How Does Obesity Impact the Quality of EMS Care?

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Introduction

Numerous studies have demonstrated that in several areas of hospital-based medicine patients with obesity are more likely to receive substandard medical treatment. [1-7]

Patients with obesity are more likely to experience negative interactions with medical providers that are commonly characterized by disrespect, condescension, and substandard treatment.

Negative interactions with medical providers have direct mortality and morbidity consequences through decreased rates of treatment participation and avoidance of medical care.

While considerable attention has been paid to the challenges the field of Emergency Medical Services (EMS) faces when providing care to the increasing population of patients with obesity, very few studies have explored the potential for obesity-related treatment disparities in EMS.

Objective

This study investigates the relationship between a patient's obesity status and EMS medical care.

Methods

Cross-sectional, retrospective study using a private dataset of all adult pre-hospital patients with a traumatic injury or a chief complaint of atraumatic pain from 2015-2019 in Vancouver, WA, focusing on two outcome measures: pain screening and pain medication administration.

Bivariate descriptive statistics, adjusted multivariable logistic regression models, and adjusted multinomial regression models with intersections for gender and race and ethnicity.

Descriptive Results

	Total		Not Obese (BMI < 30)		Obese (BMI 30-39)		Severely Obese (BMI > 39)	
	n		%	n	%	n	%	n
Total	18,000		67%	11,987	23%	4,220	10%	1,793
Age, y (mean, SD)	61 (22)		62 (24)		58 (20)		56 (17)	
Gender								
Male	43.2%	7,769	43.6%	5,223	46.6%	1,965	32.4%	581
Female	56.8%	10,231	56.4%	6,764	53.4%	2,255	67.6%	1,212
Primary Impressions								
Traumatic Injury	59.3%	10,680	61.7%	7,391	56.7%	2,392	50.0%	897
Abdominal Pain	18.4%	3,311	17.8%	2,132	17.8%	753	23.8%	426
Back or Body Pain	18.2%	3,277	16.5%	1,975	21.1%	890	23.0%	412
Pain Management	4.1%	732	4.1%	489	4.4%	185	3.2%	58

Models

Table 3-3: Multivariable Logistic Regression of Obesity Status on Pain Screening

	Model 1 [#]		Model 2 [#]	
Regressor	B	OR	B	OR
Not Obese				
Obese (BMI 30-39)	0.22	1.24***	0.36	1.44***
Severely Obese (BMI >39)	0.25	1.29***	0.39	1.47***
Female	0.19	1.20***	0.26	1.30***
Female X Obese			-0.27	0.76**
Female X Severely Obese			-0.22	0.81
Constant	0.812		0.812	
Number of Cases	18,000		18,000	
-2 log likelihood	20,411		20,914	
Pseudo R2 (Nagelkerke)	0.135		0.135	

Note: B = logistic regression coefficient and OR=odds ratio
* p< .05, ** p< .01, *** p< .001
\# - Model adjusts for: patient race, patient gender, patient age, patient health insurance, primary impression, and incident year

Table 3-4: Multivariable Logistic Regression of Obesity Status on Pain Medication Administration

	Model 1 [#]		Model 2 [#]	
Regressor	B	OR	B	OR
Not Obese				
Obese (BMI 30-39)	0.11	1.11*	0.23	1.25**
Severely Obese (BMI >39)	-0.01	0.99	0.26	1.29*
Female	0.05	1.06	0.15	1.16**
Female X Obese			-0.21	0.81*
Female X Severely Obese			-0.41	0.67**
Constant	-1.445		-1.445	
Number of Cases	18,000		18,000	
-2 log likelihood	14,367		14,357	
Pseudo R2 (Nagelkerke)	0.260		0.261	

Note: B = logistic regression coefficient and OR=odds ratio
* p< .05, ** p< .01, *** p< .001
\# - Adjusts for: patient race, patient gender, patient age, patient health insurance, primary impression, pain screening, initial pain score, and incident year

Photo featuring plus-size model by Michael Poley of Poley Creative for AllGo, publisher of free stock photos featuring plus-size people.

Conclusions

Regarding Pain Screening:

- Unexpectedly, patients with obesity or severe obesity were *more* likely to receive a pain screening when considered as a whole.

- However, men with obesity received a pain screening outcome advantage compared to non-obese men, while women with obesity received a disadvantage when compared to non-obese women.

Regarding Pain Medication:

- Also unexpectedly, patients with obesity were more likely to receive pain medications when considered as a whole.

- However again, women received a treatment disadvantage from being obese when compared to men and were less likely to receive pain medications when compared to obese men.

Conclusion:

- Overall, patients with obesity received an EMS treatment advantage.

- However, **for each outcome measured, obesity conferred an advantage for men, but a disadvantage for women**.

- For men generally, the more obese the better the EMS treatment for pain.

- For women generally, the more obese the worse the EMS treatment for pain.