

# Analysis of the Health Status of the Homeless Clients Utilizing a Free Clinic

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**Abstract** The purpose of this study is to evaluate the health status of the homeless population who utilize a free clinic. The study specifically aims to compare the prevalence of asthma, diabetes, tuberculosis, mental health disorders, sexually transmitted diseases, sinus problems, and hepatitis among the homeless population. Investigators collected data from paper medical records during patient visits from 2004 to 2009. Diagnosed health conditions among the homeless population were compared to the general clinic users using logistic regression. There were several similarities between the general clinic and homeless population, however, the homeless population had statistically significant ( $p < 0.05$ ) outcomes for diagnosed cases of tuberculosis, hepatitis, anxiety, and bipolar disorders. Prevalence of diabetes, sinus problems, asthma, diabetes, and depression were similar among both populations. The odds ratios among hepatitis, tuberculosis, STDs, bipolar disorder and anxiety disorder indicated the

homeless had a significantly greater risk of developing hepatitis, tuberculosis, and bipolar disorder. This study adds to the literature by illustrating the characteristics of the homeless population who utilize the free health clinic and their medical conditions. Previous studies have shown the free clinic clients have a lower level of health than the general population. This study finds that the homeless clients of a free clinic have an even worse level of health than the general clinic clients. This research can contribute to the improvement of the healthcare delivery system in providing access to needed health care services for the homeless population.

**Keywords** Free clinics · Homeless · Uninsured · Medical conditions

## Background

The homeless population is an estimated 1.6 million individuals in the United States and is projected to increase five percent by 2013 [1]. The U.S. Department of Housing and Urban Development defines homelessness as “lack[ing] a fixed, regular, and adequate nighttime residence” [2]. Homeless individuals fall into their state due to various conditions both within and out of their control. Financial difficulties due to unemployment, lack of public assistance, health expenses, disability, divorce, and others can leave individuals with limited means of seeking a stable residence. Additionally, uncontrollable events such as natural disasters or fires can contribute to homelessness. The homeless population consists of a greater percentage of single males than females with a rise in the number of families [1]. Furthermore, of the total homeless population, a greater proportion are African Americans (49 %),

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compared to Caucasians (35 %) and Hispanic (13 %) [3]. Previous literature has further illustrated that African American women had a higher rate of homelessness compared to their White and Hispanic counterparts [4]. In addition to disparities among ethnicity, level of formal education has also been associated with homelessness. The prevalence of homelessness was reported greater in elementary aged children whose parents only had a high-school education level, 11 %, than compared to parents with a 4 year college education, 3 % [4].

The homeless population is characterized by significant disparities in health including high rates of mortality, mental illness, chronic conditions, and dental problems [5]. In a study analyzing the unmet needs of homeless adults, approximately 73 % of individuals reported at least one unmet healthcare need. The most common reason was a lack of health insurance or inability to afford care [5]. The unmet health care needs for the homeless population were six to ten times greater than the general population [5]. Chronically unsheltered adults had high self-reported rates of lifetime mental illness, substance abuse, and repeated trauma [6]. Those who suffer from homelessness also experience chronic and acute conditions such as respiratory disorders (tuberculosis and chronic lung disease), cardiovascular disease (hypertension), ulcers, HIV/AIDS, and traumatic injuries due to falls, assaults, and accidents [7]. In addition to these conditions, the homeless population is more prone to contract common colds, influenza, and muscle aches and pains as opposed to the general population due to their exposure to unsanitary conditions and lack of a stable shelter [7]. This population becomes at risk when their conditions and illnesses are left untreated, causing a disparity in healthcare.

Furthermore, health status is directly associated with healthy eating habits. Lack of food is more prevalent in the homeless population than compared to the general public [8]. Of those who reported their health status as poor, 45 % of individuals were categorized as food insufficient compared to 27 % who were not, potentially illustrating a significant correlation with food insufficiency among the homeless population [8]. It can be concluded that individuals among the homeless population may be more likely to report poor health status due to the relationship between food insecurity and homelessness.

#### Services Available to Homeless Individuals in the Champaign-Urbana Area

Champaign County is located in east central Illinois and consists of both rural and urban areas. The metropolitan area includes the cities of Champaign and Urbana. The county has a population of 201,081 [9] with the main cities of Champaign and Urbana consisting of a population of 122,305 [9]. In 2005, it was estimated that 308 individuals

were homeless in the cities of Champaign and Urbana [10]. In 2009, this number increased to 495 individuals [10]. During the cold winters, these individuals may move in with their family and friends, or they may travel to warmer climates. This trend could potentially skew the data upward for this at-risk population during the summer months [11]. Due to the increase in homelessness, Champaign County received approximately \$800,000 for public agencies and shelters to aid this population in 2009 [10].

There are several accommodations to help support homeless individuals within Champaign County. Shelters provide temporary residence and seek to improve the health and well being of the homeless community. Group homes aid those with psychiatric problems by helping them regain their independence [12]. Additionally, one particular organization funded by the U.S. Department of Housing and Urban Development distributes housing vouchers to lower the amount of homeless individuals [12].

Homeless shelters assist in addressing barriers to employment such as being “chronically homeless, severe mental/physical disability, high family demands including dependent children, substance abuse history, mental illness, or felonious criminal history” [13]. Additionally, these organizations encourage counseling services, treatment for substance abuse (drugs and/or alcohol), management of finances, and other projects to reduce homelessness as well as provide temporary residence for individuals [14]. Although such services are available for daily use, women do not have 24-hour accommodations or shelters in Champaign County [15]. One organization assists in meeting the basic needs of housing and food as well as providing case and financial management, transportation, support groups, and tutoring for the women’s children [15]. Local food pantries donate food and clothing, offer financial management, and provide access to computers to a diverse group of individuals, many of whom include the homeless, mentally ill, jobless, and those who make minimum wage or cannot afford to buy food [16]. In addition to supplying lunches, certain organizations provide bus passes and help individuals obtain state identification and birth certificates [17].

While these resources can provide individuals with shelter and food, this at-risk population is limited in their access to health care resources. This population generally seeks preventative care in a clinic or health center [4]. Studies have also found that the chronically homeless families experience greater rates of emergency department visits than the general population. Past research illustrated approximately 52 % of the homeless population were admitted for mental health or substance abuse treatment and the length of hospital admission stay was longer [7]. Champaign County has several locations for the homeless population to seek medical attention. There are two main hospitals, two free health clinics, and a Federally Qualified

Community Health Center (FQCHC). The underserved and uninsured populations often utilize the hospital emergency departments and local clinics for their health care needs.

The Champaign County Christian Health Care Center (CCCHC), operating since 2004, is the free clinic utilized in this study. The CCCHC provides free, holistic, quality healthcare from volunteer physicians to anyone who lacks health insurance [18]. The purpose of this study is to evaluate the health status of the homeless population who utilize this clinic. This study aims to specifically compare the prevalence of asthma, diabetes, tuberculosis (TB), mental health disorders, sexually transmitted diseases (STDs), sinus problems and hepatitis among the homeless population. These conditions were included among the top five medical conditions reported within the general clinic population as well as conditions commonly associated with the homeless population [19]. Past literature has indicated that the overall population at CCCHC is characterized with poorer health as illustrated with greater rates of hypertension, obesity, and mental health issues compared to the overall county population [19].

## Methods

This study and all participating researchers received appropriate Institutional Review Board approval by the University of Illinois at Urbana-Champaign. Researchers collected 2,279 paper medical records from patient visits from 2004 to 2009 representing the entire clinic patient population. Variables recorded into an electronic database included patient street address, city, state, zip code, year of birth, gender, blood pressure, height, weight, smoking status, self-reported history, self-reported social service needs, and medical condition(s). Data with missing addresses were omitted from the analysis. Mapping the distribution of patients illustrated clusters which further confirmed locations of homeless shelters or other organizations in which homeless individuals sought refuge. This resulted in identifying 122 individuals as homeless, which were compared to the remaining 2,157 general patient clients. All data was analyzed using STATA 11.0 software.

Analysis of the data included observing the health status of homeless individuals compared to the total patient population. Individuals under the age of 18 years were excluded in the analysis. Variables were recorded as yes/no for the diagnosed health conditions. Health condition data were based on physician diagnoses recorded in patient medical records. Descriptive statistics and Chi-square analysis were utilized to determine prevalence rates and statistical significant of diabetes, STDs, depression, anxiety, bipolar, hepatitis, TB, sinus problems, and asthma between the general clinic population and the homeless population.

## Results

A total of 2,279 patient records were documented, of which 122 individuals were determined to be homeless based on their residential address, representing approximately 5.4 % of the clinic population. The prevalence rates for all patients for depression were 19.8 %, sinus problems 17.9 %, anxiety 13.8 %, asthma 8.9 %, diabetes 7.6 %, STDs 5.8 %, bipolar 4.7 %, hepatitis 2.5 %, and less than one percent for tuberculosis. Frequency of diabetes, hepatitis, TB, STDs, sinus problems, asthma, depression, anxiety, and bipolar disorders among the general clinic and homeless population are reported in Table 1. Depression was the most prevalent diagnosed condition accounting for approximately 20 % of the population among the homeless individuals and general clinic users. Anxiety was also reported in 20 % of the homeless population, greater than reported among the general clinic population (13.8 %). The prevalence of sinus problems was approximately equal to one another, 18.9 and 17.9 % for the homeless and general clinic users respectively. Bipolar disorder was diagnosed among 11 % of the homeless population, compared to fewer than 5 % among the general clinic population. Hepatitis was reported more frequently among the homeless population, with almost 10 % of patients, compared to 3 % in the general clinic population. Chi-square analysis were calculated between the homeless and general clinic populations as well as logistic regressions to determine odds ratios and p-values. The prevalence of hepatitis was found to have the greatest odds ratio among homelessness (OR = 4.2), followed by TB (OR = 3.8), bipolar disorder (OR = 2.4), anxiety disorder (OR = 1.6), and STDs (OR = 1.4). The remaining diagnosed conditions, diabetes, asthma, depression, and sinus problems did not result in an odds ratio of statistical significance. All odds ratios are reported in Table 2.

**Table 1** Frequency and percentage of diagnosed ailments

| Diagnosis      | General clinic |      | Homeless |      |
|----------------|----------------|------|----------|------|
|                | <i>n</i>       | %    | <i>n</i> | %    |
| Diabetes       | 163            | 7.6  | 9        | 7.4  |
| Hepatitis      | 54             | 2.5  | 12       | 9.8  |
| Tuberculosis   | 19             | <1   | 4        | 3.3  |
| STDs           | 126            | 5.8  | 10       | 8.2  |
| Sinus Problems | 385            | 17.9 | 23       | 18.9 |
| Asthma         | 191            | 8.9  | 8        | 6.6  |
| Depression     | 432            | 20.0 | 25       | 20.5 |
| Anxiety        | 298            | 13.8 | 23       | 20.5 |
| Bipolar        | 101            | 4.7  | 13       | 10.7 |

**Table 2** Odds ratio for diagnosed conditions among the homeless population

| Diagnosed condition | Odds ratio |
|---------------------|------------|
| Diabetes            | 0.97       |
| Hepatitis           | 4.25***    |
| Tuberculosis        | 3.81*      |
| STDs                | 1.44       |
| Sinus problems      | 1.07       |
| Asthma              | 0.72       |
| Depression          | 1.09       |
| Anxiety             | 1.61*      |
| Bipolar disorder    | 2.43*      |

Statistical significance \*  $p < 0.05$ ; \*\*\*  $p < 0.001$

## Discussion

The results indicated that the health status of homeless individuals differed significantly than those with stable home residences. The four conditions that resulted in statistical significance differences among the homeless population compared to the general clinic users included hepatitis, TB, bipolar, and anxiety. Odds ratios suggest that homeless individuals have a significantly greater risk of developing hepatitis, TB, STDs, and bipolar disorder than the general clinic users. Logistic regressions indicate statistical significance among the homeless population for hepatitis ( $p < 0.001$ ), TB ( $p = 0.016$ ), anxiety ( $p = 0.041$ ) and bipolar disorders ( $p = 0.004$ ) when compared to the general clinic clients. Additionally, homeless individuals among this population had a statistically significant likelihood to be diagnosed with the previously mentioned conditions when compared to the general clinic users. The remaining conditions, diabetes, STDs, sinus problems, asthma, and depression, did not have statistically significant differences.

Supported by the literature, the homeless population observed from this free clinic had a greater prevalence of hepatitis, TB and mental illness. Results indicated that the homeless population was more likely to be diagnosed with hepatitis, TB, anxiety and bipolar disorders than the general clinic population. A recent study similarly found that the homeless population experienced chronic and acute conditions such as TB, chronic lung disease, hypertension, and HIV/AIDS [7]. Additionally, past literature has illustrated that high rates of lifetime mental illness are reported among the homeless [6].

### Hepatitis

The homeless population used in this study was over four times more likely to be diagnosed with hepatitis (OR = 4.25) and indicated statistical significance ( $p < 0.001$ ). Hepatitis can be classified as type A, B, C, D,

or E. Possible risk factors for each type may include fecal contamination, sexual transmission from infected individuals, or sharing needles among injection drug users [20]. Detailed analysis on the distribution of hepatitis among the free clinic population was not possible as medical records did not specify the type of hepatitis. A 2007 survey found that nationally, two-thirds of the homeless population indicated that substance and alcohol abuse contributed to their homelessness [21]. This population consists of low-income individuals who may have less access to, ability to obtain, or motivation to seek substance and drug abuse treatment. Therefore, if homeless individuals continue to use drugs, it will result in poorer health outcomes by increasing their risk to contract various types of hepatitis. More support from family, social networks, and social services is necessary for these individuals to seek proper recovery from drug and substance abuse.

### Tuberculosis

The prevalence of TB was reported to be much greater among the homeless population than general clinic users. The homeless population was approximately four times more likely to be diagnosed with TB than the general clinic users (OR = 3.82), which was statistically significant ( $p = 0.016$ ). Additionally, TB was reported to be considerably greater among the homeless population (3.28 %) compared to the state average (<0.01 %) [22]. Injection drug users and those with HIV/AIDS have weaker immune systems, which may place them at greater risk for contracting TB as it is highly contagious. Environments such as congested living arrangements inside homeless shelters can increase the possibility of spreading contagious diseases at a much greater rate [23]. Although TB can become dormant when not active, proper disease treatment and management is crucial in reducing the spread of this disease. Identifying health care resources for this population can be helpful in identifying symptoms and treatment options for TB.

### Sexually Transmitted Diseases

Similarly, STDs were reported to have a greater odds ratio (OR = 1.44) among the homeless population than the general clinic population. The odds ratio indicated that homeless individuals had a greater likelihood to be diagnosed with STDs than the general clinic. Detailed analysis was not possible because data were not available on the specific types of STDs. Previous research has provided evidence illustrating a greater prevalence of HIV/AIDS as well as other STDs among this population [24]. Furthermore, it is reported that the homeless population has greater difficulties accessing adequate health care and

social services, which are necessary to manage diseases such as STDs and HIV/AIDS. When analyzing the data that was available from the CCCHC, it was not possible to accurately investigate relationships and correlations with no specific diagnosis on STDs.

#### Mental Health (Depression)

Depression, anxiety, and bipolar disorders fall under the umbrella of mental health conditions. Mental health conditions should be noted because of their greater prevalence among the clinic's homeless population. The homeless clinic population had approximately the same likelihood as the general clinic population of being diagnosed with depression (OR = 1.03). Risk factors associated with depression include biological factors, gender, alcoholism, experiencing traumatic or stressful events, having a serious illness (e.g. cancer, heart disease, or HIV/AIDS), smoking, drug abuse, and socioeconomic status [25]. Past literature indicated that 29 % of the homeless women were diagnosed with depression and were twice as likely to not receive care for their depression [26]. As the literature helps illustrate, the study population demonstrates the increase prevalence of depression as well as other mental health disorders among the homeless population.

#### Mental Health (Anxiety and Bipolar)

Of the previously mentioned disorders, anxiety was reported greater among the homeless population (20.5 %), compared to the general clinic population (13.8 %) with a corresponding odds ratio of 1.61. Risk factors for anxiety include having chronic health conditions, stress, substance abuse, gender, and genetics [27]. As previously indicated, high levels of stress and substance abuse can be prevalent among the homeless population, potentially increasing their risk of developing anxiety or depression. In 2005, roughly 18 % of the U.S. population suffered from anxiety disorders [28]. Additionally, the homeless population from this clinic was approximately two and a half times more likely to be diagnosed with bipolar disorder ( $p = 0.004$ ) compared to the general clinic population (OR = 2.43). The prevalence of bipolar disorder in this study's homeless population exceeds that of a previous study, which found that the homeless were 1.6 times more likely to be diagnosed with bipolar than those who suffered from depression [29]. Risk factors for bipolar disorder include biological influences, periods of high stress, substance abuse, major life changes, presence of another health condition, anxiety disorders, and physical health problems—many of which can affect homeless individuals [30]. In a 2008 survey conducted in 13 major U.S. cities, 26 % of the homeless population suffered from a mental illness

[31]. This study is consistent with the existing literature in that the homeless who utilize free clinics experienced higher rates of mental illnesses [6]. Improved mental health services and social support are necessary in order to help the homeless reintegrate into the community and find supportive housing programs for stability.

#### Chronic Conditions (Diabetes and Asthma)

As hepatitis, TB, STDs, and mental illnesses were widespread among the homeless population within CCCHC patients, other chronic conditions were not as prevalent. The prevalence of diabetes among the homeless was 7.38 %, approximately equal to the 7.56 % among the general clinic population and slightly lower than the state average of 8.7 % [32]. The logistic regression did not indicate any statistically significant results for the diagnoses of diabetes between the two populations (OR = 0.974). Therefore, when compared to general clinic clients, being homeless did not increase the risk of having diabetes. The prevalence of asthma yielded similar conclusions. The logistic regression for asthma did not indicate a significant odds ratio (OR = 0.722), and thus, being homeless did not significantly increase the risk of developing asthma. Although results for both diabetes and asthma did not indicate statistically significant results, it is apparent the homeless population requires improved access to adequate health care in order to better manage chronic and infectious conditions.

#### Limitations

This study had several limitations. Data utilized in this study were obtained from hand written medical records that may have lacked consistency due to variability among volunteer physicians. Some medical records were incomplete or contained missing data possibly leading to inaccurate results in data analysis. Additionally, missing addresses may have led to a flawed representation of the homeless population. The free clinic used in this study served only about 5 % of the uninsured population of this county, which may not accurately represent the uninsured or homeless population. Although this study contains certain limitations, there is valuable evidence supported through its findings. Results from this study contribute to the current literature indicating a disparity among the health status of the homeless population. Further social and medical support is necessary to improve health care access and enhance the health for these individuals.

#### Conclusion

When compared to the general population, homeless individuals have a higher susceptibility to infectious diseases and therefore require more attention for specific conditions. Of the 2,279 patients seen at the CCCHC, 5.4 % were



determined to be homeless. Knowledge of a patient's homeless status is valuable in order to implement an efficient treatment plan. This population had a statistically greater risk of developing the diseases hepatitis, tuberculosis, anxiety, and bipolar disorders. Out of these four predominant conditions, those with mental health disorders would benefit from greater attention due to the current lack of adequate resources. Therefore, additional mental health clinics and services could aid this issue. Similarly an increased amount of care would assist those with infectious diseases among this population. Ensuring these areas are addressed can help alleviate the disparity currently present among the health status of the homeless population.

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