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4-15-2014

A Tale of Two Cities: Health Literacy Between Two Western Healthcare Models

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Abstract

Background: Health literacy, the ability to obtain, read and understand healthcare information, is the paramount indicator of an individual's health; it determines how individuals request and understand information necessary to make appropriate health decisions. Perhaps most exemplifying insufficient health literacy are the homeless, who in the United States, have varying access to healthcare depending on state legislature. However, select European countries, specifically Denmark, provide the homeless population with healthcare access. This discrepancy raises the fundamental question of whether increased healthcare access leads to improved health literacy. This project investigates associations between the system of healthcare delivery and the health literacy of the population. Ultimately, the purpose of the project is to explore this connection by comparing the health literacy of three homeless populations, one served by the limited American model of healthcare, another by a universal American model, and the last under a Western European model.

Methods: The study was conducted in homeless centers in Copenhagen, Denmark, Boston, Massachusetts and Dallas, Texas. A comparison proved to be the most effective way of isolating extraneous variables: there are approximately 5,000 homeless in both Copenhagen and Dallas, both with urban populations of 1.2 million. Apart from these similarities, the core difference was the system of healthcare available to both populations. The project utilized surveys based on two established methods of evaluating health literacy: REALM and short-TOFHLA assessments, having a correlation r=0.84. The study required the administration of the surveys to a sample size of 100 individuals: eligible subjects include individuals aged 18 and older who identified themselves as homeless for a minimum period of three months. The survey did not include those among the homeless population who are linguistically illiterate to prevent confusion in the results between health literacy and language literacy. To supplement the assessments, a questionnaire was administered regarding participants' relevant information such as age, gender, education, and access to healthcare. To maintain anonymity of the subjects, individuals and surveys were tracked using initials and assigned numbers.

Results: The methodology highlighted health literacy rates among the respective populations. The sample size utilized represents a 95% confidence level and confidence interval of 6.8%; analysis of the trends in health literacy among the homeless populations provides requisite data to determine the health literacy efficiency of the healthcare delivery systems. Surveys in Denmark produced an average REALM score of 62.5 and S-TOFHLA score of 10.9, indicating correlation of r=0.82. Among the Dallas sample population, an average REALM score of 57.2 and S-TOFHLA score of 8.7 was observed; the Boston sample population produced an average REALM of 58.4 and TOFHLA of 9.1.

Conclusion: Based upon the research, it was reasoned that the readily available access to healthcare among the Danish homeless population led to higher rates of health literacy over the health literacy of both the Boston and Dallas individuals. Whereas the American populations may receive a wider variety of healthcare options—VA hospitals, county hospital, charity clinics—the sporadic nature of visits may prove to be unfavorable compared to the more holistic access provided in Denmark. Any correlation—or lack thereof—lends vital information on how to address the health needs of the homeless population. Ultimately, the access to healthcare correlated strongly with improved health literacy and health understanding.

Introduction

Nothing is a better indicator of individuals' health than their health literacy. According to the American Medical Association, poor health literacy is "a stronger predictor of a person's health than age, income, employment status, education level, and race" (NNLM). However, current models of healthcare administration and prevention identify ethnicity, race, and genetic dispositions as the leading markers of an individual's prospective health. Health literacy is defined as "the degree to which individuals have the capacity to obtain, process, and understand basic health information and services needed to make appropriate health decisions" (Glassman); perhaps most exemplifying unmet needs are the homeless, who in the United States, have varied access to healthcare according to state legislature. In contrast, however, in select European countries, specifically Denmark, the entire homeless population has access to a primary healthcare physician (Squires). This raises the fundamental question of whether increased healthcare access leads to improved health literacy in a population.

Despite the importance of health literacy, a recent analysis of PubMed databases reveals that less than two percent of all articles pertaining to health literacy mentioned European populations. This disparity strengthened the research problem, and points to the need for further research of this topic. Dr. Nora Gimpel, a professor at UT Southwestern, shares this belief and indicated that her department is interested in replicating the project as a pilot study for her medical students. The project proposes an exploratory study to survey comparable populations under different healthcare models, and to analyze the gathered data in order to reveal trends in health literacy. Within the current perspective of the American healthcare model, there is an incomplete understanding of the causal link of health literacy to patient health. The project is interested in broadening this understanding by comparing the American model of healthcare to that of Denmark. In doing so, the project aims to seek associations between the system of healthcare delivery and the health literacy of the population. Ultimately, the purpose of the Engaged Learning project is to explore this connection by comparing the health literacy of three homeless populations, two served by the American models of healthcare—Dallas, Texas; Boston, Massachusetts—and the other that exists under a Western European model—Copenhagen, Denmark.

Background

Health literacy is commonly assessed with the Rapid Estimate of Adult Literacy in Medicine—Short Form (REALM-SF), the Single Item Literacy Screener (SILS), or the Test of Functional Health Literacy in Adults (TOFHLA). Specifically, the REALM is assessed on a scale from 0-66 with 0-14 indicating a lack of health literacy and 42-66 indicating proficiency at a high school level (AHRQ). In order to understand and effectively compare the health literacy of two populations in Denmark and the United States, it is necessary to describe the two different healthcare environments. Though both countries are developed, western democracies, they noticeably differ in their delivery of health services to the homeless populations.

The history of the Danish healthcare system is one marked not by sweeping reform but rather waves of progressive, gradual changes from the 1970s to the middle of the last decade. Due to an overwhelming aura of fiscal federalism that exists in the Danish state, the path of healthcare reform followed one of decentralization and a reimbursement system (Pederson, Christiansen, Bech). Although Denmark belongs to the group of national health care systems, it is much like its ethnic cousins Sweden, Norway, and Finland in that the state run healthcare model is decentralized into the county delivery system. Among Danes, fairly broad political consensus towards universal health avoided any political battlegrounds that have encompassed other Western counterparts. The 1970 local government reform movements reduced the number of counties and municipalities and put in place a unified health service at the county level, opening the path for universal health delivery.

It is evident that Danes are involved and concerned with health literacy. This concern is derived from their trust and support of the Denmark health care system. "A country of 5.3 million people, Denmark is known in public management circles for having remarkable support for its public institutions, such as healthcare. Comparative surveys of 13 countries conducted by the World Values Institute and supplemented by Danish Government-sponsored surveys show average confidence in Danish public institutions, such as its healthcare system in the range of 65-70 per cent over the last two decades" (Blume).

Healthcare in Denmark is based upon the European model, where all persons are covered under the financial responsibility of counties and municipalities (European Observatory). Recent figures indicate that Denmark spends approximately 9.8 percent of its GDP, or 30.7 billion US dollars, on healthcare services (Lewis). This translates into approximately 3,540 US Dollars per capita spent on healthcare in Denmark (Health Spending). Furthermore, in Denmark, municipalities are responsible for health visitors, homeless health centers, and municipal dentists. Additionally, access to general practitioners and hospital care is free for all Danish residents (European Observatory). This current Danish system was designed to ensure that all people of Denmark are eligible to receive health services. Denmark reports a 95 percent satisfaction with their healthcare system.

Conversely, healthcare in the United States is not a system in the true sense as the government has not organized national health insurance programs like most developed countries in the world do. As a result, not all Americans are automatically covered by health insurance: access to healthcare among homeless populations is too often compromised by the immense scope of the healthcare structure (Shi). Healthcare in the United States does not consist of interrelated components that work together coherently as a system should, but is instead a kaleidoscope of insurance and finance agencies along with delivery and payment mechanisms. The World Health Organization (WHO) ranked the U.S. health care system as the highest in cost, first in responsiveness, 37th in overall performance, and 72nd

by overall level of health among 191 nations included in its research study (World Health Statistics 2009).

In Massachusetts, health care reform laws passed in 2006 aimed to provide health insurance to nearly all the state's residents. The Massachusetts healthcare act – "An Act Providing Access to Affordable, Quality, Accountable Health Care" – was introduced due to alarming rates of emergency room usage by uninsured Massachusetts residents as a source of primary care. The homeless of Massachusetts are covered under the provisions of this law due to their poverty status and presumed unemployment.

In contrast to Denmark's 9.8 percent GDP spending on healthcare, in the United States up to 16 percent of the GDP is spent on healthcare, with 15% of its GDP spent on healthcare in 2003: the highest percentage among developed nations (Chua). In addition, the United States spends $5,635 per capita, twice the per capita of developed countries. Ultimately, though the United States pays more per head towards the healthcare of its citizens, the result is a delivery mechanism that fails to serve nearly as many individuals as its European counterparts. Consequently, individuals affected most by this inefficiency are the underserved populations, including the homeless.

Though healthcare for marginalized individuals in Denmark has been studied in the past, research has often failed to address how the healthcare structure affects access to health delivery. In the Danish sense, although "homeless" is not concretely defined, rough-sleepers and those without a home for 14 days or more are considered homeless. Studies conducted show that vulnerable groups in Denmark, including the homeless, use hospital-based healthcare noticeably more often than average Danes. In contrast, these same groups make use of their general practitioners much less frequently; in a survey, up to 70% of these individuals did not even know who their general practitioners were (Del Zott). The significance of these statistics is highlighted when analyzing the situation with a health literacy aspect—homeless members who frequent their GPs less often are less likely to develop adequate health literacy and in turn expose themselves to an increased risk of health deterioration.

Homelessness is an ongoing public health concern in both Boston and Dallas County. The Metro Dallas Homeless Alliance 2011 Point-in-Time Homeless Count and Census Report showed that on one given night there were 5,783 homeless, including 4,626 adults, 1,106 children in family units and 51 unaccompanied children. These figures included 504 individuals categorized as chronically homeless, defined as any unaccompanied disabled individual who has been continuously homeless for over one year. The report, which provides a snapshot of homelessness in Dallas, showed health concerns as a contributing cause to homelessness as well as a significant unmet need among the homeless (MDHA). The problem of Americans without proper healthcare and adequate health literacy continues to rise. Not surprisingly, the rates of both chronic and acute health problems are extremely high among the homeless population. "With the exception of obesity, strokes, and cancer, homeless

people are far more likely to suffer from every category of chronic health problem. Conditions which require regular, uninterrupted treatment, such as tuberculosis, diabetes, hypertension, and addictive disorders, are extremely difficult to treat or control" among those without adequate housing (NCH). It is believe this tragic problem is exacerbated because the homeless neither have information on preventative measures, nor do they possess the health literacy needed to understand and seek treatment. At present, there is one federally funded program, Health Care for the Homeless (HCH) that is designed specifically to provide primary healthcare to homeless persons. More programs similar to this are needed, as well as programs to increase health literacy among not just the homeless, but the entire American population (NCH).

The Danish population's perception of their healthcare delivery as well as the general consensus towards the effectiveness of the system was also studied as a component of the research to be conducted in Denmark. There is limited information available through U.S. publications regarding Danish views on healthcare—a thorough understanding of the healthcare system in Denmark is available by studying local records regarding policy towards the delivery process. Records of spending towards healthcare are also more transparent with local governmental records as opposed to information that is available online.

Significance

The significance of health literacy is reflected in its implications: health literacy is a prime determinant in an individual's self-reported health status, rate of compliance and understanding of treatment, and use and comprehension of preventative services. Results from health literacy tests reveal that functional health literacy scores essentially mirror the patient's knowledge of their illness; individuals who score higher on health literacy evaluations know more about their illness and how to accurately care for themselves as compared to individuals who have lower or have mediocre scores. Furthermore, lower scoring individuals are more likely to answer incorrectly regarding the state and severity of their illness and how to recover. For example, compared to individuals with adequate health literacy, patients with low health literacy on average do not understand when to take "as needed" drugs, increasing their chance for accidental overdose or insufficient use. An increase in health literacy should improve these facets of an individual's life thus lowering health care costs (Andrus, Roth).

Methods
Preface

The study was conducted in various homeless shelters and centers throughout the research locations, Copenhagen during the summer of 2012, Dallas during winter of 2012-2013 and Boston during the fall of 2013. The subjects' participation was on a purely voluntary basis – they were given information about the study and then the option to take part in it. The developed survey strategy was based on two established methods of evaluating health literacy: REALM and Short-TOFHLA health literacy assessment surveys. The original TOFHLA's sheer length hinders the project's ability to complete the project within the time parameters with a

satisfactory sample size. Consequently, the project opted to utilize the S-TOFHLA (Short-TOFHLA), which can be administered in less than ten minutes per subject. Furthermore, the REALM and S-TOFHLA complement each other as health literacy surveys, having a high correlation of r=0.84 (Parker).

Setting

The Engaged Learning project compared the healthcare model and demographics of Copenhagen, Denmark with Dallas, Texas and Boston, Massachusetts. Copenhagen was the most attractive choice for this project for multiple reasons, including the practicality of carrying out inquiries. Primarily, there are 3.8 homeless persons per 1000 citizens in Copenhagen, which has an urban population of approximately 1.2 million as of January 2011 (Berensson). In a study completed by *Project UDENFOR,* a private Danish social foundation, approximately 5,500 homeless people lived in Denmark, of which three-fifths or 3,300 live in the Copenhagen metropolitan area (Udenfor). This homeless population is relevant because it provided the project sufficient access to the intended population of study. Furthermore, the population of Copenhagen is nearly identical to that of Dallas in terms of total population as well as the homeless population, which is estimated to be approximately 5,800 in 2011 (MDHA). These similarities in the populations provided the study a higher degree of control, which limited extraneous variables that could have biased the results.

Second, English is the predominant second language in Denmark, spoken by over 86 percent of the population (Eurobarometer). This was vital to the administration of health proficiency surveys (REALM and S-TOFHLA), which required verbal exercises and communication between the subject and administrator. In addition to facilitating the administration of the survey, the population's knowledge of English contributed to ease of travel, allowed direct communication with healthcare contacts, and offered the opportunity to explore research institutions for pertinent data and additional information sources. Moreover, English as a prevalent language permitted researchers to collect oral narratives from subjects that are important in further exploring the consequences of health literacy, and further humanized the study.

Furthermore, Southern Methodist University has strong connections with the Danish Institute for Study Abroad—DIS. This benefited the project due to close affiliation with Danish research individuals who are familiar with the culture and customs of the local population and have a thorough understanding of the public perception of healthcare delivery. These individuals at the DIS assisted in conducting research about the Danish model of healthcare and disseminating relevant data.

Although Canada may appear to have been a plausible, alternative location, its proximity to the United States created several problems. The project elected to forego Canada because close interaction between the Canadian and American populations results in a transmission of healthcare knowledge via radio, television, newspapers, and direct access to U.S. health services. This diffusion diluted the effects of the two different healthcare models on their

populations, and subsequently, their health literacy. Canada's population was simply not isolated enough from the United States population to provide a discernable set of effects.

Design

Homeless shelters and centers in the Dallas-Fort Worth and Boston area were approached in order to compare health literacy among the homeless populations. Professors Dr. Nora Gimpel and Patti Pagels at UT Southwestern Medical School agreed to assist in formally connecting researchers with homeless centers that they have worked with through the Family and Community Medicine Department. With the homeless centers' cooperation, surveys were administered to a sample size of 100 individuals. This sample size reflects a 95% confidence level, the most common metric used by researchers, and a confidence interval (margin of error) of 6.8 (Snedecor). The sample size was appropriate given the three month period prior to traveling to Copenhagen. Eligible study subjects included individuals aged 18 and older who identified themselves as homeless and had been, as the Danish say, rough sleeping. However, the survey population did not include participants who were linguistically illiterate to prevent confusion in the results between health literacy and language literacy. Surveys were administered with consent and release forms according to their pre-determined instructions. To supplement the assessments, a brief questionnaire was given regarding participants' relevant information such as age, gender, and education received.

Upon the completion of a survey, each administrator recorded the data in a Microsoft Excel file to be documented and analyzed. Once the surveys were completed, each participant received a simple, easy-to-comprehend flier detailing the benefits of health literacy and healthcare resources available to them. This service was provided to give back to the community and allowed the participants to have greater input in their own healthcare decisions. To maintain the anonymity of the individual and eliminate bias, the surveys did not inquire the individual's name but instead tracked each set of surveys using an assigned number. In order to ensure that no survey was repeated, birth dates and initials were documented from each surveyed individual. In the Dallas segment of the project, approximately 20 people per week were surveyed whereas the Boston segment required nearly 15 daily.

In Copenhagen, the researchers communicated with contacts at the DIS—Danish Institute for Study Abroad—and visited predetermined homeless centers and shelters. The professors at DIS strengthened connections to the homeless centers throughout Copenhagen and facilitated research at local institutions. These instructors—Jakob Hansen, Maj Vingum and Anders Moller Jakonsen—have backgrounds in the study, organization, and provisions of public health in Northern Europe and its connection to the historical, social, economic, and political climates of the present healthcare system. The project also worked in conjunction with instructors in the field of Health Economics and Health Policy in Europe to determine a connection between public health delivery and the policy of Denmark. Henceforth, the previous steps in distributing and recording the surveys as

well as parameters for survey participants were repeated. However, due to the shortened time period of five weeks, approximately ten individuals were surveyed daily, with each survey requiring roughly twenty minutes.

Initially, weekends were utilized for further independent research—the public records that reveal the healthcare systems of Boston, Dallas and Copenhagen in more detail, talking with healthcare providers and reviewing available public information. The information collected included, but was not limited to, expenditures, propensity of various diseases, number and location of hospitals or healthcare facilities, and healthcare regulations. This information was obtained through primary sources such as books, public ledgers, and local scholarly articles. During the finishing stages of the project, efforts shifted toward compiling the data that was assembled through surveys with the information accumulated from primary sources. Combining these data provided the project sufficient knowledge to formulate graphs and detect possible trends between healthcare models and health literacy.

Description of Instruments
REALM

The Rapid Estimate of Adult Literacy in Medicine – REALM is a widely utilized health literacy assessment tool. It is a word recognition test, where subjects are presented with 66 medical words in order of increasing difficulty. Subjects are asked to read through the list aloud by an examiner, who records their score. Each word pronounced correctly is a point; scores of 0-44 represent literacy below the sixth grade level, scores from 45-60 indicate proficiency at an eighth grade level, while scores above 60 reflect aptitude of high school and beyond.

The reason for REALM's success and popularity is the speed with which it can be administered, around 5 minutes per subject. Furthermore, the test has been used time and again and has proven to remain accurate and produce reliable results.

S-TOFHLA

The Short Test of Functional Health Literacy in Adults (S-TOFHLA) is a 36-question, seven-minute timed test that assesses an individual's reading skills. In its procedure, subjects are required to read health-related sentences, which contain missing words; then they fill in the blanks by selecting the correct word from four choices. The authors of the test found a high correlation between the STOFHLA and original TOFHLA as well as the REALM, $r=0.97$ and $r=0.84$, respectively. Similar to the REALM, each question on this test grants one score. Scores of 0-16 implies inadequate health literacy, 17-22 are marginally proficient, while scores of 23-36 have adequate health literacy. (Chew)

Results

Data from the Copenhagen interviews suggested a mean score of 62.5 out of a potential 66 on the REALM and 10.9/14 on the S-TOFHLA – these values correspond to percentage scores of 94.69% and 77.86% respectively. The percentage values indicate a correlation $r=0.8195$ compared to the correlation of $r=0.84$ that should be expected between the two tests. Differences in grammatical structure between Danish and English

may have caused confusion in part with the Danish population who needed to choose between articles and also singular tense verbs (has versus had). Even so, the standard deviation of the participants was fairly low, with a range of scores ranging from several perfect scores in the REALM – 66 – to a low of 57. TOFHLA scores reflected similar deviations with scores ranging from perfect – 14 – to a low of 8. The REALM distribution was skewed heavily to the left, indicating that more of the population was at or above average while the TOFHLA score distribution was fairly standardized. Again, the discrepancy may stem from the nature of the tests themselves: because the REALM is a recognition and pronunciation based test, chances are higher for improved scores. Conversely, the S-TOFHLA tests for both recognition and application of health literacy terms—including a comprehension element in the test helps to normalize the distribution of scores. Nonetheless, both sets of tests proved to be remarkable given the fact that the population is homeless.

The study found a much different result among the Dallas homeless population. The surveyed population sample scored an average 57.2 on the REALM and 8.7 on the S-TOFHLA: these values correspond to percentage scores of 88% and 62% on the REALM and S-TOFHLA, respectively. Data from the Dallas sample population was also spread on a large range, with a high score of 65 and a low score of 16 on the REALM. These results are in line with what is perceived as the primary difference between the populations in regard to their health advocacy: adequate access to healthcare venues. In fact, a majority of the individuals surveyed had no primary care physician and would sporadically visit the emergency room when symptoms of disease progressed to intolerable levels. Such encounters were limited to once or twice every several years, a direct comparison to the annual visits enjoyed by their Danish counterparts.

Surprisingly, the Boston study population had results very similar to the Dallas sample population. The average REALM of the Boston sample population was 58.4 with a S-TOFHLA of 9.1. These values do not indicate a significant difference from data collected among the Dallas population. In fact, although the Boston population had supposedly higher access to healthcare, it was not necessarily reflected in the population's health wellbeing. Homeless individuals in Boston were just as unlikely to visit primary care providers on a regular basis as their Dallas counterparts. This may adversely affect their health wellbeing to a large extent and explain lower health literacy rates.

Interestingly, the pilot study of the Dallas homeless population also produced similar data. Of the individuals surveyed, many had perfect scores on both the REALM and S-TOFHLA. The extremely high distribution of scores among the pilot population was alarming as it threatened the entire foundation of the health literacy hypothesis that lower income individuals are susceptible to lower health literacy rates. However, a correlation was quickly established: the individuals in the pilot population all originate from the Union Gospel Mission homeless clinic – these

individuals already visit a healthcare establishment at a remarkably higher rate than most homeless individuals, on par with a middle-class American. Upon further interviewing, these individuals typically revealed that they had high school level schooling or higher and were typically concerned about developing or exacerbating medical conditions. Ultimately, the connection elucidated the fact that these individuals had higher health literacy rates, on par with the general homeless population in Copenhagen.

However, upon completing interviews with the Boston and Dallas populations, the average health literacy rate was observed to decrease in comparison to both the Union Gospel pilot population as well as the Copenhagen homeless population. The initial pilot was flawed in that it did not systematically select homeless individuals from among the Dallas population – only those who frequently visited health centers and were aware of their health consequences; the pilot did serve its purpose in serving as a primary tool to work out potential kinks in the survey delivery prior to implementation in Copenhagen. Because the pilot population frequented healthcare establishments at a comparable rate to the Copenhagen population, the general Dallas population is expected to have a lower health literacy rate exclusively on the notion that their access to health services is either non-existent or hindered. However, according to this logic, the Boston population should be expected to hold higher health literacy. If the data from the Boston and Dallas segments holds true to these expectations, there will be very strong

conclusive evidence pointing to the connection between access to health services and the subsequent health literacy of the individual or population.

<u>**Implications for Policy**</u>

There is a notable disparity between the homeless who were Danish citizens and the homeless who lacked Danish citizenship. Most discernible were the living conditions of the two populations. The former lived in a homeless shelter complex with a variety of buildings -- including a dining hall, apartments, a job search center, and nursing station. The latter, however, only had a few facilities to visit, all of which were separate buildings that consisted of only a kitchen and living space. These were located throughout Copenhagen. In light of this discovery, it was speculated that the homeless who had citizenship would have higher health literacy because of their improved conditions. However, upon surveying both groups, no such correlation is evident. This is attributed to the full availability of primary healthcare to both populations in Denmark.

The success of the homeless shelter complex is the result of mutual cooperation between staff and the homeless who reside. There are few staff members, who work with the homeless there to create a haven where there are three meals a day, full-time living and recreational areas, and employment opportunities. This shelter complex is a simple idea: work to serve yourself and your community. Replicating this foundation would be very beneficial to communities elsewhere.

The Danish recycling policy is innovative and beneficial, particularly for the homeless population. People are rewarded for returning used bottles – glass, aluminum, or plastic. This is prevalent in many developed countries; however, the difference is that instead of bringing the recycled materials to a plant to be paid, one simply can collect bottles and return them to a special machine located in all major grocery stores in Denmark. The machine sorts the bottles and rewards the recycler with either store credit or cash.

The success of this policy is because it simplifies the recycling process and reduces the work load of the recycler. Moreover, because the recycling machines are so easy to access, many homeless and impoverished people carry bags and clean the streets of empty bottles and cans. In theory, they are receiving payment to clean the city and increase recycling. Implementing a similar recycling system elsewhere would promote recycling while providing the homeless population a source of income.

Conclusion

The project speculated that the readily utilized access to healthcare among the Danish homeless population leads to higher rates of health literacy over the health literacy of both the Boston and Dallas individuals. Whereas the Dallas population may receive a wider variety of healthcare options—VA hospitals, county hospital, charity clinics— and Boston may have universal healthcare coverage, the sporadic nature

of visits may prove to be unfavorable compared to the more holistic access provided in Denmark. Ultimately, any correlation—or lack thereof—lends vital information on how to address the health needs of the homeless population.

Limitations and Future Queries

One limitation to this project was that often, people were unwilling to partake in the survey. Some felt embarrassed by it, while others saw little reason to take the survey as there was no incentive. To amend this problem, researchers assured the subjects that their anonymity would not be compromised. Additionally, subjects were offered them bottled water as an incentive for completing the surveys.

Future ventures include performing this survey in cities with easier access to healthcare than Dallas, but less than Copenhagen. Such cities include London and New York. Furthermore, these cities have comprehensive public transportation, which allows for easier access to health clinics and hospitals. Additionally, it would be interesting and supplemental to investigate the role of doctors in providing and teaching their patients, especially those who have lower health literacy, to become more knowledgeable about their health and treatment. This area of research would provide insight into how healthcare professionals view the problem of low health literacy among patients, and what solutions there are to mitigate this problem.

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