

Understanding evidence based nursing practice



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Course Unit: Understanding Evidence Based Nursing Practice

Section 1:

Nursing research is a systematic inquiry aimed at developing trustworthy evidence to create rationale for evidence-based practice (EBP); EBP is using the best evidence to make patient-care decisions and underpins nursing practice (Polit and Beck, 2018). In order to deliver high-quality care in an ever-changing society, nurses are required to evolve and develop their care in line with EBP (Ellis, 2016). The Nursing and Midwifery Council (NMC) (2018, p. 6.), states nurses should ‘ *always practice in line with best evidence*’. A fundamental part of evolving is research, it allows the nurse to question nursing phenomena through critical investigation of evidence which has been evaluated and peer reviewed (Lo-Biondo Wood and Haber, 2017).

The research process contains multiple components, the first is devising a research question; identifying what is to be researched and formulating a focused question (Parahoo, 2014). The question forms the foundation of the research and offers the idea which will be examined (Lo-Biondo Wood and Haber, 2017). For example:

“ Is manual handling training more effective than no training at preventing back injuries?”

To assist in this process the use of frameworks such as PICO (population, intervention, comparison, outcome) are used (Figure 1) (Richardson et al., 1995).

Figure 1:

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P Nurses	C	No Training
Manual		
I Handling	O	Back Injuries
Training		

This framework works well with quantitative research, for qualitative research an alternative framework SPICE is preferred, as it allows for perspectives to be incorporated (Booth et al., 2016). There are also variations of the PICO; PICOT, including time frame, PICOS, including study type and PICO. The question formulated will decide on the most applicable framework.

From this question clear terms and concepts are defined to reduce the amount of results providing higher quality, relevant evidence (Parahoo, 2014), including synonyms and phrases relating to the key concepts to cover all relevant evidence (Figure 2).

Figure 2:

Key Concepts	Search Terms
Nurses	Nurses, Nursing, Nurse
Manual handling	Manual handling training, Moving

training and handling,
 Patient handling

 No training, No
 training support

 Back injuries, Back
 support, Back
 Back pain, Back safety,
 injuries Lumbar pain,
 Chronic back pain

Once search terms are identified Boolean logic is applied to best combine the search terms, applying Boolean operators ' AND', ' OR', ' NOT' to a search strategy will define how the databases combine each of the terms within the search, providing more relevant research (Figure 3) (Booth et al., 2016). The addition of a symbol such as '*' will allow the search of words with the same beginning, i. e. Nurs* will cover nurse, nurses and nursing (Polit and Beck, 2018).

Figure 3:

Manual Handling Training

OR

Moving and Handling

OR

Patient Handling

Nurs*

No Training

OR

No Support

Back Injur*

OR

Back Support

OR

Back Pain

OR

Back Safety

OR

Lumbar Pain

OR

Chronic Back Pain

AND

AND

AND

There are numerous databases to apply the search strategy to, for relevance of nursing research, CINAHL and MEDLINE have been chosen for their credibility, and range of sources (Figure 4) (Booth et al., 2016).

Figure 4:

Search Term	CINAHL	MEDLINE
1. Nurs*	813,469	793,009
2. Manual Handlin Trainin g	47	43
3. Moving and Handlin g	290	824
4. Manual Handlin		

g

Patient

5. Handlin 1, 523 2, 766

g

No

6. Trainin 3, 826 10, 965

g

No

7. Suppor 4, 699 18, 132

t

Back

8. Injur* 2, 838 3, 693

Back

9. Suppor 419 948

t

1 Back

33, 421 59, 792

0. Pain

1 Back

162 238

1. Safety

1 Lumbar 2, 105 5, 905

2. Pain

Chronic

1 Back 5, 559 8, 901

3. Pain

2 or 3

1 or 4 or 2, 252 4, 436

4. 5

1 6 or 7 8, 472 28, 983

5.

8 or 9

or 10

1 or 11 36, 413 65, 480

6. or 12

or 13

1 and

14 and 36, 448 3

15 and

16

From these results, limits can be set to narrow the search (Figure 5):

- Language: English
- Source Type: Academic Journals for credibility.

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- Published from 2014 onwards, ensuring up to date research.
- Geography: UK (UK not available on MEDLINE).
- Abstract available, allowing a brief overview to assure relevance to research.

Figure 5:

CINAHL MEDLINE

1, 128 879
Results

The filters have brought a more manageable amount of research relevant to the question, saving time when researching. However, there is still a large amount of research involving patient back pain. The removal of the following search terms: back pain, lumbar pain and chronic back pain has provided more relevant research relating to the question.

CINAHL MEDLINE

278 371

Section 2:

For nurses to be successful evidence-based practitioner's, critical and analytical ability is vital when completing a systematic review (Ellis, 2016). This ensures limitations and strengths have been explored, strengths should outweigh the limitations to provide credible research (Coughlan et al., 2013). This reflects the systematic review aims of summarising the best available evidence (Pearson et al., 2009).

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A systematic review will be completed of Rylance et al's. (2017) quantitative research into ' mental health students feeling prepared to assess physical health', using CEBMa's (2014), critical appraisal tool.

1.

The researchers clearly state within the abstract the aims of the study, further supported through the method of the study; a self-assessment questionnaire relating to competency. The researcher's developed a focused question which the PICO framework can be applied; Participants – 3rd year mental health students, Interest – feeling competent to assess physical health, Context – during their 3rd year of their studies. The formulation of the question using a framework allows the researchers to choose the appropriate design method for their study (Lo-Biondo Wood and Haber, 2017).

Within the aims section, the objectives are reinforced using one unambiguous sentence, displaying clear intentions of the study to the reader (Nieswiadomy, 2012). Also, within the findings section the results reflect the aims, the questions are related to competency of physical assessment skills.

2.

Research methods are the ' blueprint' of the study, they decide how research will be conducted and how data will be gathered (Coughlan et al., 2013). They should be detailed within the methods section, including why the researcher has chosen the particular design (Gray et al., 2017).

The researchers state questionnaires were used, mainly for the ease of utility. The study was noninterventional research attempting to describe the variables, as opposed to correlational research which attempts to describe relationships amongst variables (Gray et al., 2017). Noninterventional research only provides information on the variables as they occur, causality cannot be established (Coughlan et al., 2013). The researchers intended to gather information surrounding students who did or did not feel prepared to assess physical health, there is no comparison and no causality, leading to the decision of a descriptive design (Gray et al., 2017). Their intentions are to measure and retrieve data relating to competency, thus the research method an appropriate choice for the study. However, the research question contains the word 'feel' suggesting qualitative research, also the use of open-ended questions. This type of information gathering is more relevant to qualitative research, as it is an attempt to explore meaning within the phenomena (Aveyard, 2019).

3.

An important aspect when designing a study is the sample size, too small can be difficult to generalise the findings and too large can become timely and costly research (Parahoo, 2014).

The researchers state an opportunist sample was used, a type of non-probability sampling method; meaning the sample was selected using the most convenient people, two cohorts of mental health nursing students at one University. Using this type of sampling method can lead to the sample being atypical of the population, not representative (Polit and Beck, 2018).

Opportunist sampling is one of the weakest forms of sampling, although one of the most common, due to its ease and cost-effectiveness (Elfil and Negida, 2017).

The researchers fail to mention how many questionnaires were sent out, nevertheless, report 37 questionnaires were completed. This is a small sample size and cannot be generalised to the wider population of mental health nurses. Furthermore, the sample was taken from one University, a cross-sectional sample; aiming to provide a snapshot of the wider population, in this case mental health nurses; issues may arise from this form of sampling as it is not possible to distribute the questionnaire to an entirely representative sample (Aveyard, 2019). Given the researchers have not informed the reader of the response rate, it is difficult to analyse and non-response bias cannot be reported. The researchers acknowledge the findings cannot be generalised, accepting nursing programmes and placements differ across the country and suggest further research is necessary.

Consent was gained from the University, prior to the research commencing. As such, the research will have been reviewed by the University in line with the Ethical Research Standards (WHO, 2011). The researchers kept all data anonymised in line with the protection of human rights, protecting confidentiality and anonymity (Lo-Biondo Wood and Haber, 2017).

4.

Quantitative research is underpinned by positivism, based on scientific laws and truths which emerge from research that is observed and measured
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(Gerrish and Lathlean, 2015). Findings from research with minimal or no bias hold greater validity (Gerrish and Lathlean, 2015).

As previously discussed, selection bias occurred through the non-probability sample method used, thus reducing reliability. In contrast, the researchers were unknown to the participants and their involvement was voluntary, consequently reducing bias.

5.

In quantitative research a sample must be valid in order to generalise the findings (Wilson, 2014). The sample refers to those who took part in the research, they should be a group of people who represent the population the research relates to (Aveyard, 2019), meaning the findings can be generalised to the wider population providing higher validity. Mental health nurses were chosen as the sample, which represents the relative population, however, data was only collected from two cohorts at one University, reducing reliability as the findings cannot be generalised to other mental health nursing students who attended other Universities where training may differ.

6.

To gain higher validity, it is possible for researchers to conduct a power analysis prior to the research (Polit and Beck, 2018), where a sample size estimation is made increasing validity of the research. Analysis of this method shows limitations; power analyses are unable to tell the researcher whether the study is appropriately powered or not as it is based on the

notion of study replications (Taylor and Spurlock, 2018). Meaning that the power analysis is based on what the researcher already presumes.

Furthermore, it is problematic for the researcher to foresee and include all factors which will affect the power analysis (Taylor and Spurlock, 2018).

Within the paper the researchers fail to mention statistical power, implying this method was not used. This increases the risk of statistical conclusion validity being wrong, the data cannot support the hypotheses even if proven (Polit and Beck, 2018).

7.

Response rate is the number of participant's who respond from the sample. The higher the response rate, the more likely the sample is representative of the target population (Parahoo, 2014). Following this, those that don't respond can have different characteristics or interests than those that do, producing response bias. The research should inform the reader of the response rate as well as acknowledging response bias (Polit and Beck, 2018).

The research does not mention response rate within the paper, only the total completed. This makes it difficult to make assumptions that the findings represent the target population.

8.

For questionnaires to be of any use within research, they need to produce valid and reliable data. Validity relates to the questionnaire asking and finding out information relating to the aims of the study (Parahoo, 2014).

Reliability relates to the participant's understanding of the questions and responding to them in the same way. (Parahoo, 2014).

The researchers asked closed-questions relating to competencies i. e. taking temperature, with the answers ' yes', ' no' or ' not relevant to my role'. The questions relate to the research question and adequately represent the concepts which are being studied. Furthermore, participants were asked additional open-ended questions relating to the research question i. e. ' Do you feel that the range of clinical experiences that you have undertaken during your training has influenced your answers?'. This form of open-ended questioning collects qualitative data, as the process of gathering information involves clustering similar types of answers given through analysis and interpretation of the researcher (Polit and Beck, 2018).

Whilst the closed-questions were clear and unambiguous, response was limited to two answers whereas a scale of competence could have been used providing a more detailed range of response e. g. Like-RT type scale (Gray et al., 2017). The open-questions were also clear and unambiguous and trends appeared in the responses indicating the participants interpreted the questions similarly. This concludes the questionnaire holds reliability. However, the questionnaire includes qualitative methodology and mixes the two methods.

9.

Statistical significance relates to hypotheses testing, when the results of a study are unlikely to have occurred by chance at a specified level of probability, $p < 0.005$ being the threshold (Polit and Beck, 2018).

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Researcher's assume the *null* hypothesis is true, attempting to disprove this through research (Aveyard, 2019).

There was no *null* hypothesis used, as previous studies indicated mental health students lacked competency in assessing physical health. Therefore, it is impossible to assess statistical significance.

10.

Another way to assess the generalisability of research is to calculate confidence intervals (CI) (Aveyard, 2019). CI are a range of values based on the sample population, which estimates the precision of the findings applied to the wider population (Lo-Biondo Wood and Haber, 2017). A larger sample size will effectively create a more precise CI, 95% or above is the threshold; supporting the generalisation of the findings to the target population (Jirojwong et al., 2014). The researchers did not account for CI.

11.

Descriptive quantitative research is concerned with an occurrence of a phenomenon of interest, to make generalisations research needs to be valid, reliable and minimal bias (Gray et al., 2017). As previously discussed, the findings cannot be generalised to the wider population due to sample bias. There are no p values or CI mentioned within the paper, again generalisations cannot be made. If research was conducted at multiple Universities, generalisations could be made from wider range data. Nevertheless, the methodology was valid and reliable, and all participants

received the questionnaire in the same format adding some internal validity.

Assumptions

cannot be made from this research and further investigation is needed.

12.

The conclusions of the study was that further research is required, applying this research to another organisation when it is incomplete and unvalidated would be imprudent. The participants are enrolled on a particular degree course, there is no guarantee that students are receiving the same education from other institutions.

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