The Prevalence of Homeless Patients in the Emergency Department

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Abstract:

This study was done to observe the prevalence of homeless patients and to accurately identify homeless patients coming through the emergency departments of all three Lehigh Valley Health Network (LVHN) hospital locations. It was hypothesized that there would be a difference among homeless patient volume within LVHN hospital locations, and once this difference is found, Lehigh Valley Health Network can use its resources to meet the needs of the homeless patients. At 17th Street, there was a prevalence of 21% homeless or at risk of homeless patients. Both Muhlenberg and Cedar Crest locations each had a prevalence of 8% homelessness or risk of homelessness. The prevalence of homelessness was greater at 17th Street than at Cedar Crest ($p=0.001$). The prevalence of homelessness was greater at 17th Street than at Muhlenberg ($p=0.0001$). No statistically significant difference in the prevalence of homeless or at risk of homelessness patients was found between Cedar Crest and Muhlenberg ($p=0.920$). More data should be collected from the 17th Street site and the survey should be administered in both English and Spanish in order to identify more homeless patients. Depending on the results of a further study, more resources should be allocated for employing a full time Street Medicine consult service at the 17th Street site and providing low cost primary, non-emergent care to greater areas of the city.

Introduction:

Homelessness is a slowly declining epidemic in the United States of America. In 2014, around 578,424 people were found to experience homelessness every night[1], a decrease from the 610,042 homeless found in 2013[2]. This epidemic however is not over. Lehigh and Northampton counties have an estimated 10,500 residents who qualify as being homeless[3]. Chronic homelessness is defined as being "continually homeless over one year or more or as having four or more episodes in the past three years,"[4]. Most of these chronically homeless have a greater chance of poor health. This greater risk can be attributed to a number of factors including higher rates of mental illness, addiction, and alcoholism or lack of access to primary health care facilities [5]. In a survey of 2,578 homeless individuals, it was found that 40.1% of the individuals visited the emergency department at least once in the past year and 7.9% of the individuals visited an emergency department four or more times in the past year. Of those surveyed, 27.8% reported having at least one of the following chronic illnesses- heart disease or stroke, high blood pressure, asthma, diabetes, or emphysema- and 18.4 % reported that the only outpatient care they received in the past year was from an emergency department[5]. Lehigh Valley Health Network employs a Street Medicine team lead by PA Brett Feldman. This team holds clinics at local soup kitchens and shelters, goes to the homeless encampments and treats those living in them free of charge, and also consults with doctors of hospitalized homeless patients to ensure a course of treatment that will help the patient with compliance once they are discharged.

This study was done to observe the prevalence of homeless patients and to accurately identify homeless patients coming through the emergency departments of all three Lehigh Valley Health Network (LVHN) hospitals. Would the 17th street location have a higher population of homeless patients than the Muhlenberg or Cedar Crest locations? If the number of homeless patients is greater at one

location, why is it greater? How could these numbers be lowered, especially in non-emergent cases? Are any of the homeless patients being seen more than once over the course of the study? The findings of this study will help to assess the Lehigh Valley's homeless population. Moreover, these findings will also help to better allocate resources to programs that could help this high risk population.

Methods:

This was an Institutional Review Board (IRB) approved cohort study. The data was collected over a period from May 2015-July 2015 by CITI trained medical students, physician assistant students, and undergraduate research scholars. Collection of the data was done by administering an anonymous five question survey to patients in each of LVHN hospitals' three emergency departments. The survey questions were:

In the past 60 days have you,

1. Changed residences more than twice?
2. Been concerned about losing your housing?
3. Lived with a friend or family member you do not normally reside with due to financial hardship?
4. Faced eviction or have been evicted from your current living situation?
5. Slept outside, in an abandoned building, your car, in an emergency shelter or a motel due to financial hardship?

Each question required a yes or no answer. A patient was considered homeless if he or she answered yes to any question except question two. A patient was considered "at risk of homelessness" if he or she answered yes to question two. This survey was administered in randomly assigned shifts to avoid selection bias. The shifts were either from 7:00 AM to 4:00 PM or from 4:00PM to 1:00 AM. Weekends were not excluded from the screening process. These shifts allowed the students to obtain accurate data representative of all times of days and all days of week. The survey was administered electronically using a laptop. The survey answers were sent to a secure online interface in which the data was deidentified and stored anonymously. All the patients in an assigned shift area were surveyed except for non-English speakers, minors, those who did not have the capacity to answer, those who were critically ill, and those who were not interested in participating.

Results:

	Total	**17th St**	**Cedar Crest**	**Muhlenberg**
At Risk for Homelessness	55	16	21	18
Homeless	114	45	34	35
Neither	1447	214	618	615
Total	1616	275	673	668

Table 1: Total Patient Data breakdown by Location

Site	At Risk (%)	Homelessness (%)	Total (%)
17th	6%	16%	21%
CC	3%	5%	8%
MHC	3%	5%	8%

Table 2: Percentages of Homeless and at Risk of Homelessness Patients by Location

The total number of recruited participants was 1646 with 30 participants being excluded from the findings due to duplicate surveying. 17th Street accounted for 17% of the total participants surveyed. Muhlenberg and Cedar Crest each accounted for 41.5% of the participants surveyed. At 17th Street, there was a prevalence of 21% homeless or at risk of homeless patients. Both Muhlenberg and Cedar Crest locations each had a prevalence of 8% homelessness or risk of homelessness. The prevalence of homelessness was greater at 17th Street than at Cedar Crest ($p=0.001$). The prevalence of homelessness was greater at 17th Street than at Muhlenberg ($p=0.0001$). No statistically significant difference in the prevalence of homeless or at risk of homelessness patients was found between Cedar Crest and Muhlenberg ($p=0.920$).

Discussion & Conclusion:

According to the results of this study, the prevalence of homelessness was statistically higher in 17th Street Hospital's emergency department than any other emergency department of LVHN hospitals. Moreover, even though there was a smaller sample size from the 17th Street Hospital, the total number of homeless patients was almost equal to the other two hospitals. Therefore, there is a difference in homeless patient volume among LVHN hospital emergency rooms, which confirms our initial hypothesis. In light of these findings, appropriation of street medicine resources should be done to efficiently help as many patients as possible. One such way to do this would be to use the survey in the initial intake log of patients to get a more complete social history of each patient. If a patient is identified as homeless or at risk of homelessness, then they can qualify to get free medicine and lab work done through the street medicine program.

The higher occurrence can be attributed to the location of the hospital. Compared to the neighborhoods of the two other hospitals that were included in this study, the neighborhood of 17th Street Hospital has the lowest mean household income. According to the United States Census Bureau in 2013, the zip code of 17th Street Hospital (18103), had a mean household income of $65,256, the zip code of Muhlenberg Hospital (18107) had a mean household income of $78,418, and the zip code of Cedar Crest Hospital (18104) had a mean household income of $86,207[6]. Therefore, the neighborhood of 17th Street Hospital has a lower income that is statistically significantly different than neighborhoods of the other two hospitals in the study (in both instances $p<0.0001$). Thus, the hospital in the lowest income area had

highest prevalence of homeless in its emergency department. In light of our findings, more resources can be allocated to 17th Street Hospital to identify and take care of the homeless patients.
Although this was an Institutional Review Board (IRB) approved cohort study, there can be a few possible sources of error. First, the subjects might not have answered the survey questions truthfully. Therefore, the data from this study might have suffered from social desirability bias. According to social desirability bias, the people that are interviewed might answer in a misleading manner to be seen favorably by the interviewer. For instance, a homeless individual might answer "No" to the questions in order to not seem inferior by the health care team in the emergency department and receive lower quality care even though all the patients were assured that the responses to the questions would not interfere with the quality of the care provided. The presence of this bias, however, would only underestimate the prevalence of homeless patients who come through the emergency department.
In addition to the integrity of the subjects, the sample size can be a source of error. Although the number of individuals that have taken the survey is equal between Muhlenberg and Cedar Crest hospital, the sample size at 17th Street Hospital is almost half the size of the other two. Therefore, the data from the 17th Street Hospital might be biased due to the fact that more variance is likely to occur in smaller samples. Larger samples provide less variance and better evidence. Although there was a smaller sample size from the 17th Street Hospital, the total number of homeless patients was almost equal to the other two hospitals. After a T-test, the difference is statistically significant from the data obtained from the other hospitals.

Resources:

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