

Side effect in cancer patients



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Internationally, the Oncology Nursing Society strives to ensure that the basis of nursing practice is on the most current evidence available to ensure high quality, cost effective patient care. For OM, strategies suggested include an oral care assessment tool, an oral care protocol and patient education to help maintain patients' functional status and quality of life(Eilers and Million 2007). Likewise, the National Comprehensive Cancer Network (NCCN) 2008, one of the world's leading cancer centres, recommends the same strategies. This centre is committed to enhancing the quality and effectiveness of care provided to cancer patients. Furthermore, the World Health Organisation (WHO) and the National Cancer Institute (NCI) advocate assessment tools to grade the damage caused by mucositis (WHO 1979, NCI 2003). Other national general indicators for best practice include the Department of Health (DOH) (2010), benchmarking tool, Essence of Care. These stress that practice and care should be evidence based and underpinned by research. The Essence of Care benchmarks includes personal hygiene that constitutes mouth care to ensure that the oral cavity is preserved in a healthy condition. They also outline that information should be available to make patients aware of particular hygiene needs that may be required as a result of specific treatments such as chemotherapy. Currently our organisation is in the process of implementing benchmarking against standards. However, locally in practice no interventions on minimizing the risk of mucositis exists despite the impact it can have on cancer patients.

Chemotherapy induced mucositis is a common side effect of drug toxicity with up to 80% of patients having symptoms during their treatment (Dodd et al 2000, Lalla and Patterson 2006). Oral mucositis (OM) is defined as oral

mucosal changes secondary to cancer therapies. It manifests first by the thinning of oral tissue leading to erythema. As the tissue continues to thin, ulceration eventually occurs. Treister and Sonis (2007) allude to OM occurring in four biological stages (Table 1)

Table 1: Adapted from Treister and Sonis (2007)

Initiation

Cell exposure to chemotherapy causes DNA damage and generates reactive oxygen species (ROS), which are able to injure cells, tissues and blood vessels.

Signalling

ROS cause further cell damage and stimulate expression of transcription factors that lead to tissue injury and cell death.

Ulceration

Painful ulcers form providing an entry point for bacteria, viruses and fungi. Bacterial cell wall components can then induce inflammation further.

Healing

A signal from submucosal tissue allows renewed cellular proliferation and differentiation restoring the lining of the oral mucosa.

The primary function of oral mucosa is to act as a barrier that protects the underlying tissue and organs. The high turnover rate of the non – keratinized squamous epithelia cells that make up the oral mucosa, every ten to

fourteen days, increase the vulnerability of these cells to the effects of chemotherapy.

Table 1: 2 the clinical sign of mucositis includes;

Erythema

Cracked lips

Difficulty wearing dentures and / or swallowing

Pain and / or bleeding

Ulceration

Dry mouth, accompanied by a reduction in the immune components of saliva.

Despite the obvious clinical manifestation, OM presents a frustrating challenge for healthcare providers and a painful obstacle for patients.

The tissue trauma and associated pain of OM were identified as a major clinical problem as far back as 1970. Among all the treatment side effects and complications that cancer patients face, OM ranks as one of the most troublesome, causing significant concern for the majority of patients receiving chemotherapy. Bruce and Quinn (2007) highlighted the fact that patients consider OM to be the most difficult treatment related toxicity to endure. This relates to the most common associated oral mucositis dysfunction such as dysphagia, dry mouth and changes in food taste. All these symptoms have a negative impact on patients' daily living and lifestyle

(Cheng and Chang 2003, Ohrn and Sjoden 2003). Likewise, a 2008 report by the National Comprehensive Cancer Network stated that mucositis has emerged as the

‘ Most significant adverse symptom of cancer therapy’ reported by patients.

A number of factors increase the risk of infection which includes the loss of mucosal barrier integrity. The cooperation of local and systematic immunity leads to the emergence of opportunistic and acquired pathogens in the oral cavity. Infections can be fungal, viral and bacterial in origin (Wojtaszek 2000), causing direct tissue damage or increase damage already present due to mucositis. Symptoms vary from pain and discomfort to an inability to tolerate diet and fluids (Silverman 2007). Maintaining adequate nutrition and hydration can be difficult if not impossible. Poor nutritional status is known to interfere with mucosal regrowth as it decreases cellular migration and renewal and therefore increases the effect of mucositis through delayed healing (Shih et al 2008).

In many cases too, the pain can be severe enough to require inpatient care and high dose opioid analgesics (Treiter and Sonsis 2007). Opioid analgesics are associated with incapacitating side effects such as constipation, hallucination and loss of mental alertness (Bruce and Quinn 2007, Bellm et al 2000). Continuous pain and the inability to carry out simple oral tasks such as swallowing can have a profound psychological effect on patients, eroding the feeling of wellbeing.

Many patients also experience emotional side effects including anxiety, distress and depression. A study by Dodd et al (2001) highlighted the impact

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mucositis had on patients' quality of life during chemotherapy treatment. They noted that mood disturbance, anger and depression doubled in patients who suffered with mucositis. Severe mucositis can also greatly complicate the management of cancer. It often leads to a delay in treatment cycles, dose limiting complications and therefore compromise cure rates (Lalla and Peterson 2005). As oral complications primarily are associated with discomfort and interference with oral function in patients who are also immunosuppressed, these complications can become life threatening.

Economically, mucositis becomes a burden when patients require prolonged hospitalization or unplanned admissions to hospital. This is governed by the need for prophylaxis antibiotic therapy to reduce the risk of systemic infection, pain management and parenteral nutrition to optimize a positive clinical outcome (Avritscher et al 2004, Bhatt et al 2010). This is an example of one patient's experience of mucositis;

A patient's story

Mia, a 45-year-old woman was admitted with neutropenic sepsis. Mia was diagnosed with breast cancer three months ago and is currently having chemotherapy. The primary focus on admission was to manage and treat the episode of sepsis, a life threatening condition. The initial nursing assessment did not highlight any significant physical complications associated with her cytotoxic therapy. As this was Mia's first admission with Neutropenic sepsis, she was obviously anxious about the infection and the possibility that her next cycle of chemotherapy would need to be delayed or postponed. Four days on, nursing staff noted that Mia had become withdrawn. Her dietary and fluid intake had decreased enough to cause concern. Mia admitted that

she was finding it difficult to swallow, eat and drink as her mouth was very painful. Mia described the pain as “unbearable” at times. An examination highlighted inflammation in the mucosal membrane with patchy ulceration throughout the oral cavity. Mia’s symptoms were distressing for her as she associated a good dietary intake with recovery. Mia admitted that she had anticipated some side effects but felt unprepared for the longer-term side effects of altered taste, difficulty in swallowing, dry mouth and loss of appetite. Nursing staff were concerned about the risk of further infection. Mia spent an extra four days in hospital, required opioid analgesia to manage her pain, intravenous fluid therapy to maintain hydration, drugs and mouth washes to alleviate the ulceration and inflammation

In 1997 the WHO defined Quality of life as

“an individual’s perception of their position in life in the context of the culture and values systems in which they live and in relation to their goals, expectations, standards and concerns.”

Neutropenic patients are the most vulnerable of cancer patients due to their inability to fight infection, and therefore are more susceptible to opportunistic infection. These immunosuppressed patients are also at increased risk of developing OM and therefore should receive a standardised oral care regime as an ongoing component of their care. Patients with OM and neutropenia have an increased risk of sepsis more than four times than that of patients with neutropenia only (Treister 2010). The potential of systemic infections associated with chemotherapy induced mucosal damage

could decrease as could associate morbidity and mortality, if mucosal damage could be prevented or treated earlier.

Much of the literature regarding this subject relates to the medical management such as effective drug treatments to treat mucositis. My interest is to focus on the nursing interventions that could minimize the risk of developing mucositis in the first instance. Cawley and Benson (2005) claim that effective oral hygiene can reduce pain, bleeding and prevent infection. However, McGuire (2003) found that oral care was often set aside when nursing workloads were excessive. Meanwhile, Quinn (2009) points out that it is not always a priority until problems arise leading to unnecessary distress for the patient and could potentially lead to more serious clinical consequences. This is a true reflection of what happens in current practice, as mucositis is not directly addressed unless patients complain of pain or are observed having problems eating and drinking.

Locally in practice, there is no strategy in place to reduce the risk of OM in this patient group, despite overwhelming evidence that OM has a negative impact on patients' quality of life and treatment outcomes. Cheng (2007) advises that increased attention to oral dysfunction is paramount for the early detection of mucositis and relief of distress. Nursing these patients gives us the opportunity to have a positive impact on their care, through diligent attention mucositis can be identified early allowing for treatment interventions before the problem intensifies.

To form a decision regarding the best possible clinical intervention for this identified practice problem it seems logical to convert the issue into a single

answerable question (Colyer & Kamath 1999). Several authors have identified that the use of frameworks to inform the development of the clinical question, provides the practitioner with a systematic process of formulating an answerable question (Sackett et al 2005, Ridsdale 1998).

Therefore to address the focus of my enquiry, I utilised the four stage process framework, identified by the acronym PICO (Sackett et al 2005).

Patient or Population

Adult patients with chemotherapy induced neutropenia.

Intervention or Indicator

Effective nursing interventions

Comparison or control

Current practice

Outcome

To minimize the effects of mucositis

Hence, the development of the question;

“ What does the evidence suggest is effective nursing interventions to minimize the risk of mucositis in adult patients with chemotherapy induced neutropenia?”

Having read broadly literature pertaining to OM and utilising PICO to formulate the question, this will assist me to develop a search strategy and lead me to explore relevant evidence to answer the question.

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Chapter 2

With the focus of the dissertation now determined, what does the evidence suggest are the nursing interventions required to minimise the risk of oral mucositis in chemotherapy induced neutropenic patients. This chapter will demonstrate the systematic process used to discover, select and extract the best possible evidence from the literature to answer the research question.

Clinical practice is not always evidence based and, therefore, may not optimise patient outcomes. I considered using practice enquiry to explore my knowledge and analyse current practice within the hospital on the chosen topic. Current practice could be considered ritualistic, as care is often carried out without thinking it through in a problem – solving logical way. According to Philipin (2002) ritualistic practice can be irrational, unscientific, repetitive and therefore, unsafe. Furthermore, Strange (2001) perceives ritual practice as economically underproductive and primitive which presents a disapproving view of such care. Presently, there is no policy or guidelines in place for managing OM in chemotherapy induced neutropenic patients within my organisation. Meanwhile, I felt evidence-based practice (EBP) was the best option to answer the question as it allows nurses to develop realistic interventions that are more efficacious for the identified patient group. Throughout the process, I will evaluate theories and practices, with the intention of applying the knowledge obtained to future practice. The emergence of (EBP) in the early 1990's has placed emphasis on ensuring that the best available evidence determines decisions in healthcare (Evans 2003). The public assume and patients expect that care received be based on the best clinical knowledge that has been tested and verified. According <https://assignbuster.com/side-effect-in-cancer-patients/>

to Fineout – Overholt et al (2005), healthcare that is evidence based and conducted in a caring environment leads to enhanced clinical decisions and patient outcomes. Sackett et al (1996) concur, stating

“ EBP aims to promote clinical and cost effective care through the explicit, conscientious and judicious use of the current available best evidence from research to guide decisions”.

Practitioners are increasingly required to question their own practice (Towler, 2001) and to deliver care based on current evidence and, if applicable, on validated research (Nursing and Midwifery Council (NMC) 2004). This research based or EBP as it is known (Meijet et al 2003), is the conscientious use of current best evidence in making decisions about patient care (Sackett et al 2000). Furthermore, this includes actions and interactions resulting in clinically appropriate and cost effective interventions and outcomes for clients (Polit et al 2001). Silverman (2005) proposes that research is a tool for developing the quality of nursing decisions, prescriptions and actions. As nurses, we have a research responsibility; neglect of that responsibility could be classified as professional neglect.

Research Approach and Design

Research is a systematic process used to examine, verify or filter existing knowledge and to explore new ideas about issues relating to nursing practice (Borbasi et al 2008).

Nursing research falls within two broad world views, the positivist and the naturalistic paradigms (Houser 2008). Both have contrasting assumptions about realism and view of the world. Positivists believes that a single reality

exists, which can be calculated. Whereas, the naturalistic paradigm believes in numerous realities, that continually change and therefore, cannot be measured. Further assumptions are outlined below.

Table 2

Postivist Paradigm

Naturalistic Paradigm

One reality – measurable

Numerous realities.

Cannot be guarded or predicted.

A level of understanding can be

achieved.

The researcher and the study participants remain independent of each other and therefore do not influence each other.

The researcher and study participants communicate and therefore, influence each other

The outcomes from the research can be indiscriminate from the study sample to the larger target population

Findings cannot be generalised outside the study sample.

Knowledge gained from the study is in the form of a “ working hypothesis”

Cause and effect relationships can be tested

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The multiple realities are continuously changing.

Impossible to distinguish causes from effect therefore, cause / effect relationship cannot be tested.

The research can be carried out objectively.

Value free

Research is subjective

Value bound- influenced by the researchers own values

(Adapted from Jones & Bartlett)

Research methodologies include qualitative, quantitative, and mixed method models that provide specific direction for procedures in a research design.

Research design is a logical and proficient process (Jolley 2010) to describe how, when and where information is to be collected and analysed (Parahoo 2006).

Qualitative research is a broad term used to describe research that is focused primarily on human experience through exploring attitudes, beliefs, values and experiences (Whitehead 2007). It is used to explore health related or illness related experiences or groups where little is known, or when the current understanding seems inadequate (Richards & Morse 2007).

Qualitative research is based on a number of methodologies including phenomenology, grounded theory and ethnography. The research method most commonly used in this process is interviews, case studies and ethnography, the process of observing an intact cultural group over a long

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period collecting mainly, observational and interview data (Creswell 2007). Therefore, qualitative researchers will argue that it is more indepth and holistic, generating rich material on which to base the findings of a piece of research (Polit and Beck 2010). Qualitative research plays a vital role in providing evidence for practice in nursing and is gaining greater acceptance within medicine (Bailey and Tilley 2002).

Meanwhile, the basis for the quantitative research process is the paradigm of logical positivism. This focuses on outcomes for patients, which are measurable. It is a more formal, objective, deductive approach to problem solving. The quantitative paradigm is considered more dominant and is usually associated with the so – called “ scientific method”. Generally, statistics gathered through several methods, for example a survey questionnaire, is utilized for this process (Parahoo 1997). Furthermore, collecting data in numeric form and emphasizing precise measurement of variables is often conducted in the form of rigorously controlled studies. Essentially, quantitative research provides strong, objective evidence that can be statistically analysed and interpreted. Additional features of the qualitative and quantitative research methodologies are outlined below.

Table 2: 1

Qualitative

Quantitative

Less scientific

Firm science

Subjective

Objective

Inductive reasoning used to amalgamate facts

Deductive reasoning used to amalgamate facts

Focus – intricate and broad

Focus – succinct and narrow

Develops theory

Tests theory

Basis of knowing – meaning, discovery

Basis of knowing – cause and effect relationships

Basic element of study – words, narrative

Basic element of study – numbers and statistical analysis

Multiple realities that continuously change with each interpretation

A single reality – can be calculated and generalised.

(Adapted from Houser 2008)

Evidence – based nursing and clinical governance presuppose research, without it evidence will remain vague and no creditability will be given to clinicians who base their work on routine and tradition alone (Lawton et al

2000). To enhance patient outcomes now and in the future, it is vital that the evidence – based approach to nursing care is integrated into clinical practice settings. Effective exploitation of EBP depends on the skill of finding and analysing data, critically examining results and applying the appropriate intervention to reach the desired outcome (Dickerson 2010).

Search Strategy

A well-formulated search strategy is an essential component in gathering appropriate evidence (Hewitt-Taylor 2002). By comprehensively reviewing all types of studies and results, future service developments can avoid making the same mistakes and be ethically more viable (Arnd-Caddigan & Pozzato 2006). Sackett et al (2000), propose the following strategy for the EBP process;

Table 2: 2

Step 1: Convert the need for information into an answerable question.

Step 2: Search the best evidence with which to answer the question.

Step 3: Critically appraise the evidence for its validity, impact and applicability.

Step 4: Integrate the critical appraisal with clinical expertise, patient's unique biology, values and circumstances.

Step 5: Evaluate the effectiveness and efficiency in executing Steps 1 through 4 and seek ways to improve them both.

Literature Search

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Conn et al (2003) propose that a well – defined literature search strategy is critical for enhancing the rigour of reviews as, incomplete and biased searches can result in insufficient databases leading to potential inaccurate results. However, there is now such a wealth of research that it can be difficult to locate and discern what is relevant. Therefore, the search strategy will be devised from the framed EBP question. As nurses are encouraged to work within the multidisciplinary team, exploring multiple databases is advised to extract the best evidence (Polit and Hungler 1997). For the purpose of this dissertation, the search for evidence will explore electronic databases. Identifying the key databases relating to Health and Social Care directed the initial search. Subsequently Ebsco Host provided access to databases such as Cochrane Library, Cinahl, Medline and Ovid.

Key words within search terms

Keyword searches are the most common method of identifying literature (Ely and Scott 2007). Careful consideration was given to the keywords in order to select terms that would generate the data being sought. Furthermore, some alternative keywords can be found using the database thesaurus (Hek and Moule 2006). Specific terms to the subject headings within the proposed question were focused on for this reason. Harvard (2007) highlighted the significance of identifying the search criteria prior to commencing the data search. For the purpose of this dissertation the key words found using the question being asked were;

Oral mucositis

Infection

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Nursing care interventions

The Boolean search methods rely strongly on key words therefore, it was vital to ensure the defined terms oral mucositis, infection and nursing care interventions were appropriate and not open to misinterpretation. Medical Sub Headings (MESH) is a standardised list of terms densed by the National Library of Medicine in America. The use of MESH terms increases the likelihood of a successful search (Lambrou 2004). However, difficulty in locating suitable subject headings and inexperience in use can affect search returns (Conn et al 2003). Consequently, I did not apply any MESH terms to my search within the chosen search engines Table 2: 3.

Table 2: 3

Search Number

Search Terms

Database Hits Cinahl

S1

Oral mucositis

384

S2

Infection prevention

12972

S3

Nursing care interventions

596

S4

S1 AND S2 AND S3

0

S5

S1 AND S3

21

Search Number

Search Terms

Database Hits Medline

S1

Oral mucositis

1247

S2

Infection prevention

36764

S3

Nursing care interventions

442

S4

S1 AND S2 AND S3

0

S5

S1 AND S3

1

Search Numbers

Search Terms

Database Hits Embase Ovid

S1

Oral mucositis

1490

S2

Infection prevention

34212

S3

Nursing care interventions

38

S4

S1 AND S2 AND S3

0

S5

S1 AND S2 OR S3

9

Search Numbers

Search Terms

Database Hits Cochrane Library

S1

Oral mucositis

6

S2

Infection prevention

256

S3

Nursing care interventions

87

S4

S1 AND S2 AND S3

0

S5

S1 AND S2 OR S3

0

Inclusion and Exclusion Criteria

Herbert et al (2005) suggest that a literature search that specifies clear inclusion and exclusion criteria provides stronger evidence for the field of search. To aid my search it was necessary to identify clear exclusion and inclusion criteria

Table 2: 4 exclusion criteria / rationale

Research in a foreign language / Unable to translate.

Research published pre 2002/Llooking for the most up to date research

Evidence where the focus is on paediatric patients / Paediatric patients do not use the Neutropenic cubicles within my practice area

Evidence where the focus is on medical interventions / The focus is on nursing interventions

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Table 2: 4a inclusion criteria / rationale

Research published within the last ten years/ Considered to be the latest research

Evidence focusing on adult patients/ Adult patients are nursed in my practice area.

Evidence focusing on nursing care interventions / Nursing is my speciality

Evidence that is peer reviewed/ Underpins research and validates findings.

Having applied the key search terms, I retrieved eighty-two papers in total from the data bases searched (Appendix 1). The first database searched was the Cochrane library to ascertain if any previous studies had been done, since it is considered the ‘ gold standard’ database for evidence (Greenhalgh 2006). As this database concentrates on systematic reviews of randomised and non- randomised controlled trials and thus sits on the highest level of the evidence hierarchy. Having found three papers relevant to the topic, they were excluded as the focus related to medical and drug interventions and therefore did not meet the criteria set. As a result, the search refocused on the other identified databases. After applying the inclusion and exclusion criteria, I was left with sixteen papers to review (Appendix 1).

Within the research paradigms are hierarchies of evidence, which rate the types of evidence in terms of quality. EBP is ranked by the way the evidence is collected. Polit and Beck (2008) outlines all the levels within one hierarchy.

Table 2: 5 Hierarchy of evidence

Level 1: Systematic reviews of randomized and non – randomized clinical trials.

Level 2: Single randomized and non – randomized clinical trials.

Level 3: Systematic review and correlational and observational studies.

Level 4: Single correlational and observational study.

Level 5: Systematic review of descriptive, qualitative and physiologic studies.

Level 6: Single descriptive, qualitative and physiologic study.

Level 7: Opinions from authorities and expert committees.

The hierarchy of evidence is a helpful guide to exemplify those research designs, which are most robust and reproducible. The higher up the hierarchy the more vigorous and nearer the objective truth, it is alleged to be. Systematic reviews and Meta – analyses are exclusive and statistically refined methodologies and therefore, sit at the top of the hierarchy. The evidence they provide are at low risk of bias, are more vigorous and therefore present the best evidence of effectiveness (Evans 2003). However Polit et al (2003) maintain that research designs lower down the hierarchy scale must not be excluded. They may be suitable for some hypothesis or specific questions.

Each of the sixteen retrieved papers were read to determine their validity. Six were excluded on reading the abstract alone as no nursing interventions were applicable to the studies. Reading the abstracts is a quick and easy

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way to 'identify junk' as this gives an indication of the feasibility of the study (Muir Gray 2001). One further paper was excluded for the fact it was a written report presented at conference. Despite seeking out the work the report was based on, neither the Librarian or I was able to locate the original paper. This left me with nine articles, which I read in full and then appraised using three general questions. The primary focus of each question was central to validity, reliability and applicability to determine the final three papers I would be using to answer the research question. According to Melnyk and Fineout-Overholt (2005) answering these questions ensures that significance and transferability of the research findings to the target population set out in the question. Each paper focused on different perspectives but all showed relevance to the question being asked.

The articles for critique Table 2: 6

Debra J. Harris, June Eilers, Amber Harriman, Barbara J. Cashavelly and Cathy Maxwell, (2008). Putting Evidence Into Practice®: Evidence-Based Interventions for the Management of Oral Mucositis. Clinical Journal of Oncology Nursing 12(1) pp 141-152.

Miller M, Taylor A, Kearney N, Paterson G, Wells M, Roe L, Hagen S, Maguire R. (2007). Evaluation of the feasibility and acceptability of an oral care diary by patients during chemotherapy . International Journal of Nursing Studies. 44(5) pp 693-701.

Rashada¹ U M, Al-Gezawya¹, S M, El-Gezawya, E and Azzaza, A N. (2009). Honey as topical prophylaxis against radiochemotherapy-induced mucositis in head and neck cancer. The Journal of Laryngology & Otology, 123 (2), pp 223-228.

The explanation of EBP and my rationale for using this process lead to the literature search and findings allowing me to identify the three key articles I will critique in chapter three. Throughout, I will use a critical framework to determine the validity and rigor of the research process. Critiquing research allows the findings to be challenged before practitioners propose changing practice. The purpose is to ensure that if implementing changes, patients will derive genuine benefits.

Chapter 3

Having implemented an appropriate literature search strategy as described in Chapter 2, substantive evidence has been gathered to address the research question

“ What are effective nursing interventions for minimizing the risk of mucositis in adult patients with chemotherapy induced neutropenia?”

Here, I will critically appraise three papers to address this question. The studies to be critiqued represent a comprehensive review and two clinical trials. The tools employed to critique these papers are as follows:

The first, from The Joanna Briggs Institute for Evidence Based Nursing