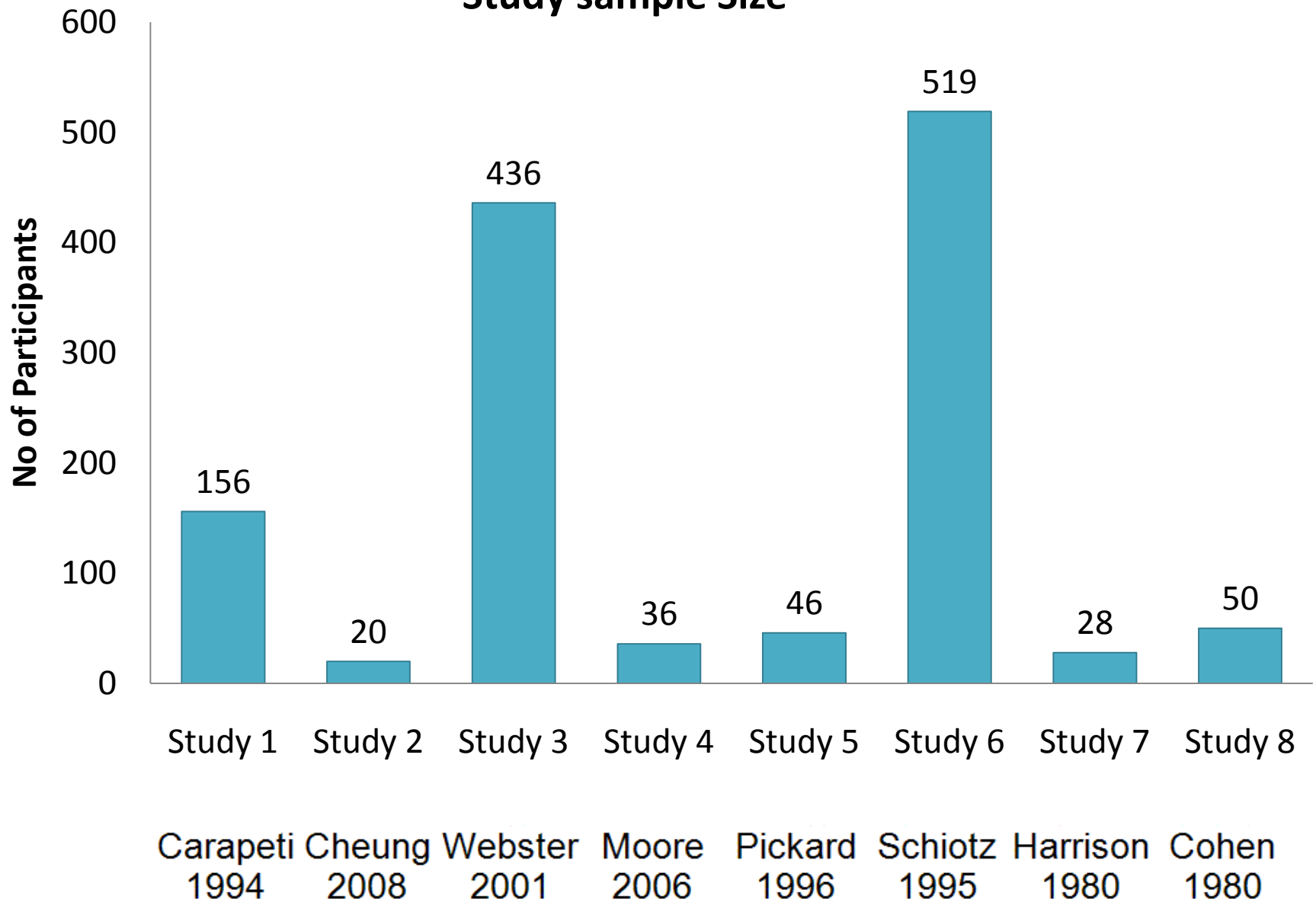


## Results 6: A summary of the results of the data extracted from each paper



- There are a number of different ways of presenting this
- Themes (qualitative)
- or in a Table
- or as a Histogram
- or a Pie chart

## Study sample Size

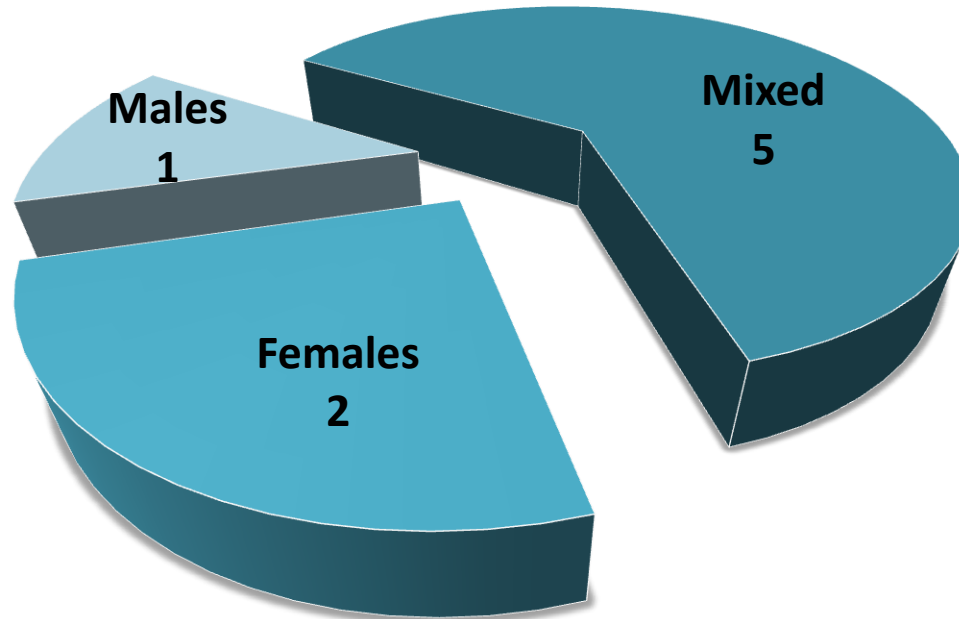




# Study Participants

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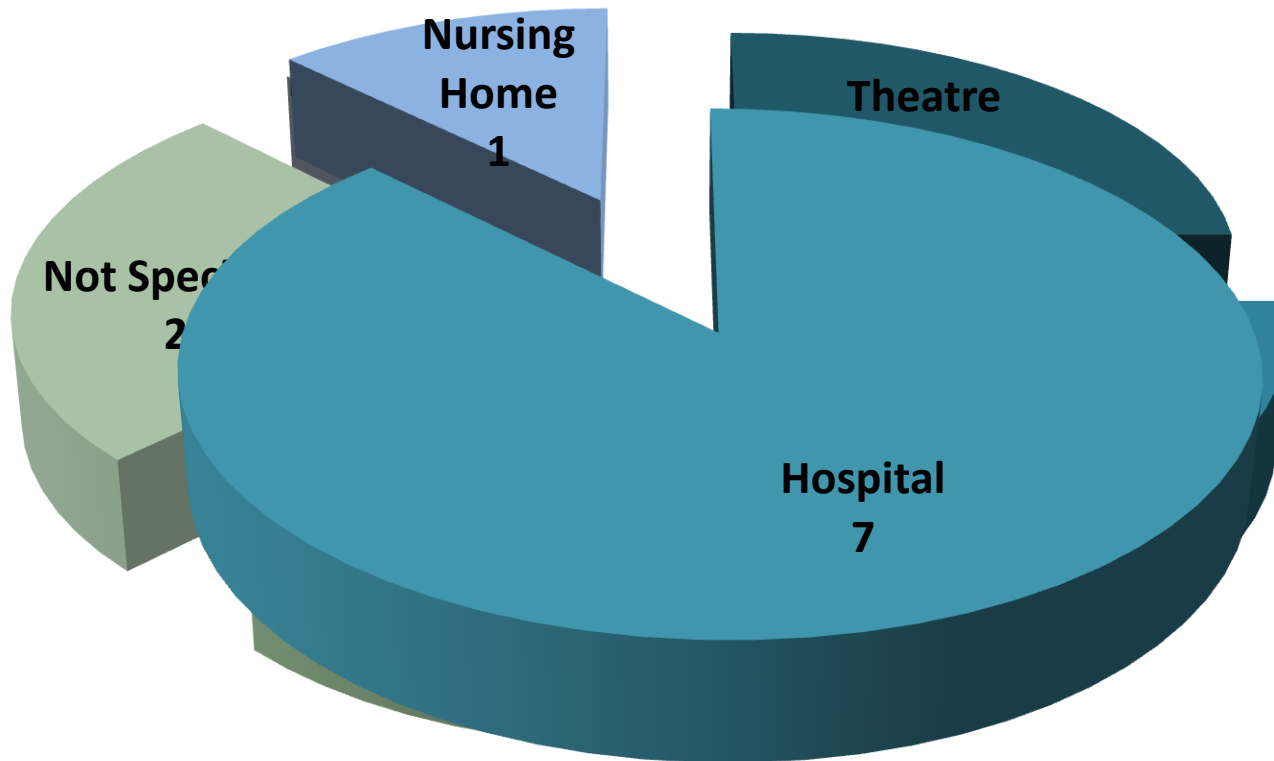
## Subjects' Gender



# Study Participants

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## Study Setting



# Table 6.6.2 Catheterisation Type and Reason

STUDY	CATHETERISATION							
	TYPE			REASONS				
	Indwelling		Intermittent					
	Short Term	Long Term	(Not self-catheterisation)	No clear indication	Peri-operative	Urinary Obstruction	Neurogenic Bladder	Experimental
1	X				X			
2		X		X				
3	X				X			
4			X				X	
5		X					X	
6	X				X			
7	X							X
8	X	X	X			X		



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# Questions





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# Question Development

How you frame the question will depend on the focus of the problem

## Types of questions

- Diagnosis and prognosis
- Intervention
- Risk / aetiology
- Patient / client perspectives
- Efficiency
- Cost effectiveness



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A well built question will contain 3 or 4 elements (Fleming, 1998; Richardson et al, 1995; Sackett et al, 1997)

- Population
- Intervention
- Comparison (if relevant)
- Outcome



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- PICO structure works well for clinical effectiveness or intervention questions
- Developed as part of EBM therefore medically orientated
- Need to be creative to adapt this to other types of question
- Word 'intervention' is used loosely



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- Questions that don't have an intervention need an alternative framework
- Population
- Issue, indicator, index test or exposure
- Outcome
- Comparison not often included but may be relevant if comparing diagnostic tests





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- The type of question developed will influence the type of evidence found

Effectiveness

RCTs

Patient perspective

qualitative

Diagnosis

cohort studies

Prognosis / risk

cohort / case control



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# Questions





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# Discussion, writing up and Publishing

- Summarise findings
- Develop and/or discuss the theory/s
- Compare and contrast the findings
- Discuss the overall quality of included studies (Does the quality of the included studies affect the outcome of your results? I.e. if the methods of a particular study are very “poor” can you still believe the results and apply them to practice?)



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- Relate the findings back to the aims
- Interpret the findings in relation to the literature reviewed
- Support a particular theory or model
- Point to any methodological shortcomings or flaws in your systematic review.
- Recommendations on how these shortcomings may be rectified in future studies would be beneficial.
- Suggest any implications for existing theory/research



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- Discuss the findings with respect to practice
- Discuss the ethical aspects of the included studies
- Discuss whether or not you would change your practice as a result of your review giving your rationale.
- Reveal questions for future research on this topic.
- Your discussion should finish by stating some overall conclusions about the study



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# Questions





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# Thank You for your attention

