

Critique Part 2

Effects of Aloe Vera on Pressure Injuries

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### **Data Collection and Measurement**

Authors Hekmatpou, Mehrabi, Rahzani, and Aminiyan (YEAR) operationalized key variables using the best possible method in order to collect data. Due to the triple blind nature of the design participants could only be observed for signs that their pressure ulcers were either diminishing in size, increasing in size, or remained the same in size (Hekmatpou et al., 2016). Specific instruments were adequately described and were the correct choice given the study purpose and study population. The authors of the study used a demographic questionnaire in order to collect data on the 80 selected participants, as well as a Braden pressure ulcer risk assessment scale, which is relevant to collecting pressure ulcer measurements (Hekmatpou et al., 2016). The authors of the study provide compelling evidence that the data collection methods yielded data that are highly reliable and valid. The authors chose 80 valid and reliable participants based on strict pre-inclusion criteria, whose results could ideally be applied to larger populations, thus signaling high external validity (Polit and Beck, 2013). Also relevant to this study, which is trying to establish a causal relationship, is internal validity, which is the extent to which it can be inferred that the *Aloe Vera* gel is causing participant outcomes. The researchers minimize the risk of unreliable internal validity by establishing two separate groups of participants – one control and one experimental (Polit and Beck, 2013). Furthermore, the measurable results found after the 10-day period of *Aloe Vera* gel application confirm that the intervention was effective and consistent with the results of other similar studies (Hekmatpou et al., 2016).

### **Procedures**

The authors of the study adequately describe the intervention and its implementation. Pretreatment data was collected in advance and then 40 hospitalized participants were placed in

the control group, while the other 40 hospitalized participants were placed in the experimental group. Once placed in their respective groups, participant interventions included the application of Aloe Vera gel or the application of a placebo used second to the *Aloe Vera* gel as a control (Hekmatpou et al., 2016). Researchers should maintain intervention fidelity as it is the degree to which an intervention is competently delivered as prefaced by the researchers prior to beginning to study (Breitenstein, Gross, Garvey, Hill, Fogg, & Resnick, 2010). Decreased fidelity was not evident throughout the study as the authors' successfully maintained procedures and garnered results akin to other similar studies (Hekmatpou et al., 2016). Data was collected in a manner that minimized bias and the staff that collected data was appropriately trained. Researchers use a triple blind and randomized method in order to conceal research design elements from the participants in the research process (Page & Persch, 2013). During this time neither the patients nor the trained nurse, nor the statistician were aware of the data collection and measurement process. Therefore, data were collected based on the number of each patient to ensure the outcome of blindness (Hekmatpou et al., 2016, pg. 4).

### **Results**

The researchers used appropriate statistical methods. SPSS 21 software was used to analyze the data, descriptive statistics were used to describe the data, and Chi-square, Fisher's exact test, and independent t-test were utilized in the interpretation of the data (Hekmatpou et al., 2016). The most powerful analytic method was used to control confounding variables. Confounding variables must be held constant and must not be related to the independent variable or to the outcome (Polit and Beck, 2013, pg. 162). The researchers decreased the incidence of confounding variables by including 80 participants hospitalized on the orthopedics floor, who scored less than 13-14 on the Braden skin assessment tool, and whose admission had been less

than 24 hours and had not been already hospitalized in another unit (Hekmatpou et al., 2016).

The researchers also made it clear that their hypothesis was supported by the results found at the end of the study. In this study the redness in the control group was more than the redness in the intervention group, which represents the effect of Aloe Vera gel on Grade I pressure ulcers (Hekmatpou et al., 2016).

### **Findings**

Information about statistical significance was presented in the study. Statistical significance measures the probability of an accurate hypothesis due to the intervening variable within the experimental group (Tenny, 2018). The authors of the study clearly write that there were statistically significant differences between the control group and experimental group and provide evidence of effectiveness when using the *Aloe Vera* gel on the hip, sacrum, and heel of hospitalized participants versus when using the placebo (Hekmatpou, et al., 2016). The researchers presented significant statistical information (*p* values) about effect size and precision of estimates was evidenced in this study. Data analysis showed that the intervention and control groups had statistically significant differences in rates of incidence of pressure ulcers with the application of the *Aloe Vera* gel intervention (Hekmatpou et al., 2016). By measuring and comparing temperatures of pressure ulcer sites between the control and experimental groups, an analysis showed decreased temperatures in the intervention group as opposed to higher temperatures in the control group. This large difference in percentage between the two groups evidences that the difference is real and not due to a change of factors (Polit & Beck, 2013, pg. 426). Repeated measures of the hip (trochanter) showed a significant temperature decrease in baseline values within the experimental/intervention group ( $P = 0.0001$ ). Repeated measures of sacral temperatures also showed a significant decrease within the experimental/intervention

group ( $p = 0.0001$ ). Heel analysis proved to show that the *Aloe Vera* gel played a significant decrease of temperatures within the experimental/intervention group as well ( $p = 0.0001$ ) (Hekmatpou et al., 2016).

### **Summary Assessment**

The study does show valid findings. I do have confidence in the *truth*-value of the results because of how reliable the researchers' methods and procedures are (Polit and Beck, 2013). The sample population size was adequate, the blind manipulation of interventions (placebo v *Aloe Vera* gel) was also adequate, and so were the results as evidenced by information provided in the background section of the study (Hekmatpou et al., 2016). The study does provide meaningful evidence that can be used in the nursing discipline. Pressure ulcers occur in everyday hospital settings and contribute to high rates of patient dissatisfaction and diminished health. By applying the knowledge gained from reading this article, a nurse can utilize the application of *Aloe Vera* gel on his or her patients and effectively prevent skin pressure ulcers.

### **Conclusion**

Decreased skin integrity poses many problems for an individual as the integument offers the largest form of protection against microbes and infection. As the organ system with the largest surface area it is of the utmost importance to protect it from any shearing forces, tearing, or friction which would cause skin abrasions, among these, pressure ulcers. The research conducted by researchers Hekmatpou, Mehrabi, and Aminiyan evidences the benefits of applying *Aloe Vera* gel on bony prominences, which are areas most at risk for developing skin ulcers. The study, which investigates the effectiveness of *Aloe Vera* gel, evidences the benefit of applying the gel through data analysis by comparing numerical evidence gathered from an intervention and control group. Appropriate statistical methods, data collection and

measurement, and procedures by Hekmatpou, Mehrabi, and Aminiyan demonstrate the positive significance of applying *Aloe Vera* gel in this revealing research study.

References

- Breitenstein, S. M., Gross, D., Garvey, C. A., Hill, C., Fogg, L., & Resnick, B. (2010). Implementation fidelity in community-based interventions. *Research in Nursing & Health, 33*(2), 164-73.
- Hekmatpou, D., Mehrabi, F., Rahzani, K., & Aminiyan, A. (2018). The effect of Aloe Vera gel on prevention of pressure ulcers in patients hospitalized in the orthopedic wards: A randomized triple-blind clinical trial. *BMC Complementary and Alternative Medicine 18*:24
- Lyder C.H, Ayello, (2008) Pressure Ulcers: *A Patient Safety Issue. In Patient Safety and Quality: An Evidence-Based Handbook for Nurses*. Retrieved from:  
<https://www.ncbi.nlm.nih.gov/books/NBK2650/>
- Page, S. J., & Persch, A. C. (2013). Recruitment, retention, and blinding in clinical trials. *The American journal of occupational therapy*: official publication of the American Occupational Therapy Association, 67(2), 154-61.
- Polit, D., & Beck, C.T. (2013). *Essentials of nursing research* (8<sup>th</sup> ed.). Philadelphia: Lippincott Williams & Wilkins.
- Polit, D., & Beck, C.T. (2014). *Essentials of nursing research* (9<sup>th</sup> ed.). Philadelphia: Lippincott Williams & Wilkins.
- Tenny, S. (2018, October 27). Statistical Significance. Retrieved from  
<https://www.ncbi.nlm.nih.gov/books/NBK459346/>