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SENTIMENT ANALYSIS OF PAIN PHYSICIAN REVIEWS ON HEALTHGRADES, A PHYSICIAN REVIEW WEBSITE

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Introduction

There are currently no published studies using patient reviews of pain physicians to quantitatively assess patient preferences for pain physician attributes. The aim of the present study was to use natural language processing to quantitatively analyze patient reviews of pain physicians by determining the effect of physician demographics and word frequency on positive review outcomes.

Materials and Methods

Using a peer-reviewed algorithm, online Healthgrades reviews of pain physicians practicing in the United States were scored according to their positive sentiment from -1 to 1. These sentiment scores and star ratings were used to compare physicians by age, gender and region of practice. Frequency analysis of words and bigrams was performed for all reviews. As the reviews are devoid of patient identifiable information, it is exempt from IRB review requirements as per the Icahn School of Medicine IRB policy.

Results/Case Report

15101 reviews among 1275 pain physicians showed male physicians received higher star ratings and review sentiment scores than did female physicians. Pain physicians younger than 55 years received higher star ratings and sentiment scores than those of 55 years and older. Frequency analysis revealed that words most commonly used in the more positive patient reviews included “care”, “professional”, “patient”, “help”, and “kind”; the words most commonly used in less positive reviews included “pain”, “back”, “office”, “time”, and “years”.

Discussion

Male and/or younger pain physicians receive more positive reviews. Patients highly rate pain physicians who are perceived as personable. Patients lowly rate physicians who are perceived as providing ineffective treatment of their pain as well as when they experience barriers to their access to care.

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Disclosures

No

Tables / Images

Demographics	Healthgrades Sample Percentages	Current National Percentages
Gender		
Male	1071 (84%)	4745 (81%)
Female	204 (16%)	1113 (19%)
Age*		
< 55	759 (63.8%)	4074 (69.4%)
≥ 55	430 (36.2%)	1797 (30.6%)
Region		
West	178 (14.0%)	1154 (19.2%)
Midwest	268 (21.0%)	1179 (19.6%)
Southwest	231 (18.1%)	775 (12.9%)
Southeast	385 (30.2%)	1626 (27.0%)
Northeast	213 (16.7%)	1278 (21.3%)

* 86 physicians did not report their age and were excluded from age analyses.

Metric	Male (mean ± SD)	Female (mean ± SD)	*P* value	Age <55 (mean ± SD)	Age ≥55 (mean ± SD)	*P* value
Star rating (/5)	4.01 ± 1.67	3.80 ± 1.79	**<0.001**	3.93 ± 0.923	3.74 ± 1.01	**<0.001**
VADER score [-1, +1]	0.322 ± 0.658	0.262 ± 0.676	**<0.001**	0.295 ± 0.320	0.240 ± 0.341	**0.006**

Comparison by gender and age of star rating and VADER sentiment score

Positive Reviews		Negative Reviews	
care	3594	pain	6245
professional	1429	back	1979
patient	1386	time	1427
help	1304	office	1236
kind	1123	years	1153
treatment	1071	staff	1090
feel	1059	appointment	761
friendly	963	procedure	687
procedure	923	injections	621
listens	905	rude	602
questions	893	treatment	596
compassionate	853	meds	484
life	836	‘back’, ‘pain’	484
knowledgeable	802	injection	468
‘takes’, ‘time’	516	chronic	439
‘bedside’, ‘manner’	337	‘chronic', 'pain'	299
‘office’, ‘staff’	333	‘lower', 'back'	238
‘took’, ‘time’	290	‘pain', 'meds'	217
‘pain’, ‘free’	257	‘office', 'staff'	193
‘time', ‘listen’	236	‘pain', 'medication'	121
‘cares’, ‘patients’	221	‘waste', 'time'	119
‘quality’, ‘life’	209	‘severe', 'pain'	114

Select words’ and bigrams’ frequencies in positive and not positive reviews; cutoff for “positive”