



Time to Heal

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Abstract

Chronic lower extremity wound care is a multi-billion dollar drain on the Medicare system annually. They make up a prevalent socioeconomic and psychosocial burdens for patients worldwide. While, wound care has advanced in many ways, lifestyle modification remains the most important factor for decreasing wound healing times and prevention of recurrence. Smoking, diabetes, and obesity are the three leading causes in chronic wound formation with overlapping mechanisms of formation. Therefore, incorporating management of these comorbidities that adversely impact the wound healing process with evidence-based guideline therapy is vital to decrease the prolonged healing rates and subsequent monetary and psychological drain on the patients and healthcare system.

Introduction

Chronic wounds affect millions of people every year and incur costs of \$25 billion annually. Approximately 1-2% of the population in developed countries is expected to experience a chronic wound at some point in their lives. The incidence of chronic wound formation is higher when associated with obesity, diabetes, and smoking. These comorbidities also increase expected costs and healing times dramatically over time. Considering the financial, social, psychological, and clinical impact of wounds and the associated comorbidities is key for proper healing therapies and therefore targeting the most important modifiable risk factors can improve this further.

There are four stages to wound healing: hemostasis, inflammation, proliferation, and maturation. It is well documented that chronic wounds are arrested in the inflammatory phase. Pro-inflammatory comorbidities such as obesity, smoking, and diabetes will further impede progression and resolution of the inflammatory phase of wound healing. All wounds have the potential to become chronic and this is not usually predicated on location, depth, or initial appearance of the wound except in extreme cases.

Method

- n = 25.
- Patient must have at least one of the following, smoking history, diabetes history, or obesity with BMI >30. This single center retrospective study compared wound healing in patients with individual comorbidities as well as combinations of them. A chronic wound is defined as failure to properly progress and restore anatomic and functional integrity of the skin after at least three months. The results were collected from the EPIC EMR system. No other variables or external sources were used in the data collection process other than EPIC chart review.

Results

- The greatest difference between groups was noted from those with no comorbidities and those that smoked.
- Likewise, those who smoked and also had diabetes had a large difference.

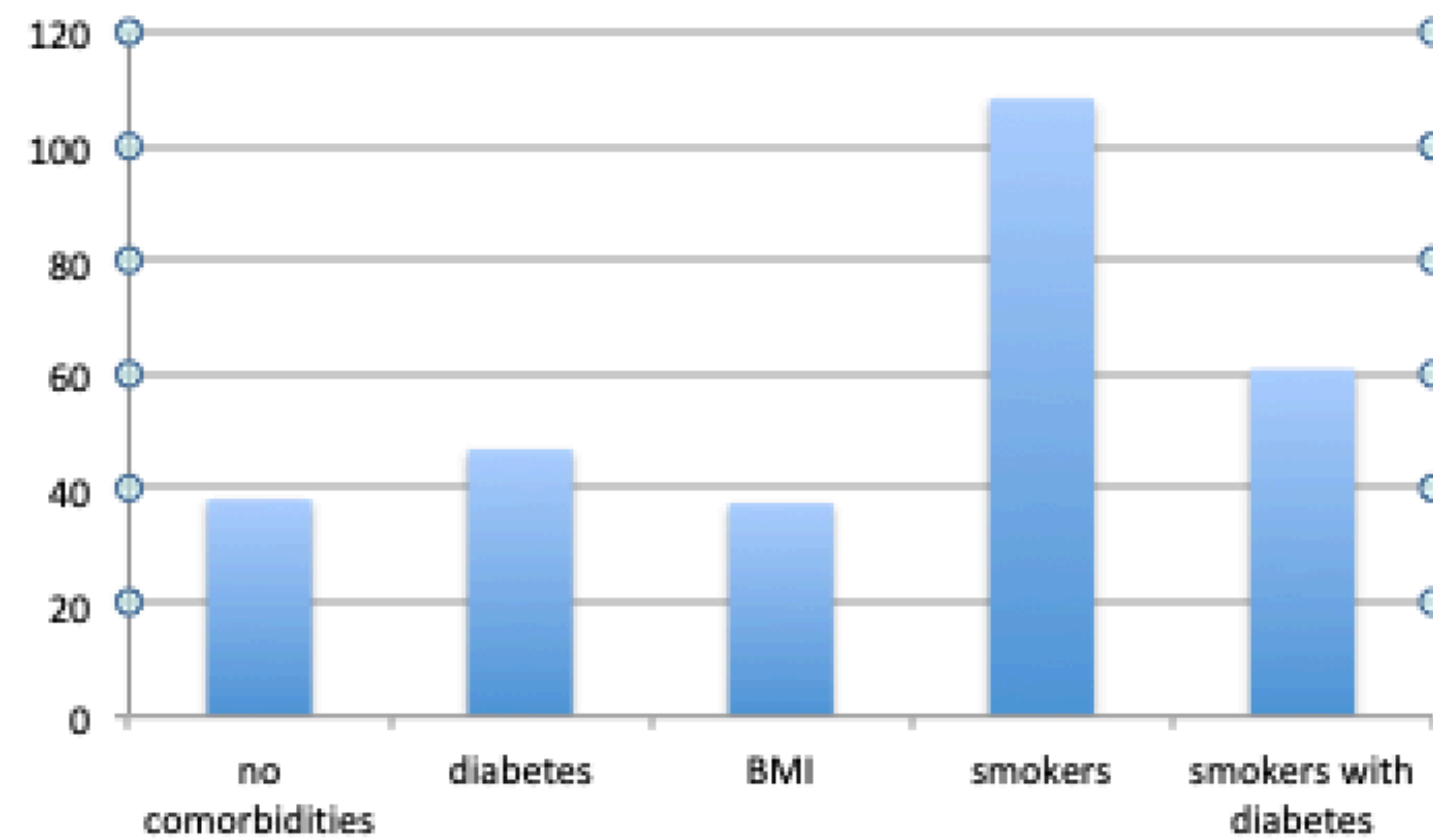
F-statistic value = 2.09366
P-value = 0.09821

Data Summary				
Groups	N	Mean	Std. Dev.	Std. Error
Group 1	4	38	56.9854	28.4927
Group 2	16	40.25	51.292	12.823
Group 3	8	39.375	23.3968	8.272
Group 4	12	108.25	104.5511	30.1813
Group 5	8	60.875	65.0548	23.0003

ANOVA Summary					
Source	Degrees of Freedom	Sum of Squares	Mean Square	F-Stat	P-Value
Between Groups	4	39516.9792	9879.2448	2.0937	0.0982
Within Groups	43	202902.0648	4718.6527		
Total:	47	242419.044			

Group 1 no comorbidities; Group 2 diabetes; Group 3 obesity; Group 4 smokers; Group 5 smokers with diabetes

Wound Healing Duration in Days based on Comorbidities



Discussion

- The purpose of this study was to examine the effect of numeric magnitude on time perception.
- Results showed that duration of a stimulus had an expected effect on subjects reproduction of the stimulus' perceived duration. Numerical magnitude, however, did not.
- The longer the duration of the stimulus, the longer subjects perceived the duration of that stimulus.
- The larger the digit in the stimulus, subjects did not perceived the duration of that stimulus as any longer than a smaller digit.
- Our results did not correspond the results of an earlier study done by Chang. Reasons for this likely due to small sample size and low power.

References

Chang, Tzeng, Hug & Wu (2012). Big Time Is Not Always Long : Numerical Magnitude Automatically Affects Time Reproduction. *Psychological Science*.

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