Literature Review on Oral Mucositis in Cancer Patient

Student's Name

Institutional Affiliations

Date

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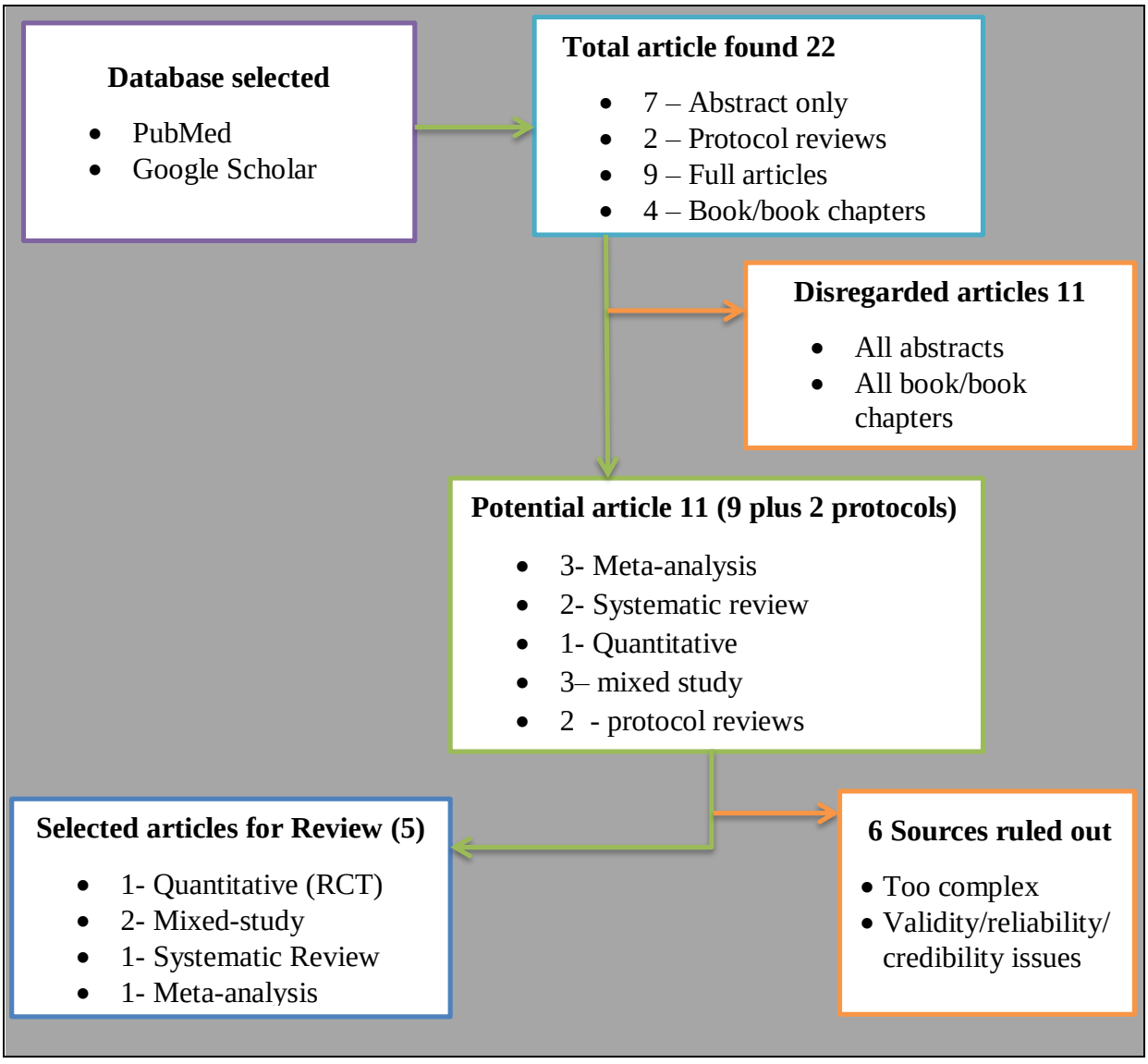
Oral mucositis has elicited interests among physicians and scholars focusing on pathogenesis and management of cancer, especially those receiving radiotherapy, chemotherapy or both (Bjordal, Bensadoun, Tuner, Frigo, Gjerde & Martins, 2011). Mucositis describes mucosal damage to cancer therapy patients occurring in the oral cavity; that is pharyngeal, laryngeal and esophageal regions and other regions of the gastrointestinal tract (Pawar, Neve, Kalgane, Riva, Bombardelli, Ronchi, Petrangolini & Morazzoni, 2013). Oral mucositis develops following a systematic effect of cytotoxic chemotherapy agents and from the effects of radiation on the mucosa (Bjordal et al., 2011). Symptoms of oral mucositis include; halitosis, dry mouth, erythema, white patches, severe ulceration, loss sense of taste, inability to tolerate food in the mouth, and dysphagia (Gussgard, Hope, Jokstad, Tenenbaum & Wood, 2014). The condition has significant impacts on cancer management on aspects of compromised nutrition, psychological effects, comorbidity management, compromised immunity, and increased hospital stay due to delayed laceration healing secondary to oncotherapy (Gussgard et al., 2014). Understanding the oral mucosa as a condition with significant impact on cancer management can play significance role towards effective oncology patient care. Therefore, this paper seeks to conduct a review of the literature on contemporary management of chemo/radiotherapy-induced oral mucositis. The literature review will bring out the existing perspectives on the topic and the existing gap that need to be explored further.

Article Location and Selection Criteria

Articles used for the review were located from two main databases – PubMed and Google Scholar. The two databases were selected based on ease of accessing and filtering the articles. In addition, the two databases have high volumes of health-based research articles,

making it possible to retrieve many articles to select from. The combination of keywords used in the search or the articles included oral mucositis, chemo/radiotherapy-induced mucositis, mucositis in cancer, cancer management induced mucositis, and managing mucositis in cancer patients. Articles were further filtered by selecting the year of publication to be from 2011 to date. A total of 22 articles were found, but the top five for review were selected on the basis of accessibility, full articles, recency, credibility, reliability, and evidence level for each of the articles. The article selection process is as indicated in Figure 1.

Figure 1: Article Selection Process



Critical Review of the Five Articles Selected

Calantog, Hallajian, Nabelsi, Mansour, Le, Epstein & Wilder-Smith, 2013, study focused on the effectiveness of using non-invasive imaging diagnostic approaches in monitoring for development of oral mucositis. This was a mixed study with both aspects of qualitative and quantitative. The patients recruited as participants in the study were 48, who were evaluated for eleven days post commencement of chemotherapy. The ethical grounds were well met by gaining approval relevant research board (UCI IRB), seeking participants consent, and maintaining the participants' anonymity. Oral mucosa images taken using Optical Coherence Tomography (OCT) were evaluated against a scoring system for rating risk of oral mucositis. For the purpose of reducing bias, and improving the reliability of the results, the images were evaluated by three blinded investigators. The results indicated profound benefits and effectiveness in determining the development of oral mucositis using the OCT method as compared to the scoring scale alone. The strengths of this article include meeting the validity, reliability, and credibility measures. Notable weaknesses identified with the study included lack of identifying the study design, and lack of identifying the limitations of the study. The title communicates the study direction and hints on the main variables. This article has been cited five times and was selected since effective, early identification of the mucositis development has a significance impact on the fruitful management of the condition.

The study by Gussgard, Hope, Jokstad, Tenenbaum & Wood, 2014, has grounds of an evidence-based practice, which evaluated the effectiveness of patient reported experience on mucositis in comparison to clinician-based scoring tools. Patient with head and neck injury were recruited for the study, but out of the initial fifty patients orally thirty-three participants completed the study. This number is arguably sufficient for a mixed study design. The questionnaire developed was continuously evaluated for effectiveness throughout the study. For the purpose of reinforcing the results validity and reliability of the study tool, linear

mixed models were also instituted into the study. The findings from the patient experience questionnaires were evaluated against three well established clinician-based scoring tools. Use of three tools that are already tested and validated improves the reliability of the study; thus, promoting generalizability of the findings. A notable weakness of the study is the manner of recruiting the participant (convenience technique), which may be influenced by selection bias skewing the results. After a period of up to seven weeks of therapy and six weeks of post-chemotherapy, the findings were analyzed, and the inference showed support for replacing clinician-based assessment tools for oral mucositis with patient experience questionnaires. So far, at least six articles have cited Gussgard et al., 2014, study.

Figueiredo, Lins, Cattony & Falcao, 2013, conducted a meta-analysis study with a focus on the successfulness of laser therapy as a prophylactic measure for oral mucositis among oncology patients. Availability of the researcher affiliations reinforced the article credibility and trustworthiness. The title of the articles is directive enough for the audience to understand the focus of the article. Moreover, the nature of the study is identified as a meta-analysis. The article presents a detailed background, which plays a significance role towards developing the study topic as well as preparing the readers for the development of the concept under evaluation. Twelve articles were included in the meta-analysis with an intense vetting of the articles to ascertain articles relevance, validity, reliability, and credibility. The article outlines the explicit procedure used to select the article; thus, removing any doubts of article selection bias. Data from the source articles was extracted by three different researchers, a step that enhances credibility and validity of the presented data. The meta-analysis, which comprised of 527 patients from the selected 12 articles asserted the effectiveness of laser therapy as a preventive approach for oncology patients undergoing chemotherapy or radiotherapy. Figueiredo, Lins, Cattony & Falcao, 2013, article has been cited by at least five articles.

Bjordal, Bensadoun, Tuner, Frigo, Gjerde & Martins, 2011, article is a systematic review and meta-analysis of controlled randomized trials on the usage of low-level laser therapy for oral mucositis. Unlike Figueiredo, Lins, Cattony & Falcao, 2013, who evaluated laser therapy as a prophylactic approach, Bjordal evaluated considered laser therapy a curative approach. The abstract is well structured with details presented under each of the subheadings, making it easier for the audience to identify main takeaways from the article. The credibility of the article and the findings is reinforced by the availability of author's details and affiliations. Another strength identified with the article is the ability to determine the main focus of the article from the topic, identify the study method, and isolate main variables for the study from the topic. The total number of articles included in the review was 11, which contributed to a sample size of 415 patients evaluated on the usage of low-level laser therapy on oral mucositis. Selection bias was controlled by having several researchers appraise the articles to be included in the study. The results are well presented, valid, reliable, and credible; which makes the article a good reference material for this study. Bjordal, Bensadoun, Tuner, Frigo, Gjerde & Martins, 2011, concluded that low-level laser therapy has positive results when used to treat oral mucositis among cancer patients. The article is referenced in seven subsequent studies.

The article by Pawar et al., 2013, presents a randomized controlled study that aimed at evaluating the safety and efficacy of a botanical extract formulation (SAMITAL ®) in treating oral mucositis in cancer patients. The study recruited 30 head and neck cancer patient with 20 receiving SAMITAL while the other ten acted as the control group. The procedure for administration of the treatment is well outlined with used of the assessment tool (WHO severity scales) whose validity and reliability is justified. The article has detailed the background of the treatment (SAMITAL) giving a good account of the study objectives. The methods section is well structured with a good explanation of design, participant's selection,

and ethical measures, data collection, and data presentation. The results indicated a significant improvement in pain relieve and quality of life following use of SAMITAL. The method can be used as an evidence-based practice in alleviating problems associated with oral mucositis among cancer patients. The study methods and results are reliable, valid, and credible; thus, a good reference for this study. Pawar et al., 2013, has been cited by at least seven articles.

Discussion of the Research Topic Using the Articles

Effect of Mucositis on Cancer Management

It is a common observation from the five articles review that management of cancer faces significant challenges when the patient develops oral mucositis. Bjordal et al., 2011; Pawar et al., 2013; and Gussgard et al., 2014, assert emphasize that the patient nutrition aspect is compromised since the patient may not tolerate food or drinks in the mouth due to lacerations. Poor nutrition reduces body immunity; thus, weakening the ability to recover or overcomes the ailment Gussgard et al., 2014. In addition, with poor nutrition and weakened body immunity, the patient is a risk of getting opportunistic diseases, which further contribute to the deterioration of the patient state (Bjordal et al., 2011). The lacerations in the mouth compromise the first line of body defense mechanism by altering the skin integrity (Pawar et al., 2013). Oral mucositis complicates the decision on selecting the right appropriate dosage for the patient Figueiredo, Lins, Cattony & Falcao, 2013. Radiotherapy and chemotherapy, which induce the oral mucositis, impedes cell regeneration and proliferation, which further affect the mucositis rate healing (Calantog et al., 2013).

Effective Oral Mucositis Assessment

Effective disease management starts by understanding the condition characteristics, presentation, and progress. Gussgard et al., 2014, focused on improving the management of

oral mucositis by enhancing the ability to detect the condition, and monitor the conditions progress. The patient-reported experience questionnaires on oral mucositis were a breakthrough towards introducing another approach other than the clinician-based scales for oral mucositis assessment. On the other hand, Calantog et al., 2013, proposed the use of Optical Coherence Tomography in Assessing risk and detection of oral mucositis among cancer patients. The imaging approach, though costly than the patient reported questionnaires, was also an effective approach for prediction and detection of oral mucositis. Since the patient-reported experience questionnaire focused on an already developed condition, the use of the non-invasive imaging by Calantog et al. 2013, is a better approach for early detection. The imaging revealed the cells behavior, hence ability to engage other approaches such as cell engineering for better management of oral mucositis.

Approaches of Oral Mucositis Management

Bjordal et al., 2011, argue that oral mucositis has a significant implication on cancer therapy due to effect of adding antibiotics and analgesic to the patient regime. In response to this complication, they suggested the use of low-level laser therapy in managing the oral mucositis, which was 1) convenient with the client, 2) reduced poly-pharmacy, 3) had no negative impact on cancer management, and 4) effective in managing the condition. These observations were also noted by Figueiredo, Lins, Cattony & Falcao, 2013. In Pawar et al., 2013, study, the problems of poly-pharmacy also motivated the study to evaluate an alternative approach to managing oral mucositis in the cancer patient. SAMITAL - high formulation from botanical sources - proved effective in reducing pain, enhancing the ability to speak, enhancing ability to tolerate food, and improving the patient health status. The three studies, Bjordal et al., 2011; Figueiredo, Lins, Cattony & Falcao, 2013; and Pawar et al., 2013, focused on management practices that would improve oral mucositis management without complicating or impeding cancer therapy.

Conclusion

The literature review was based on five articles, two which presented effective assessment approaches for oral mucositis in a cancer patient, and three which presented therapies for oral mucositis in cancer patients. From the literature review, it is clear that oral mucositis induced by oncotherapy have considerable ramification to patient health and cancer management. Early detection of the oral mucositis development is crucial for effective disease management. However, there is still need for further evaluation of the most appropriate management approach for oral mucositis in cancer patients. The results from the five reviewed articles point to a positive direction regarding oral mucositis management among oncology patients. This motivates researchers to delve more into the topic for fruitful conclusions. Knowledge of oral mucositis in cancer patients on the importance of early detection, approaches of effective assessment, and appropriate management approaches can help nurses take part in reducing the incidence, morbidity, and complications of oral mucositis in cancer patients. Consequently, the implication to nursing practice may include reduced patients' hospital stay, increased patient satisfaction, reduced nursing workload, reduce complication among cancer patients, and reduced the cost of cancer management. The results of this study can be shared with the rest of the profession through publication for ease of access, and sharing the findings during nursing forums. In addition, blogging can also disseminate the findings to a large nursing population, especially in the contemporary era of Internet usage.

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