

Reducing Oral Mucositis among Pemphigus Vulgaris Patients

Yoka Resta

ABSTRACT: Pemphigus Vulgaris is a chronic autoimmune intraepithelial blistering disease. Usually affects the oral mucous in 80% of cases leading to significant decrease in patient's daily functioning of oral cavity and quality of life. This is because of the bad odour, tastelessness, difficulty or inability to eat, drink or speak. Objectives of the study is to assess the pre-interventional level of oral mucositis, to assess the effectiveness of baking soda as mouth wash in reducing oral mucositis and to find out the association between the post interventional level of oral mucositis with the selected demographic variables among pemphigus vulgaris patients. Methods: This study adopted a Randomized control trial and was conducted in the Dermatology OPD and the Dermatology ward of Christian Medical College, Vellore. A sample of sixty four subjects were selected for the study using purposive sampling technique. Effectiveness of Baking soda as mouth was in reducing oral mucositis was assessed using Saraswat's oral Pemphigus score, by the research assistant blinded to group assignment on 1st and 7th day. Descriptive and inferential statistics was used for data analysis. Results: No evidence to conclude that baking soda mouth wash is effective than normal saline in reducing oral mucositis among pemphigus vulgaris. There is no association ($p=0.68$) between the post interventional oral mucositis and the selected demographic variables. Conclusion: Dermatology nurses should recognize the need for assessment of oral mucositis on a daily basis and provide the most appropriate and cost effective interventions. These interventions could be prepared in simple way at home for their long term use, in alleviating the pain and discomfort, by providing meticulous mouth wash for patients with Pemphigus Vulgaris

Keywords: Pemphigus vulgaris, Oral mucositis, Baking soda mouth wash, Normal saline mouth wash, sodium bicarbonate

I. INTRODUCTION

In the recent years, the ability to respond quickly to users' requests has become one of the main challenges most organizations facing with in competitive global marketplace. Due to frequent changes in the needs and requests of customers and environmental dynamics, organizations are forced to adapt their systems with existing conditions. Consequently, the use of Service Oriented Architecture as one of the leading architectural practices is recommended for these organizations. This is an ideal approach to integrate technology in an environment where there are a variety of software and hardware platforms [1]. Web services could be used to implement Service Oriented Architecture. The basic structure of the service used in this architecture is adequate to implement simple interactions with customers, but the diversity, complexity and variability of users' demands requires the simultaneous use of multiple services and a need to compose the services. The main problem here is to obtain the best composition in accordance with user requirements. As web services are in a dynamically changing computing environment, it is better to model the problem as an optimization problem and to apply heuristic algorithms for solving them [2]. In this research, section 2 will review related works in this field. The process of composing web services as well as the patterns to evaluate their quality then will be studied in section 3. The next section, i.e. section 4, presents particle swarm optimization (PSO) algorithm and the proposed method of this article that is an improved version of the algorithm and finally the proposed method will be evaluated in section 5.

II. MATERIALS AND METHODS

The present study was a double blind, randomized control trial. After the approval of the study protocol by the institutional Review Board and Ethical committee, Christian Medical College (CMC), Vellore. Official permission to conduct the study was obtained from the department of Dermatology, Christian Medical College, Vellore. The study was carried out according to the Declaration of Helsinki for biomedical research involving human rights.

III. STATISTICAL ANALYSIS

The results were analyzed using SPSS for windows version 17. The primary endpoint of the study was at the end of the 7 th day. The present study was designed to have a power of 80% and alpha level of significance was fixed to 0.05. Chi square test was not used because there was no normal distribution of sample. So Mann-Whitney test was used.

IV. PROPOSED METHOD

The method presented in this paper is based on Particle Swarm Optimization (PSO) algorithm. The algorithm has been integrated with inertia coefficient adjustment and particle modification functions, leading to reduced run time, increased success rate and improved rate of the convergence of the algorithm.

In general, the high value of inertia coefficient results in a more global search and the low value of this coefficient lead to a more local search. Therefore, whenever the value of evaluation function in the PSO algorithm decreases, it means that the algorithm has become closer to the optimum solution. In this case, it is better that the value of inertia coefficient to be decreased such that search can be performed more local. On the contrary, whenever the value of evaluation function increases, it means that the algorithm is far from away optimal solution. Here, it is better that the value of inertia coefficient to be increased such that search can be performed more global. As a result after a certain number of iterations of the algorithm, inertia coefficient adjustment function is called and performed. Of course, it should be noted that if the value of inertia coefficient becomes constantly more or less, it will have a negative impact on searching. Thus, any increase or decrease in the value inertia coefficient is done with a certain probability. The probability is determined by considering the different values in the simulations.

V. EVALUATION AND CONCLUSION

This section evaluates the proposed method and indicates the effect of inertia coefficient adjustment and particles modification functions on improving the efficiency of PSO algorithm. This method is also compared with genetic algorithm.

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