The Effect of Hygiene on Dermatological Concerns in Homeless Patients

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Introduction

Often times, popular belief excludes skin related complaints from the "typical" scope of primary care concerns. These complaints are written off as being specifically for dermatologists and other specialists, while primary care physicians are believed to be limited to caring for chronic illnesses such as diabetes, obesity, and hypertension. Contrary to these popular notions, a large variety of dermatological concerns are addressed within a primary care/community health setting, specifically when concerning patients within underserved populations. Nearly 7 percent of all adult patients seen in outpatient settings present with a skin condition as their chief complaint, with roughly 60% of the complaints (dermatological concerns) being addressed by primary care physicians, not dermatologists. Many patients with chronic illnesses also present with secondary dermatological concerns. Often, upon skin examination, a patient's previously un-diagnosed conditions may manifest through dermatological lesions.

The aim of this project was to specifically address the skin-related concerns of the homeless population served by the United Neighborhood Health Services. By investigating the number of patients that presented to these clinics with dermatological concerns, and specifically those that can be addressed through modification of personal hygiene methods, the project will help inform primary care physicians on how to better counsel their patients. In addition, the interventional portion of this project will provide a sustainable model for addressing hygienic concerns in homeless and other low socio-economic populations.

Background

For generations, the American homeless population has been medically underserved, as well as overlooked by the healthcare community. With limited access to education, medical

insurance, and other vital resources, this particular group has always been especially vulnerable to many diseases. Upon recognition of the severity of this problem, the Health Care for the Homeless (HCH) Program was originally sanctioned under the Stewart B. McKinney Homeless Assistance Act of 1987. Nineteen national demonstration projects were held to determine if a specialized model for the delivery of health services would improve health outcomes for homeless patients. Nashville was one of the cities chosen to receive federal funding during these demonstrations. Later, in 1996, HCH projects were consolidated with community health centers by the Health Centers Consolidation Act, and law mandated that HCH projects receive 8.7% of appropriated health center funds.

Federally Qualified Health Centers (FQHCs) have since adapted a special focus on providing care to homeless and disenfranchised people in their specific communities. A number of FQHCs have been able to receive funding and grant support from the Community Health Center program, in addition to grants from the HCH. These FQHCs tend to be located in areas that are saturated with homeless people. Other FQHCs only receive support from the HCH grant. The National Health Care for the Homeless Council continues to conduct research focused on discovering the best ways to target comprehensive and affordable healthcare to homeless populations nationally. The United Neighborhood Health Services (UNHS) system of clinics in Nashville, Tennessee subsequently opened two clinics dedicated to serving the homeless population in the city.

Nashville has the 40th highest homeless population out of the 100 highest populated metropolitan areas in the Unites States, according to a study conducted by the National Alliance to End Homelessness in 2011. An estimated 6000 people live on the streets, in their cars, in motels, or in homeless shelters in the city of Nashville. This number may even be an

underestimation. Nashville's total homeless population increased approximately 27.5% in the last decade; in the same time period, the city's total population increased by only 5.45%. The majority of the homeless are male veterans, while others are women, children, and others suffering from domestic abuse, mental and physical disorders.

The United Neighborhood Health Services is a private, non-profit system of community health centers, clinics, and health programs. Founded in Nashville in 1976, the UNHS has since been dedicated to addressing the primary care concerns of underserved patients in the surrounding community, without regard to income or insurance. The UNHS has grown to consist of eight neighborhood clinics, one public housing clinic, five school clinics, two homeless clinics, two mobile clinics, and one multi-county clinic. It also partners with other non-profit organizations, such as the Room In the Inn and the Nashville Rescue Mission.

The homeless clinics provide medical services, counseling, psychiatric care, addiction assistance, and dental care to their patients. Specifically, dermatological concerns present a large health challenge for these homeless communities. Approximately 4500 homeless patients are served by the two UNHS homeless clinics. Many of these patients present to the clinic with a dermatological concern as their primary complaint. Factors that increase this populations' risk for dermatological diseases include shared bathing and eating, unsanitary shelters, lack of facilities and supplies for appropriate hygiene, little to no income, and lack of support in times of illness. Based on this information, it is clear that this population's risk for skin related complications can be reduced by addressing the most preventable of the aforementioned factors: the lack of facilities and supplies for appropriate hygiene. For the purpose of this project, hygiene can be defined as the promotion and maintenance of health by reducing or eliminating harmful microorganisms through cleanliness and decontamination.

Many of the most common dermatological concerns of homeless patients can be prevented or alleviated by employing effective habits of personal hygiene. Other conditions may not be directly related to hygiene, but can be aggravated by bacterial or viral infections, both of which can be prevented by cleanliness. These conditions include, but are not limited to, skin lesions such as cellulitis, body lice, dermatophytosis, Athletes foot, and skin swelling. The specific type of homelessness one is experiencing, be it living on the streets, in a short term or long term homeless shelter, in a car, or in a motel, affects the modifications that an individual can realistically make to their personal hygiene. There are also a large number of skin conditions that are genetic, systemic or chronic in nature, and will not be affected negatively or positively by one's hygienic habits.

"Skin lesion" is a general term used to describe a portion of the skin that appears abnormal when compared to the skin around it. Primary skin lesions are variations in skin that are present at one's birth, such as birthmarks, or that are developed throughout one's lifetime, such as contact dermatitis or psoriasis. Secondary skin lesions develop from primary skin lesions, especially as a result of manipulation by scratching, picking at, or placing primary skin lesions in an unsanitary environment. Underlying systemic disorders can also precipitate the presence of skin lesions, such as foot ulcers secondary to uncontrolled diabetes.

One type of skin lesion, cellulitis, is a painful bacterial skin infection that causes redness and swelling. It most typically affects skin on one's lower leg, but can occur on any part of the body. If not treated, cellulitis can spread to one's lymph nodes and bloodstream. Most commonly, cellulitis occurs when a cut, insect bite, burn site, or surgical incision in the skin is exposed to *staphylococcus* and *streptococcus* bacteria. Many homeless patients have atopic dermatitis, which puts them at an increased risk to develop cellulitis. While cellulitis is curable

by prescribing a two-week regimen of oral antibiotics, it is easily preventable by immediately cleaning and applying antibiotic ointment to the site of a wound. The patient must also make sure to re-clean the wound site regularly until the wound develops a scab and begins to heal properly.

While shelters are extremely helpful to the homeless population, providing many with a place to sleep, or protection from the weather and environmental elements, they also tend to harbor infectious agents. Body lice (*pediculus humanus corporis*), which is to be distinguished from head lice or pubic lice, are parasites that live and lay eggs on clothing and bed sheets. They are typically found in large, communal living spaces, such as homeless shelters. These lice move from clothing and bedding to the skin to feed on human blood, and are spread by person-to-person interaction, especially in crowded areas. Appropriate hygiene helps the prevention and control of body lice. By bathing regularly, or machine washing infested clothing and bedding in hot, soapy water, one can prevent body lice from spreading. Often times, homeless patients will not have access to the proper machinery to wash their clothes. In these cases, tying the infested clothing in a plastic bag for 5-7 days will suffocate and kill the body lice.

Dermatophytosis is fungal infection of the skin, also known as *tinea* or ringworm. It can be found anywhere on the body, and many times several patches appear at once. Dermatophytes tend to live in the most moist areas of one's skin, or on clothing, towels, or bedding. This infection causes an itchy ring shaped rash, as well as redness, cracking, and scaling of the skin. People living in congested areas such as shelters are at high risk for these infections due to the close contact, subpar hygiene, and communal bathing. Regular hand washing and other proper habits of personal hygiene are important preventative measures towards contracting dermatophytosis.

For homeless patients living in shelters and taking group showers or using shared restroom space, Athletes Foot becomes a common problem. Athlete's Foot (*tinea pedis*) is a fungal infection of the skin, most commonly found on the space between one's toes. It is typically characterized by itchy, scaly red skin. This fungal infection spreads easily by contact with infected skin, or direct contact with fungi in damp places. Appropriate hygiene techniques, such as clipping and cleaning one's nails, wearing shoes in public showers, and keeping feet dry and cool after showering, help to prevent and control Athletes foot.

Certain chronic diseases, such as diabetes, predispose patients towards skin conditions that are not necessarily associated with hygiene. Diabetics are vulnerable to diabetic dermopathy, yeast infections, itchy and dry skin, diabetic blisters, and foot ulcers. The foot ulcers, when left untreated can become infected, in some rare cases requiring amputation of the foot as a treatment. Another chronic illness, obesity, also increases the likelihood that a patient will develop various skin conditions. The increased skin folding in obese patients creates an ideal environment for bacteria and viruses, who reside in damp places that are hard to clean. In addition, obesity increases the likelihood that a patient will develop Acanthosis Nigricans, a condition in which dark patches appear on the skin of the arms and neck secondary to insulin resistance.

Upon learning this information, the following questions were raised: What percentage of Nashville's homeless population presents to the UNHS clinic with dermatological complaints? Of skin related complaints, what percentage are manifestations of systemic diseases or genetics? Additionally, what percentage can be attributed to method of hygiene and environment? Answering these three questions will help inform physicians in CHCs, especially those among

the UNHS system in Nashville, on how to better counsel and provide relief to their homeless patients.

This project has three objectives: 1) To better understand the dermatological concerns of the homeless population in Nashville. 2) To determine whether personal hygiene plays a significant role in the skin related conditions of these patients. 3) To provide a sustainable intervention that can be used by community health centers as a template for future care.

Methodology

The first objective of the project was to better understand the dermatological concerns of the homeless population in Nashville. This was accomplished by interviewing the physicians at the two homeless clinics associated with the UNHS, as well as the management team at the Room in the Inn homeless shelter.

In order to accomplish the second objective of the project, to determine whether personal hygiene plays a significant role in the skin related conditions of these patients, each dermatological condition believed to be prevalent in the homeless community by these professionals was researched to learn whether or not it was related to hygienic habits or not. After this, the health records of all of the homeless patients seen by a particular physician at the UNHS clinic between July 28th and August 4th were observed. The type of homelessness each patient was experiencing was noted, including living on the street, with family, in shelters, or in motels.

Using the electronic medical records of these patients, each of their chief complaints and diagnoses were listed and grouped according to organ system involved. Each patient that presented with a dermatological chief complaint was listed, and each individual condition was

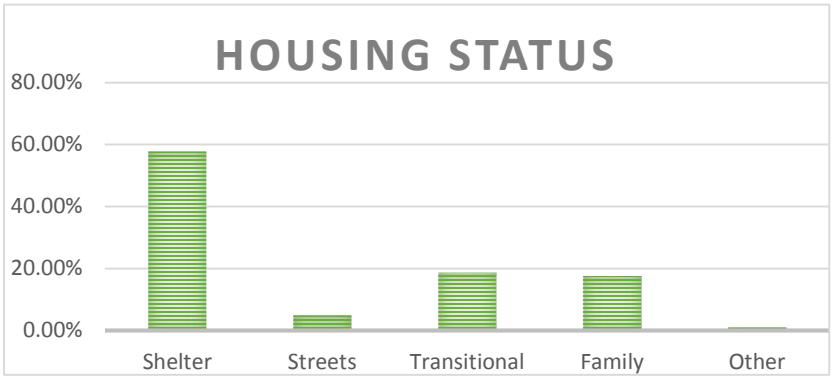
documented. Using this data set, the number of conditions that can be prevented or alleviated by proper personal hygiene and a sanitary environment were determined. These preventable conditions were distinguished from chronic skin issues or manifestations of underlying systemic diseases, in order to determine how many of the homeless patients' dermatological concerns could be impacted by a strong interventional push for hygiene on the CHC's part. The number of patients that were overweight or obese, or who suffered from Diabetes Mellitus were recorded.

The third and final objective of the project was to provide a sustainable intervention that can be used by community health centers as a template for future care. This was accomplished by conducting a soap and hand sanitizer drive with the hotels and motels around Nashville. The soap and hand sanitizer received from the drive, in addition to first aid kits, shower gel, toothpaste, and toothbrushes were disseminated to residents of the Room in the Inn homeless shelter. The distribution of these hygiene packets took place at the end of an hour-long hygiene workshop. The purpose of the workshop was to discuss the importance of proper personal hygiene, and its role in disease prevention. The focus was on dermatological concerns, and how many of them can be prevented in a realistic sense, given the residents' particular environmental contexts.

Results

In total, the electronic medical records of 102 homeless patients were used to construct the data set for this project. These patients were seen by one physician at a UNHS homeless clinic in the span of a week, from July 28 to August 4, 2014. Of the 102 patients, the majority (59) lived in a homeless shelter. As indicated in the graph below, others lived on the streets, in transitional housing (motels), and with family.

GRAPH 1



Twenty (19.6 percent) of the 102 patients presented with a dermatological concern as their chief complaint. The most common skin-related complaint was swelling, which was the chief complaint of 45% of the patients. Other common complaints included rash (20%), various skin lesions (15%), and cellulitis (15%). The complete list of dermatological conditions recorded as chief complaints from the data set is below:

TABLE 1

Skin Condition	% of Total Patients
Swelling	**45%**
Rash	**20%**
Skin lesion	**15%**
Cellulitis	**15%**
Athletes Foot	**5%**
Dermatophytosis	**5%**
Atopic Dermatitis	**5%**
Skin Graft infection	**5%**
Insect bite	**5%**
Pilonidal abscess	**5%**
Jock Itch	**5%**

Forty five of the patients (44.1%) had at least one past diagnosis of a dermatological disease. The most common skin-related past diagnoses was dermatitis, which was previously diagnosed in 29% of the patients. Other common past diagnoses included dermatophytosis (27%), cellulitis (20%), and local skin infections (8.9%). The complete list of patients' past diagnoses of dermatological diseases from the data set is below:

TABLE 2

Past Diagnosis	% of Total Patients
Dermatitis	**29%**
Dermatophytosis	**27%**
Cellulitis	**20%**
Local skin infection	**8.9%**
Open wound	**4.4%**
Carbuncle	**4.4%**
Atopic dermatitis	**2.2%**
Plantar fibromatosis	**2.2%**
Scabies	**2.2%**
Insect bite	**2.2%**
Pruritis ani	**2.2%**
Viral warts	**2.2%**
Impetigo	**2.2%**
Fascitis	**2.2%**
Decubitus ulcer	**2.2%**
Onychia	**2.2%**
Sebaceous cyst	**2.2%**
Lichen planus	**2.2%**
Blister	**2.2%**
Herpes	**2.2%**

At least 36 (35.3%) of the patients were overweight or obese. Seventeen patients (16.7%) had Diabetes Mellitus.

Discussion

Of the 11 skin conditions presented by patients as a chief complaint throughout the course of this study, 7 can be affected by a patient's personal hygiene (Swelling, Rash, Skin lesions, Cellulitis, Athletes Foot, Dermatophytosis, and Jock Itch). Almost twenty percent of the patients had a dermatological concern as their chief complaint, indicating that skin conditions are prevalent in the homeless community. Forty five of the patients (44.1%) had at least one past diagnosis of a dermatological disease. It cannot be conclusively stated that there is a statistically significant correlation between hygiene and skin- related diseases based on this study because the participant pool was too small, but the results strongly suggest that many of these conditions could be prevented by outreach initiatives on the community health center's behalf.

The majority of the patients lived in homeless shelter (57.8%), meaning that they are at risk for skin-related disorders that result from communal living, such as body lice or dermatophytosis. The various housing statuses of the patients indicated that different methods of outreach must be used to reach different patients. Some patients, particularly the ones in shelters and on the streets, will benefit from programs that are brought to them in their environments. A question that was raised throughout the course of the project was: Should the standard of what is to be considered "appropriate hygiene" be the same for someone living on the street as someone living in a shelter, and what does that mean for their health outcomes?

In the future, it would be interesting to provide the homeless patients with surveys, in an attempt to gain an in-depth understanding of their opinions on the importance of hygiene and

cleanliness, and its role in the skin-care and health outcomes. One could also set up a study for a longer period of time, to find out whether or not increased outreach and hygiene awareness had a positive effect on patients with dermatological diagnoses. This type of study could also shed light on whether or not community health centers can play a significant role in reducing the incidence of new skin conditions through outreach to the homeless communities.

Recommendations

The interventional portion of this project was designed to be sustainable and to be used as a model for community health centers to effect change nationwide. During the project, a soap, shampoo, and hand sanitizer drive entitled Soap on Wheels (S.O.W.) was conducted throughout the city of Nashville. In the future, S.O.W. can be continued for a longer period of time. Instead of only receiving donations from hotels and motels, donations can also be requested from additional organizations or corporations such as Target and WalMart. Regular hygiene workshop, relevant to the patients' specific environments, should be held at homeless shelters and clinics. At the workshop, the patients will receive their donations, and learn about the best way to use them as a preventative measure for dermatological infection and disease. The focus of these S.O.W. workshops should be on educating the patients about the correlation between their hygiene and the skin's health, as well as empowering the patients with the tools they need to be compliant and successful in their endeavors to improve their personal hygiene. All tactics suggested should be reasonable and realistic within the context of their specific housing status.

The S.O.W. initiative is consistent with the national push for community health centers to adopt the Patient Centered Medical Home model of health care, which emphasizes comprehensive, patient centered care that is coordinated with other community organizations, such as homeless shelters. I anticipate that this project will provide a template for intervention

that leads to better healthcare outcomes for disenfranchised populations in the community, such as the homeless. Furthermore I believe that the knowledge gained from this project has the potential to inspire the leadership of CHC's nationwide to tailor their health care methods to be more effective for their most vulnerable patient populations.

Conclusion

The data collected in this project indicated the large variety of dermatological concerns addressed within a community health setting. It is clear that skin-related conditions, especially of underserved populations such as the homeless, are a primary care and public health concern. This project investigated the number of patients that presented to UNHS clinics with dermatological concerns, and specifically those that can be addressed through modification of personal hygiene methods. The project helped to inform primary care physicians on how to better counsel their patients. In addition, the interventional portion of this project has provided a sustainable model for addressing hygienic concerns in homeless and other low socio-economic populations.

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