

Literature review strategy for evidence based practice (ebp)



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Introduction

Evidence based practice (EBP) is an approach to health care in which health professionals use the most appropriate information available to make clinical decision for providing high quality patient care (McKibbon, 1998). EBP has shifted the focus of health care professionals from a traditional approach on authoritative opinions to a stress on facts extracted from previous research and studies (Sackett et al, 1997). It has been suggested by that nursing practice based on evidence enhances patient care, as compared to traditional practices (Majid et al, 2011). In addition, as nurses are increasingly more involved in clinical decision making, it is becoming essential for them to make use of the best evidence in order to make effective and justifiable decisions (Majid et al, 2011).

To discuss the evidence for a clinical skill, this essay will investigate the antiseptic preparations for surgical site antisepsis. The rationale for selection of this topic is its significance for the clinical nursing practice as nurses are frequently involved in the surgical site preparation (Dizer et al, 2009).

Surgical site infection (SSI) is a type of healthcare-associated infection in which a wound infection occurs following an invasive (surgical) procedure. It has been suggested by National Institute of Health and Care (NICE, 2004) that surgical site infections account for almost 20% of all of healthcare-associated infections. It has been further highlighted that nearly 5% of patients undergoing a surgical procedure develop a surgical site infection antiseptic preparations. NICE (2008) has recommended that aqueous or alcohol based solution with chlorhexidine or iodine can be used for prevention of SSI. However, it does not favour or recommend one solution

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over the other. This essay will explore the literature for evidence about efficacy of these preparation in comparison to one another. It is important for the nurses to be aware of the best available evidence regarding antiseptic preparations to minimise the risk of surgical site infection.

Research Question and Literature Search

The research question for the current essay will be formulated on the PICO framework as suggested by Sackett et al (1997):

P	n or problem	Clean- contaminated surgical procedures
I	Interventi on	Chlorhexidine gluconate
C	Comparis on or comparat or	Povidone-iodine
O	Outcome	Surgical site infection

The question formulated for the current essay using PICO framework would therefore be:

“ In surgical procedures, is chlorhexidine gluconate more effective in comparison to povidone-iodine in reducing surgical infections?”

To answer the question, literature search for the available evidence for was done. The author identified a list of key search terms and synonyms that can result in a large number of hits and combined these with Boolean terms AND/OR. Terms made up of two words were looked for by making use of speech marks so that they were not searched for separately, and truncation was used for terms identified to have multiple endings. The key words used were “ surgical site infection” “ anti-septic preparations” “ iodine” and “ chlorhexidine”. In order to make sure that an in-depth search was done, which would elicit the largest number of studies more than one academic search engines were searched by the researcher.

Cinahal: Contains an index of nursing and allied health literature and is helpful for use in a thorough search (Glazsiou, 2001).

Medline: Suggested to be used in healthcare systematic reviews (Glazsiou, 2001).

NHS Information Resources and NHS Evidence: Is a widely used database resource containing evidence-based reviews and specialist research from reliable sources. NHS evidence was searched separately.

Cochrane Library: Provides a list of systematic reviews and RCTS that have been published or are in a process of publishing (Glazsiou, 2010).

Pubmed: It is a commonly used internet resource for healthcare

professionals with a large international coverage.

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The results of the search generated a large number of articles however these had to be reduced in order to generate an appropriate research article which can answer the question formulated. Therefore, an inclusion and exclusion criteria was set to narrow down the large number of articles generated.

The guidelines from NICE (2008) in which both preparations have been recommended in 2008 hence the research was done for studies published after that. Only randomised controlled trials (RCTs) have been included as they provide the best evidence. The articles which were not in English and published before 2009 were therefore excluded. Also, the studies in which preparations for a particular type of surgical procedure were studied were also excluded as the evidence for general surgical procedures was being looked for.

Abstracts of the studies generated from the search of different data bases engines were thus read so that the articles which do not satisfy the inclusion criteria of this essay can be excluded. This resulted in selection of one article which satisfied the inclusion and exclusion criteria of the current work.

The study by Darouiche et al (2010) is a RCT which compared the efficacy of two surgical preparations i. e. chlorhexidine-alcohol with that of povidone-iodine for preventing surgical site infections. In order to achieve this, preoperative skin preparation was done for adults undergoing clean-contaminated surgery in six hospitals with either chlorhexidine-alcohol scrub or povidone-iodine scrub and paint in a random way. The primary outcome was any surgical-site infection within 30 days after surgery. This study will be critically analysed to identify its strengths and weaknesses. It has been

suggested by Burls (2009) that critical appraisal is the process of carefully and systematically examining research to judge its trustworthiness, and its value and relevance in a particular context. The critical skills appraisal programme (CASP) tool (Appendix 1) for randomised controlled trials (RCTs) will be used as the selected study is a randomised controlled trial.

Screening questions

1. Did the trial address a clearly focused issue?

Yes, the study addressed a clearly focused issue with clear problem to be explored, comparison groups and outcomes being investigated using a PICO framework to formulate the research question thereby increasing the rigour of the study (Huang et al, 2006).

2. Was the assignment of patients to treatments randomised?

Yes, the assignment to treatment and placebo group was carried out randomly in a ratio of 2: 1. This will increase the validity of the study.

Literature suggests that random allocation of patients to study groups help to minimize both the selection bias as well as the impact of any confounder present (Cormack, 2000). It has also been observed in the study that in order to match the two groups and deal with possible inter-hospital differences, randomization was stratified by hospital by using computer-generated randomization numbers without blocking. This is a strength of the study as stratified randomisation can help to attain maximum balance of significant characteristics without compromising the benefits of randomisation (Altman and Bland, 1999).

3. Were all of the patients who entered the trial properly accounted for at its conclusion?

Yes, the trial was not stopped early and the patients were analysed in the groups to which they were randomised. The study has done both intention-to-treat analysis for both groups as well as per protocol analysis. This accounts for the drop outs in the study and also been reported thus accounting for these drop-outs which may decrease the internal validity of the study. According to the Cochrane Collaboration (2014) intention-to-treat analysis minimised the presence of bias which may exist due to loss of participants, thus upsetting the baseline similarity attained by randomisation.

Detailed Questions

The study by Darouiche et al (2010) does not explicitly mention whether the personnel involved in the study were blind to the treatment groups.

However, it has been mentioned in the study that the operating surgeon became aware of which intervention had been assigned only after the patient was brought to the operating room. In addition, both the patients and the site investigators who diagnosed surgical-site infection on the basis of standard criteria stayed unaware of the group assignments. This minimises the bias in the study and increases its validity as differential treatment or evaluation of participants can possibly introduce bias in the study at any phase of a trial (Karanicolas et al, 2010). Hence, it is a strength of the study.

According to Berger (2006), in addition to randomisation, it is important to keep the baseline variables of the study groups similar at the <https://assignbuster.com/literature-review-strategy-for-evidence-based-practice-ebp/>

commencement of the trial as it is essential for a RCT to compare groups that differ only with reference to the treatment they receive. The baseline characteristics of both groups have been reported in the study and did not show any significant difference between the two intervention groups reflected by their insignificant p values. It appears from the study that both chlorhexidine and iodine groups were treated the same way other than intervention.

In order to determine the treatment effect, clear pre-defined primary end point has been given by Darouiche et al (2010). The primary outcome was defined on the basis of a standard criteria given by the CDC hence it increases the reliability of study.

The results of the study found that the overall rate of surgical-site infection was significantly lower in the chlorhexidine-alcohol group than in the povidone-iodine group (9.5% vs. 16.1%; $P = 0.004$). In order to find the results, the study undertook multiple statistical considerations and tests. The study increased its statistical power by increasing the sample size in each group which gives the study 90% power to identify a significant difference in the frequency of surgical-site infection between the two groups, at a significance level of 0.05 or less. In addition, as mentioned above intention-to-treat and per protocol analyses were performed which further increases study validity. The study also carried out a pre-specified Breslow-Day test for homogeneity to find whether the results were consistent across the six participating hospitals. This was also a strength of the study as literature suggests that involvement of multi-centre patients can compromise the external validity of the RCTs (Rothwell, 2010). This is due to potential effect <https://assignbuster.com/literature-review-strategy-for-evidence-based-practice-ebp/>

of differences between health-care systems which result in different treatment affects, values and confidence intervals have also been reported where required.

Regarding the application of the results in the settings in UK, it has been highlighted by that the study by Darouiche et al (2010) was done in the US and used an aqueous solution of iodine. However, in the UK, the most widely used skin preparations are alcohol-based solutions of 0.5% chlorhexidine or 10% iodine (Tanner, 2012). This is because aqueous-based solutions are thought to be less effective than alcohol-based solutions. Hence, to make the study applicable to the UK settings, 2% chlorhexidine in alcohol should have been compared with 0.5% chlorhexidine in alcohol or 10% povidone iodine in alcohol.

The benefits of the study are definitely superior to the harms as SSI not only causes significant unwanted outcomes and distress for the patient but also results in increased costs for the patient, the healthcare and the wider economy (Tanner, 2012).

Thus, a number of factors increase the external validity and internal validity of the study including stratified randomisation, blinding of study personnel, intention-to-treat analysis, keep the baseline variables of the study group's similar, sample size and a number of statistical tests. In addition, clear pre-defined primary end point increased the reliability of the study. The study thus has very low risk of bias and can be therefore rated as 1++ according to NICE hierarchy of evidence (NICE, 2004). Hence, alcoholic chlorhexidine

solution is significantly more effective in reducing SSIs than povidone iodine. However, the results should be applied to UK settings with caution.

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