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Effective Models in Community and Student Run Clinics

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Effective Models in Community and Student Run Clinics

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Effective Models in Community and Student Run Clinics

Abstract

Background: Over 3.5 billion people—half of the world’s population, did not have access to any healthcare facilities or services in 2017.¹ In order to provide more healthcare to more individuals, student run clinics (SRCs), community-based health systems, and other low-cost clinics have opened up all over the world.

Purpose: It is important, however, to understand how these clinics run, their effectiveness, and how they may increase healthcare access. This study analyzed articles involving free or low-cost clinics to determine which models are utilized within free or low-cost clinics to provide effective standard of care resulting in increased healthcare access.

Methods: A comprehensive literature review was conducted using google scholar using the search terms “student run free clinic”, “low-cost health care facilities”, “community health care”, and “faith-based clinic effectiveness”. Inclusion criteria were studies from 2015-2022 that involved a free, low cost, religious based, or student run clinic. Exclusion criteria were studies from before 2015, involved large corporation clinics or hospitals, and were not community based, free, low cost, or student run.

Conclusions: Many models were identified in this literature review. Models including, days of operation, funding and staff, HTN and diabetic programs, type of care, screening tools, and telehealth, were found to be utilized in low-cost and student run free clinics, all of which provided effective standard of care resulting in increased healthcare access.

Key Words: Student run free clinic, low-cost clinic, faith based clinic effectiveness, low-cost clinic model, community health center

Introduction:

Over 3.5 billion people—half of the world’s population, did not have access to any healthcare facilities or services in 2017.¹ The Affordable Care Act in the US has decreased the uninsured population with over 35 million people enrolling by the end of 2021, however, it has not solved the problem completely.² Although the United States prides itself in quality healthcare and spends double the amount of money on healthcare as other countries, 8.9 percent of the US population was still uninsured in quarter three of 2021, eleven years after the Affordable Care Act was signed into law.^{3,4} Providing good health care to every citizen has been a difficult challenge for all countries including the United States. In order to provide more healthcare to more individuals, student run clinics (SRCs), community-based health systems, and other low-cost clinics have opened up all over the world.

The National Association of Free and Charitable Clinics (NAFC) is one organization that has implemented free clinics to better serve the underserved. The NAFC has more than 1,400 free clinics in the US, serving two million medically underserved individuals annually.⁵ Despite the impact that the NAFC has had on so many individuals, there are still millions of American citizens needing affordable and quality health care.

It is important, however, to understand how these clinics run, their effectiveness, and how they may increase healthcare access. This study analyzed articles involving free or low-cost clinics to determine which models are utilized within free or low-cost clinics to provide effective standard of care resulting in increased healthcare access. Clinically, this information is significant as knowing what models are most effective within these clinics can aid as a blueprint

for similar developing clinics so they too can implement such models to increase their effectiveness and healthcare access. The literature review will first provide a brief review of each study analyzed and then identify key aspects of each clinic and the study's findings. These aspects will provide a general model that the clinic operates by or implemented during the study. Any of the studies' outcomes may aid in how effective the clinic or model is at providing standard of care resulting in increased healthcare access.

Methods:

A comprehensive literature review was conducted using google scholar using the search terms "student run free clinic", "low-cost health care facilities", "community health care", and "faith-based clinic effectiveness". Inclusion criteria were studies from 2015-2022 that involved a free, low cost, religious based, or student run clinic. Exclusion criteria were studies from before 2015, involved large corporation clinics or hospitals, and were not community based, free, low cost, or student run. A total of 15 studies met the criteria. Analysis was done on each study to determine the type of clinic that the study involved including any funding, operating hours, care provided, staff, that was included as well as the effectiveness of the study and or the clinic itself.

Literature Review:

Utilization and Satisfaction

To start the review, several studies were found that provide details on utilization of low-cost clinics and their effectiveness. Shade Tree Clinic (STC) is a student run free clinic (SRFC) in Tennessee that works alongside Vanderbilt University Medical Center (VUMC), which provides lab and diagnostic studies for the STC, to provide care for low-income and uninsured individuals.⁶ STC has various services such as social work, legal, health education, a dispensary,

and other specialty services. The clinic operates at no cost to their patients with funding coming from grants and donations alone. Around 66% of their patients suffer from chronic diseases, eight of which were identified and associated with higher cost: diabetes, hypertension, coronary artery disease, hyperlipidemia, obstructive lung disease, anxiety/depression, and tobacco use. STC operates only two times during the week and the staff comprise of student volunteers who are supervised by other faculty. STC makes it a priority to see their patients every three months in order to closely follow up with their patients who have multiple comorbidities.

A 2018 study involving this clinic was done to determine if patients that joined STC have lower rates of hospitalizations and Emergency Room (ER) utilization compared to when they were not a part of the clinic. Hospitalizations and ER visits of each patient for two years before joining the clinic were recorded as well as the number of visits for two years after joining the clinic. Patients included in the study were 18 or older, those who had at least 2 visits, and did not include patients that were referred to the clinic for chronic diagnosis management. A multivariable analysis was done with 262 approved patients resulting in all 262 patients being less likely to have hospitalizations in the two years after joining the clinic, but ER visit likelihood remained the same. This study did not include randomization or a control group and only included two years of patient history before their enrolment in the free clinic. This study also had certain biases for their selection of patients that were included in the study such as the two clinic visit minimum. Even with these limitations, the study was still able to conclude that the comprehensive care delivered by Shade clinic does not burden the health system but rather may decrease hospital utilization.

Shade tree clinic was involved in another study aimed to find the reasons why patients of a student run free clinic visit the emergency department over the free clinic and identify if these

ED trips could be prevented in the future.⁷ The study included 254 individuals that were patients of Shade tree clinic during a one-year period between 2018-2019. The study found that among the 254 patients, 59 (23.3%) visited the ED during the time of the study. Those who presented to the ED were found to have a clinically significant higher presence of a mental health condition, higher Charlson Comorbidity Index, and greater history of presenting to the ED, than those who did not visit the ED during the study period. Of the total ED visits, 16% were for ambulatory care, and 7.5% were secondary to diabetes complications. The study concluded that those with a mental health condition were more likely to present to the ED, however, cannot prove having a mental health condition would increase the risk of an ED visit. This study was a cross-sectional study, thus, only looked at a certain population at a single point in time which does not allow the results to be generalized. The specific results from this study cannot prove what causes an increased risk for ED presentation nor cannot prove that any of the ED presentations could be prevented in the future. Despite the many weaknesses, the study's data does provide information that could be clinically significant for this free clinic and others such as improving education on diabetes and mental health disorders potentially preventing ED visits.

The student run free clinic 12th Street Health and Wellness Center (HWC) in Arkansas sees around 8 patients in a given day and operates three days a week.⁸ HWC was involved in a study asking the question of what impact a student run free clinic has on urgent care and which factors of a patient increases their probability of visiting the clinic. The average cost for a visit at surrounding EDs was collected and 3 years of patient intake forms of HWC were analyzed. Several independent variables were included in a multivariable logistic regression analysis in order to predict a binary dependent variable. Independent variables included being a minority, having insurance, having an appointment, and needing an interpreter. The study found that

patients that walked into the clinic with no appointment, needed a translator, and did not have insurance were more likely to need urgent care. The study also found that the clinic saved patients from unnecessary ED visits, reducing load on EDs and saving patient funds.

Unfortunately, there was some lost data entry as well as incomplete forms in this study which may have impacted the results. In general, the model at HWC has successfully decreased ED visits and has had a clinically significant effect on urgent care.

Keeping Neighbors in Good Health Through Service (KNIGHTS) clinic is a student run free clinic sponsored by Debel Legacy Fund in Florida.⁹ This SRFC serves individuals 200% below the federal poverty level and obtains their patients through the patient waitlist at Grace Medical Home (GMH), another SRFC. GMH also supplies KNIGHTS clinic with laboratory and other resources, though staff are provided by UCF students in medicine and social work, and pharmacy students from the University of Florida. UCF College of Medicine's curriculum for their medical school students heavily prioritizes empathic communication and service along with personable relationship development towards their patients.

A 2018 study was conducted involving KNIGHTS clinic to assess the degree of satisfaction patients have with staff and service to analyze if patients' needs are being met. A survey that was used in this study was adapted from other published surveys of SRFCs. Internal consistency of these surveys were measured using Cronbach's alpha that proved acceptable reliability. The study resulted in a 91% patient satisfaction rate in their clinic experience and 75% of patients were satisfied with their health improvement since they joined the clinic. "Courtesy/respect of staff", "doctors' knowledge", and "availability of free or affordable medications" were the top scoring variables. The greatest limitation with this study is the small sample size of only 44 patients. Despite this, for the KNIGHTS clinic, this study provides

clinically significant results that their model has been effective and successful and may have benefit to other clinics looking to implement certain aspects to their clinical model.

Between the studies done at Shade tree clinic, HWC, and KNIGHTS clinics, all serve similar patients and have implemented models that have significantly helped reduce the load on other healthcare facilities and have successfully seen and treated many patients who have been satisfied. The next several studies have focused on specific diseases to understand if low-cost clinics can have successful benefit.

Hypertension and Diabetes

In the treatment of hypertension, Therapeutic lifestyle changes (TLC) is highly recommended. A 2018 Faith-Based Approaches in the Treatment of Hypertension (FAITH) study evaluated the impact of TLC along with motivational interviewing (MINT) versus using health education (HE) solely in a community-based setting for the reduction of BP in black individuals with uncontrolled hypertension.¹⁰ The FAITH study utilized 32 churches with Lay Health Advisors (LHA) to conduct this study on 373 individuals. Outcomes of this study were BP difference from baseline to 6 months and 9 months. Churches were randomized to either implement the TLC/MINT approach or HE. The TLC/MINT implementation focused on adding a healthy lifestyle to patients' lives which involved 11, 90-minute sessions weekly and included healthy eating, physical activity, stress management, goal setting, medication adherence, and other topics. Three monthly individual meetings were then scheduled after the completion of all 11 sessions to discuss lifestyle changes and how to maintain them, as well as problem solving. The HE group involved 10 sessions on general health education, not focused on hypertension, and one session dedicated to hypertension management. 58% of participants completed all 11 TLC/MINT sessions and 46% completed all monthly individual sessions. The study resulted in

finding significant difference in baseline to 6 months and 9 months systolic BP reduction in both TLC/MINT and HE however, the TLC/MINT group had greater reduction compared to the HE alone group. The biggest limitation to this study was the short duration of the study, however, implementation of either TLC/MINT or HE was seen to improve participants' BP, though TLC/MINT may be preferred due to the greater benefits. The TLC/MINT model may have significant benefits if implemented in low-cost community-based health systems and clinics.

Another study involving hypertension as well as diabetes looked at Dedicated to Aurora's Wellness and Needs (DAWN) student run clinic in Colorado which operates with the help of a non-profit community-based partner and the University of Colorado Anschutz Medical Campus.¹¹ The clinic is run by students and clinicians providing primary care including pharmacy, dental, psychology, and physical therapy, one evening during the week and two further nights for specialty services and physical therapy. A study was conducted involving DAWN clinic in order to determine if the clinic was meeting national standards in the treatment of diabetes and HTN and to identify any improvements that could be made. A retrospective chart review was conducted including patients with diabetes or HTN above the age of 17 and were not pregnant. 30 patients with diabetes were included as well as 75 patients with HTN. It was found that HbA1c screening rates were significantly higher at DAWN at 93.3% compared to other FQHCs at 77.8%, equivalent rates of retinopathy screening, and lower rates of nephropathy care (70% vs 85.4%). Outcomes for increased diabetes control were higher than other FQHC but lower than other community health centers (CHC). BP control was significantly lower in DAWN patients than in patients of other FQHCs and CHCs. Although this study only included patients seen within 18 months, had a small sample size, and did not have a good control group, the

findings of higher HbA1c screening rates, and increased diabetes control, may be very clinically significant to the DAWN clinic and others alike.

Latino Health Access Diabetes Self-Management Program (LHA-DSMP) is a strategy developed for Spanish speaking, low income, type 2 diabetics to increase skill and support for controlling their diabetes.¹² The program was developed by Latino Health Access, an organization in California providing medical related service and programs to engage patients and speak to pressing health concerns to marginalized, low-income individuals in order to build a permanent positive change in their communities by engaging them in community involvement and by providing resources and education. This program was implemented at a federally qualified health clinic in order to see if the program had significant benefit to blood sugar control in patients who participated in the program and those who did not. The study analyzed 18-year-old or older type 2 diabetic patients who had two or more visits to the clinic and who either had successfully completed the program, which was the intervention group (305 patients), or did not complete the program, which became the comparison group (383 patients). The study found clinically significant evidence that among patients that had completed the program had a higher decrease in HbA1c than patients who did not complete the program. An average reduction in HbA1c of 1.1 point was found and is clinically significant due to studies supporting that every point decrease leads to significant reduction in other risk factors. This study does have a self-selection bias due to the participants being motivated to join the program for their own health benefit. Overall, this study was successful in decreasing HbA1c in patients of a community-based health clinic by implementing the LHA-DSMP. This program or similar implementations may also have benefits to other low-cost community-based health systems.

Overall, three studies were found involving the treatment of hypertension and or diabetes, and all three studies found successful models in treating these diseases. TLC/MINT and LHA-DSMP implementation were both seen to improve BP and Diabetes control respectively, and DAWN clinic specifically was meeting the national standards in the treatment of diabetes and HTN. With both TLC/MINT and LHA-DSMP implemented into the same clinic, one may expect an even greater success in the treatment of these diseases. A similar study also desired to try different implementations to assess if they would aid in patients' health.

Specific Intervention

A 2020 study was conducted at a free clinic that serves low-income and uninsured individuals.¹³ This study desired to improve medical care and improved health, measured with six factors, with the implementation of four interventions. The six quantifiable measures included glucose control, urine protein screening, eye exam screening, blood pressure control, colon cancer screening, and breast cancer screening. The four interventions were (1) patient education, (2) preventative education for providers, (3) BP measurement technique, and (4) creation of reminders after electronic medical record implementation. If a patient qualified for a preventative test or measure, a reminder would be seen on their chart for the provider to see. In addition to this, providers were educated on the preventative measures including who qualified, the importance, how to use the reminders. More interventions were made for breast and colon cancer screening due to the higher amount of questions patients have with these screenings. After discussing the preventative intervention with a provider, patients would receive a pamphlet with more info including the importance of the intervention. Patients met prevention criteria for diabetes, HTN, breast, and colon cancer. It was thought that diabetes control was not well controlled due to HbA1c not being properly monitored, thus with implementation of measures 1,

and 2, patients would be more likely to get these levels checked more regularly. HTN was also thought to not be well controlled due to inaccurate measuring of BP in-clinic, thus implementation 3 was hoping to address this. Data was gathered for each patient one year before and after the interventions were put in place.

The study resulted in colon cancer, breast cancer and urine protein screening increasing above the national average and above what was seen prior to the four implementations, however, diabetes, HTN, and eye exams did not improve. Although diabetes and HTN had specific interventions put in place to address them and were not improved, it is thought that due to the clinic already having above national average numbers, patients were not able to improve (the plateau effect). Due to all four interventions being put into place at the same time, certain conclusions for each are limited. Patients in this study were not able to be selected, thus this may have impacted the data. It may be beneficial in the future to implement similar interventions in a clinic with below national average marks to see if there is a more dramatic positive impact. Overall, this study and this free clinic successfully implemented models that benefitted their clinic and may benefit other similar clinics if implemented.

Healthcare Screening

Several studies were found involving the implementation of specific screening measures into clinics. Two studies focused on effectiveness of cancer screening in low-cost clinics. The University of South Florida Morsani College of Medicine supports the student run free clinic, Building Relationships and Initiatives Dedicated to Gaining Equality (BRIDGE) clinic.¹⁴ BRIDGE clinic prioritizes patients who are beneath the poverty line by 200%. BRIDGE operates during a weekly basis and is established to be a compassionate care clinic while providing education to healthcare professionals. The clinic is dedicated to primary care but also provides

many specialty clinics such as women's health which is offered monthly. Patients are offered free care due to the donations and sponsors that the clinic has and receives and due to the volunteers, including physicians, other staff, and medical, pharmacy, social work, public health, and physical therapy students.

BRIDGE was involved in a 2019 study that aimed to compare breast cancer screening rates between BRIDGE clinic and national averages. The chart review included patients if they were women between the ages of 40 and 70 and had at least two visits at the clinic. The study found that 84.5% of BRIDGE patients had their screening through BRIDGE and 75.5% of BRIDGE patients were in compliance with the screening guidelines of the American Cancer Society, compared to the national rates of 21% among insured patients, and 53% among uninsured patients. Although this study had a limited and select sample size and may not be generalized greatly, the study does offer clinically significant results showing that free clinics may have a big impact on breast cancer screening, compared to national averages, especially among the uninsured.

A second study researching cancer screening was a study conducted in 2018 focusing on Federally Qualified Health Clinics (FQHC) in Oregon and California.¹⁵ The study aimed to identify the effectiveness of mailed fecal immunochemical test (FIT) kits compared to usual colorectal cancer screening. 26 clinics were identified, accepted into the study, randomized, and all served similar low-income patients. The study mailed FIT kits for colorectal cancer screening in half of the clinics and half continued with standard CRC screening. Standard CRC screenings consisted of routine examinations providing education and ordering of tests. A total of 41,193 patients were looked at who had at least 12 months of care at one of the clinics and were due for a screening. The study found that those individuals that received a mailed FIT kit had 3.4%,

statistically significant, higher rates of completion than patients who received standard CRC screening. Completion rates of mailed FIT kits were higher in clinics that sent out a reminder letter to patients than clinics who did not. Higher implementation of this intervention was found somewhat challenging due to the added time requirement on clinic staff, organization, and other technical difficulties. Under reporting of completed FIT kits is a limitation in this study as well as miss and underreporting. This study, however, was able to show that the implementation of mailed FIT kits can have a positive impact on higher rates of CRC screening. Although not pointed out in the study, there may be a difference in cost between mailed vs in clinic testing which may also impact the implementation of this model in certain clinics. Furthermore, mailed in testing may be more practical in larger areas where commuting may be more difficult for certain individuals, while smaller towns may prefer to present to the clinic for such testing.

The last study found relating to screening focused on mental health, specifically, depression and implemented a screening model into clinics. The University of California San Diego is associated with several student run free clinics, two of which were involved in a 2018 study.¹⁶ These two clinics primarily see patients who are uninsured, have low income, do not qualify for sliding scale fees at many federally run clinics, and many other diversifying demographics. Due to the patient population and demographics, these clinics had higher rates of psychological challenges with their patients, however, depression screening was never done at these two clinics. The 2018 study involving these clinics wanted to explore implementing a screening test for major depressive disorder and measure the amount of patients at these two clinics that met the required criteria for major depressive disorder after completing the screening. The PHQ-2 questionnaire was distributed to patients every 6 months to screen for depression, and if positive, a PHQ-9 was filled out by the same patient. Out of the 570 patients that were

seen at both clinics during the 2 years of this study, 504 were screened at least once. The study was successful in screening 88% of patients that were seen with 39% of patients scoring positively for depression, with a wide range of severity including 23% having suicidal ideation. Because this study heavily revolves around the PHQ-2 and 9, certain limitations can be attributed to these questionnaires. This study could be lengthened beyond two years to increase data. This study has great implications for administering this model into other clinics to significantly improve mental health awareness, prevention, and support.

Improvement in several diseases were seen across all three of these studies that implemented screening into their clinics. This may lead one to believe that low-cost clinics could significantly improve the health of their patients if they implemented more screening tests. Just like the clinic that implemented depression screening because of the population they served, a separate study was conducted to identify a model to reduce poor prenatal and infant care to address this need in a community.

Prenatal care

A faith-based clinic in Detroit was designed to provide mobile health care services at local churches to provide prenatal and postpartum care as well as certain infant care services.¹⁷ Luke clinic operates twice each month with four hour clinic days with physician, nurse, and midwife volunteers, funded by the Lutheran Church Missouri Synod. To increase accessibility even more, between clinic days, Luke clinic provides home visits with a converted ambulance for ultrasounds and newborn exams. Luke clinic prioritizes certain characteristics in their model of care to ensure patients feel safe and welcomed, including personal connections with staff, caring, respect, and continuity of care. The clinic also offers many other services including but not limited to social work, immunizations, contraception, ultrasounds, medication, as well as

clothing, food, and other essentials. A 24/7 call center is also available to answer many pregnancy and newborn concerns or to refer to a hospital or connect to a social worker. Luke clinic was designed to have a positive impact on the high preterm birth numbers and high negative birth outcomes in Detroit by providing care to uninsured women. The clinic saw a steady increase in patients over two years and doubling by the end of the second year. The no-show rate was 23%, half of what is seen typically in other urban clinics. The clinic found that the rate of preterm or low birth weight deliveries per 1000 live births was significantly lower than in Detroit, despite the patient population that was seen by this clinic being of one of highest risk. Overall, the clinic saw very positive impacts in the first two years of operation with the model that they implemented. Luke clinic has implemented a model that has been able to successfully provide free quality care that retains and engages their patients.

Dermatology care

Another study desired to analyze the impact of a clinic implementing a dermatologic specialty one day of the month.¹⁸ The student run free clinic, Lubbock Impact, is affiliated with the Texas Tech University Health Sciences Center and provides primary care services once a week to uninsured individuals between the ages of 19 and 64. The clinic additionally provides dermatologic care, including certain biopsies and electrodesiccation and curettage (ED&C) to assess for cancer, once a month. A 2020 study assessed the cost of the dermatologic procedures at this clinic by analyzing patient charts retrospectively in a two-year window. 24 dermatologic care days were looked at which included 136 patients resulting in a total of 49 procedures completed. A total cost of these procedures was estimated to be over \$8,000. The study concluded that this dermatologic care has been vital to the patients at this clinic who are of high risk for skin cancer. This study has limitations including not accounting for office visits prior to

dermatologic procedures, and manual documentation was used which may have led to visits not being accounted for. Overall, this study may provide clinically significant results showing that the implementation of a dermatologic specialty within student run free clinics could be highly valuable.

Telehealth

University of Missouri School of Medicine is affiliated with MedZou Community Health Clinic, a student run free clinic. During the COVID-19 pandemic, MedZou clinic was not allowed to have students see patients in person, thus they converted to telehealth completely.¹⁹ A study was done to analyze the clinic's diabetes management during this telehealth time. Charts of established patients of the clinic with a recorded A1c between the study dates were recorded, including one year pre-covid. Six measures were chosen to be representative of the patient's diabetic care. 29 patients qualified for the study, 26 of them having telehealth services. Overall, the study found that there was a decrease in the six measures being met during COVID, than before COVID, however, the difference was not statistically significant. Although not statistically significant, there was an average decrease in HbA1c levels by 0.59%, which may be clinically significant due to this percent climbing toward 1% which may significantly increase the risk of many diseases. Due to the small sample size, not much statistically significant information was able to be made. The six measurements that were used may have not been the most accurate for assessing diabetic control. Despite these shortcomings, this study may provide other clinics a model for implementing telehealth in their clinic to provide another option for patients to be helped, however, diabetic control may be more appropriately managed in person due to the decrease in HbA1c that was observed.

A second clinic that was looked at due to its implementation of telehealth was located in the Intermountain Region and serves patients who are under the poverty line by 150%.²⁰ Staff include 12 paid workers and over 800 volunteers. The clinic is able to operate with grants and donations and is not affiliated with the government or religious groups. COVID-19 prevented this clinic from seeing all their patients in-person and had to rely on telehealth. A study was conducted to evaluate the satisfaction of patients at this clinic with in-person and telehealth care before and during COVID. 628 patients volunteered to take a survey to analyze their satisfaction. The study resulted in statistically significant findings of patient's having positive experiences and satisfaction with both in-person and telehealth, although in-person was slightly higher. There are a few limitations to this study, including the surveys being optional and filled out by volunteers. Despite this, the study was able to show there has been significant patient satisfaction with both in-person and telehealth care at this free clinic, which may inspire other similar clinics to adopt a similar model which may open up opportunities for certain individuals to get healthcare services easier.

Both studies involving telehealth implementation found success, however, one study saw the disadvantage to telehealth in the treatment of diabetes. As technology only continues to advance and be implemented in more areas of life, clinics will need to adapt and may be crippled if certain technology like offering telehealth is not implemented. These two clinics offer models for other clinics to examine and aid in their own utilization of telehealth.

Discussion:

Based on the literature that has been presented, there are many key findings from the studies that can aid in expressing which models are utilized within free or low-cost clinics to provide effective standard of care resulting in increased healthcare access. Several of the clinics

in this analysis did not operate every day during the week. In fact, Shade tree, HWC, DAWN, Luke, and Lubbock Impact clinics, all specified their operating days and operate three or less days a week and all found favorable results in their studies. It may seem necessary for a clinic to operate every day during a week, however, with these clinics and the results they found, it may lead one to believe that this model of operating fewer days during the week has proven beneficial, and thus, other clinics may find benefit to implementing this model. Although it cannot be proven with the current studies, having fewer working days may lead to less staff, less burnout for staff, and less funding needed, which may contribute to the success in these clinics.

Funding and staff cannot be overlooked in any type of establishment, in fact, with low-cost clinics, it is important to examine how they can operate without typical billing and employment and what options have proven successful. Most of the clinics involved in the studies discussed were funded with the help of government grants and the close involvement of an education establishment that offered student volunteers, while others had help from their connected university, medical centers, religious groups or through non-profit, non-religious, and non-governmental grants. The vast amount of possible funding seen between all these clinics shows that there are many ways to obtain funding and the type of funding that the clinic utilizes may depend on what type of clinic it is, i.g., religiously affiliated or governmental. The common model for funding and providing staff that has been successful across the board in the studies that were analyzed was affiliation with a university that provides student volunteers and other support as well as grants from all groups, including non-governmental. Affiliation with another clinic is even seen and can be very beneficial.

TLC/MINT and the LHA-DSMP were both two specific strategies implemented into a clinic and churches, respectively, that aided to increase HTN and diabetes management. Both

studies found that these two models were effective which suggests that these models or similar ones may also be beneficial to other low-cost clinics in the management of both diabetes and HTN.

All 15 studies showed clinics that focused on primary care; this type of care seems to be most widely implemented, however, several clinics were multidisciplinary and found much success providing additional or alternative care. Specialties including pharmacy, dental, psychology, physical therapy, women's health, prenatal, urgent, and dermatologic care were all seen. This broad spectrum of care may point to the belief that low-cost clinics can have a wide scope of practice and impact many areas of medicine. Some clinics may be better created to focus on a specific specialty that a community is in desperate need of. Luke clinic, for example, was specifically created to address the lack of prenatal care in the community. The clinic saw exponential growth within its first two years of development and saw much success in helping reduce the community's lack of prenatal care.

Implementing screening tools, and other specific models were also seen in a few studies. Cancer screening was examined in two studies both showing the success of this type of screening and an added benefit to mailed in colorectal cancer screening and electronic reminders. Interventions of patient education, preventative education for providers, BP measurement technique, and creation of reminders were all implemented in a clinic with the study resulting in an increased colon cancer, breast cancer, and urine protein screening in this clinic. Mental health screening was also implemented in two clinics affiliated with The University of California San Diego, and this study found tremendous success with the addition of this type of screening into the clinics. All of these studies point towards the benefit of screening within low-cost clinics and

making screening even easier and more successful with mailed in options, electronic reminders, and education.

Lastly, two studies were found that focused on the telehealth model implementation. One study found much success and high patient satisfaction with the implementation of telehealth while the other study found telehealth not being as effective in caring for diabetics. Both of these studies are helpful as one points to the benefit of telehealth, allowing easier access to care and high patient satisfaction while the other study provides insight to one specific area of medicine that is best kept to in-person. Low-cost clinics may find implementing telehealth into their clinics to be beneficial and contribute to additional patients and patient satisfaction.

Recommendations

Based on the studies and discussion, a new clinic that is in development could find that being a multidisciplinary clinic specifically in an area where a particular disease or disorder may be more prevalent and being affiliated with a university and a medical center, might be extremely beneficial as they become settled in a community by increasing their support as well as their patient demographics. The clinic may also benefit financially by being affiliated with all types of organizations to increase where their funding comes from. Implementing specific disease prevention and support services such as the TLC/MINT and the LHA-DSMP programs, and increasing screening services are two more ways that could make this clinic treat a wide range of patients and do so very successfully.

Conclusions

There are many models that low-cost and student run free clinics can adopt to provide effective standard of care resulting in increased healthcare access. Many models were identified

in this literature review. Models including, days of operation, funding and staff, HTN and diabetic programs, type of care, screening tools, and telehealth, were found to be utilized in low-cost and student run free clinics, all of which provided effective standard of care resulting in increased healthcare access. Clinics operating less than five days a week found success, funding coming from religious, non-profit, and governmental groups was sufficient, support from universities or clinics provided staff and tools, HTN and diabetic models and programs increased disease management, numerous types of care including specialties proved beneficial, added screening tools was successful, and telehealth implementation provided benefit. Low-cost and student run free clinics that have already been established can use this study to implement one or several of the models that were identified to improve their clinic's standard of care and healthcare access. Developing clinics or an organization that wishes to launch a new clinic can also use many of these models as a guide

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