# The psychology of pain: A retrospective study examining correlation between number of listed allergies on patients' medical charts and PACU pain rating

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Pain is a complex entity of any pre- or postoperative workup, and serves as a subject matter comprised of several aspects. Some make an argument that pain should be considered as the "5th vital sign". Effective pain control pre- and postoperatively is an important aspect to patient care. However, the ability to properly control pain can be limited based on the amount of allergies the patient has. The goal of this paper was to examine if a correlation exists between the number of listed allergies on a patient's medical chart, and immediate postoperative pain rating in PACU. We believed that a correlation would exist between patient reported allergies (PRAs), and PACU pain rating. The results of this study showed that patient reported allergies (PRAs) did not serve as a prognostic indicator for PACU pain rating status post lower extremity podiatric surgical procedures.

**Keywords:** postoperative pain rating, allergies, podiatry, psychology, pain management

Plato believed that pain arose from within the body and indicated it to be more of an emotional experience with sensory, cognitive, motivational, and affective qualities. Pain is known to surpass literal tactile sensation, or the physical awareness of pain. In addition, it also includes perception, learned behaviors, and subjective interpretation of perceived discomforts [1,2]. In the past, studies have examined patient-reported allergies in association with satisfaction scores after lower extremity total knee and total hip arthroplasties [3]. These studies revealed that PRAs did serve as a prognostic indicator in patient reported satisfaction, however no such study had been performed in the podiatric surgical population. The purpose of this paper is to further evaluate the relationship between the number of patient reported allergies and postoperative pain rating to see if a correlation exists.

## Patients and Methods

A retrospective study was conducted examining surgical patients over the span of a little over 3 months, from July 3rd, 2017 through October 3rd, 2017. A total of 122 patients were utilized in the study. All patients were consecutively selected utilizing Epic analytics from a surgical podiatric practice. Each patient's chart was examined to gather the number of patient-reported allergies after which PACU pain rating was rated. This includes all listed allergies, be they true allergies eliciting an anaphylactic type of reaction or be they "allergies" eliciting more a side effect type of reaction. The PACU pain rating was obtained by each patient, and documented by the PACU nursing staff.

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| | | | Anesthesia Type | | | Total |
|---|---|---|---|---|---|---|
| | | | General Anesthesia | General with popliteal block | IV sedation | |
| Surgery Type | ST | # of patients | 29 | 1 | 7 | 37 |
| | | Row percent | 23.97% | 0.83% | 5.79% | 30.59% |
| | B | # of patients | 49 | 3 | 19 | 71 |
| | | Row percent | 40.50% | 2.48% | 15.70% | 58.68% |
| | B + ST | # of patients | 8 | 3 | 2 | 13 |
| | | Row percent | 6.61% | 2.48% | 1.65% | 10.73% |
| Total | | # of patients | 86 | 7 | 28 | 121 |
| | | Row percent | 71.07% | 5.79% | 23.14% | 100% |

**Table 1** Cross Tabulation of Two Variables.

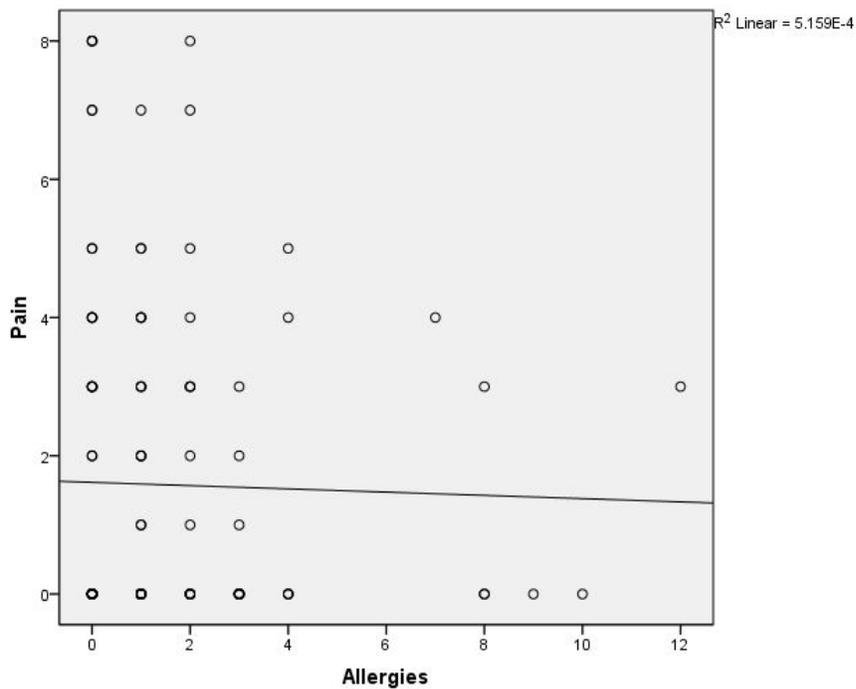| | | | Allergies | Pain |
|---|---|---|---|---|
| Spearman's Rho | Allergies | Correlation coefficient | 1.000 | 0.041 |
| | | Sig. (2-tailed) | --- | 0.656 |
| | | n | 122 | 122 |
| | Pain | Correlation coefficient | 0.041 | 1.000 |
| | | Sig. (2-tailed) | 0.656 | --- |
| | | n | 122 | 122 |

**Table 2** Correlations.



**Figure 1** Scatterplot results.

The type of surgery was also evaluated, whether it was soft tissue alone (ST) (ie: endoscopic plantar fasciitis, ganglion cysts remove, tenotomy, soft tissue mass excision) vs. bone alone (B) (ie: hammertoe, Austin bunionectomy, osteotomy) vs. both soft tissue and bone (B+ST) (ie: Austin with extensor hallucis brevis (EHB) tenotomy). As seen in Table 1, there were a total of 37 patients that received soft tissue procedures alone, 71 patients that received bone procedures alone, and 13 patients that received bone and soft tissue procedures.

Type of anesthesia was noted and grouped into 3 categories: general without popliteal block, general with popliteal block, or IV sedation. The total number of patients receiving each type of anesthesia are also displayed in Table 1. Spearman's correlation was run to evaluate if PRAs had prognostic value for PACU pain rating. In addition, the type of anesthesia received pre-emptively was utilized to evaluate if one form of anesthesia over another in relation to procedure type had prognostic value in PACU pain rating.

## Results

All statistical analyses were conducted in IBM SPSS for Windows Version 18. A Spearman's correlation was computed to assess the relationship between the number of patient's allergies and their pain scale. These results can be seen tin Table 2. Results showed that there was no correlation between the two variables (r=0.04, n=122, P-value =1.00). The scatter plot in Figure 1 summarizes the results. P-value <0.05 was considered significant. These results show there is no correlation between the number of patient's allergies and their pain scale.

To see any association between type of surgery and anesthesia, a cross tabulation was done. These results can be seen in Table 1. Since more than 20% of the cells had less than four patients, a Chi Square Test was not recommended. Instead, it was best to report descriptive statistics only.

## Discussion

Pain is an extremely complex aspect of medicine not only to evaluate, but to effectively manage as well. Pain is a biological, as well as learned aspect. Pain can be learned from cultural, psychological, emotional, and financial backgrounds. Prior studies have shown

that how we experience a painful event is strongly influenced by our prior learning history [1,2]. Therefore, effectively managing and addressing a patient's pain, especially in the postoperative time frame, serves as a challenge to the physician and treatment team.

This retrospective study sought to evaluate if there exists a correlation between the number of listed allergies on a patient's medical record and their PACU pain rating scale. The Spearman's correlation revealed no correlation between the two variables. No correlation could be found regardless of the type of surgery was performed, or what type of anesthesia the patient received preoperatively.

Although our hypothesis did not hold true, the results serve as an indicator in the fact that pain is indeed extremely complex and serves as a challenge for medical professionals to effectively manage. Although the authors do not necessarily believe that pain should be considered the "5th vital sign", it is believed that more emphasis should be given to patient's allergy list in properly addressing preemptive pain management for surgical patients.

Although an increasing number of patient-reported allergies was not seen to be associated with worse pain ratings, several limitations were present during this study. Some limitations of this study were inclusive of population size, and the challenge of objectively analyzing such a subjective topic. Only having utilized data from one surgical practice limits our study. In addition, different factors which have been known to contribute with subjective outcome measures include: race and ethnicity, education levels, and learned behaviors drawn from past-life experiences. In the future, to more accurately assess and predict the outcome of rated pain postoperatively in podiatric surgeries, this study can delve further into individual demographic, experiences, and learned behaviors

**Disclosure:** The authors declare that they have no relevant or material financial interests that relate to the research described in this paper

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