A Chronic Disease Management Program at the Rowan School of Osteopathic Medicine’s Student-Run Free Clinic
Implementation and Community Partnerships

Eric Goldwaser; Bernadette Bibber, MBS; Kathryn Eckert; Samantha Paglinco; Kyley Leroy; Danielle Alaimo

1Rowan University School of Osteopathic Medicine, Stratford, New Jersey, USA

Corresponding Author: Bernadette Bibber; email: bibberbm@rowan.edu

Published: September 30, 2016

Abstract

In the United States, one out of every four adults is living with at least one chronic disease. Treatment of these chronic conditions accounts for 84% of healthcare spending. Successful treatment of chronic diseases involves support from family, the community, and the healthcare system. In this descriptive report, we outline the beginning steps of implementing a new program aimed at addressing a pervasive chronic disease in the population seen at our student-run clinic. The Rowan University School of Osteopathic Medicine’s Camden Community Health Center in conjunction with the Camden Area Health Education Center gathered information from a community needs assessment and focus group to better direct efforts at optimizing healthcare delivery to the priorities of the community. After collecting the data, a chronic disease management pilot program targeting patients with chronic hypertension was created. The program included a course run over a six-week period, in which a peer-run educational group focused on lifestyle changes and medical management of hypertension. This plan utilized community health workers, a “buddy system,” and family support. At the end of the program, participants were provided with a weekly blood pressure log, action plan for their disease management, and specific follow-up appointments. Furthermore, we briefly share preliminary data that allowed us to gauge success of the pilot program and form the basis for a larger, more comprehensive follow-up study.

Introduction

Chronic diseases, including heart disease, obesity, and diabetes, are the leading causes of death and disability in the United States. Approximately 50% of the population has one or more chronic medical conditions, and management of these conditions accounts for 84% of healthcare spending. The behaviors most associated with an increased risk of developing a chronic disease include lack of physical activity, poor nutrition, and excess use of alcohol and tobacco. These factors are more pronounced in areas of high rates of poverty. The World Health Organization found that impoverished individuals find it 10%, 8%, and 12% more difficult to access a safe environment in which to exercise, find affordable fresh fruits and vegetables, and get medications, respectively, when compared to individuals not living in poverty. Moreover, living in poverty increases health risks and decreases access to health services. Those in poverty are more vulnerable to chronic disease due to a variety of factors, including higher risk behavior, unhealthy living conditions, material deprivation, psychosocial stresses, and limited access to quality health care. Importantly, chronic diseases can contribute to poverty as the financial burden of treatment and worsening of disease continue to manifest.

The Camden Community Health Center (CCHC) is a medical student-run, faculty-supported clinic located in Camden, New Jersey, and associated with Rowan University of New Jersey School of Osteopathic Medicine (Rowan SOM). The mission is to provide free, comprehensive healthcare and health education to the Camden community. In
this pursuit, the CCHC acquired an American Osteopathic Foundation Spirit of Humanities grant award to fund an effort to meet the demands of chronic disease management in this community. Following in the footsteps of similar community health needs assessment studies performed in the Camden area, we were able to hone in on where to more precisely target our efforts.

Compared to the rest of New Jersey, Camden has a higher percentage of the total population with a disability, lower education, and higher crime and poverty rates. Furthermore, data presented by a hospital in Camden showed that Camden had higher rates of emergency department visits for primary care issues and more Medicare 30-day readmissions. With that said, it should be noted that local residents of Camden fare better in terms of dental visits and diminished sweetened drink consumption. Camden county, as well as the city of Camden, identified access to healthcare and chronic conditions (diabetes, heart disease, and cancer) as two of their most important issues being faced.\textsuperscript{4} Health disparities were noted, as population demographics were staunchly different from the rest of the state. For instance, Hispanics were more likely to report their health as being poor, as well as having worse physical and mental health.\textsuperscript{5} Hispanics were also more likely to respond consuming fast food meals than non-Hispanics.\textsuperscript{5} Blacks and African Americans comprise roughly 48\% of the population, with a similar percentage of Hispanics and Latinos.\textsuperscript{5} Whites occupy most of the remainder, and this was representative of the population being seen by the CCHC.

By identifying perceived and actual barriers to health care in Camden and the surrounding area from which we draw our patients, and identifying a chronic disease to be targeted, the CCHC, in association with Rutgers University School of Public Health and Camden Area Health Education Centers (AHEC), implemented a team-based Chronic Disease Management (CDM) program for patients with hypertension. We describe the process, approach, and strategy taken that led to the successful implementation of the CDM program, and rationale for its focus on chronic hypertension following the needs assessment. Furthermore, we present the reason and means by which clinic staff efforts and funds were allocated to help reach our goal. Ultimately, we were able to create an environment that addresses patients’ perceived barriers, educates patients on their disease, encourages positive nutrition changes, and fosters support via a “buddy system” and community involvement to help patients make the necessary adjustments needed to significantly decrease their blood pressure.

Identifying a Community’s Health Needs

Collaborating with community partners, we were able to gain relevant information using a community needs assessment and focus group. This data revealed that hypertension was one of the most prevalent and impactful of chronic diseases afflicting the study population. Thus, the first installment of the CDM pilot program focused on managing hypertension.

Research shows that only half of people with hypertension have their disease adequately controlled. Hypertension increases the risk of developing heart disease and stroke, which are responsible for over 750,000 deaths each year.\textsuperscript{6} High blood pressure alone costs the nation 47.5 billion dollars each year.\textsuperscript{7} Prevalence of hypertension by race shows 43\% of African American men and 46\% of African American women to be afflicted. Like many chronic diseases, hypertension shows greater prevalence in populations plagued by poverty.\textsuperscript{2} Residents in areas that have greater walkability, safety, and healthier available foods are less likely to be hypertensive than those in poverty.\textsuperscript{8,9} Unfortunately, diminished access to health services and low numbers of individuals with insurance make it less likely that individuals in the latter group have access to hypertension screening.\textsuperscript{2}

Roughly 1 in 3 adult Americans have prehypertension and would greatly benefit from screening and preventative measures.\textsuperscript{7} Furthermore, 39\% of Americans are unaware that they currently have hypertension.\textsuperscript{10} Proper treatment and control of hypertension can decrease the risk of heart attacks, stroke, heart failure, and chronic kidney disease, thus adding to the importance and scope of management of the underlying hypertension.\textsuperscript{10}

Designing the CDM

In order for treatment to be successful, barriers to patient health have to be identified and removed as best as possible. A focus group conducted by Jerant and colleagues found patients perceived the following barriers: depression, weight problems, difficulty exercising, fatigue, poor physician communication, low family support, pain, and financial problems.\textsuperscript{11} However, barriers differ based on the population being studied.
In order to have the greatest impact in reducing barriers, the method of treatment for a chronic disease needs to account for many aspects of the patient’s life not addressed during physician visits or by a single practitioner. The following themes that have been identified to promote patient-centered health management: (1) starting from the patient’s situation; (2) legitimizing the illness experience; (3) acknowledging the patient’s expertise; (4) offering realistic hope; (5) developing an ongoing partnership; (6) providing advocacy for the patient in the healthcare system.12

One of the most effective methods of managing chronic diseases is by using a team-based approach, while simultaneously promoting active self-management.13,14 This approach incorporates the patient, the primary care team, the healthcare system, and the community in order to deliver optimal, cost-effective healthcare, all while keeping the patient at the center of their disease management.15,16 Federal and state funded programs like the Center for Disease Control’s Healthy Communities Program and AHEC are community centers that strive to build programs aimed at improving the health of their surrounding communities through the previously mentioned approaches.17,18 Through various preventative and educational programs, these centers attempt to address risk factors and help break down the barriers to achieving good health.17,18 It is advantageous to integrate these programs into newer programs, creating a patient-centered, team-based approach to chronic disease management.18,19 The goal of team-based chronic disease management is to create a supportive environment to most efficiently assist those suffering from chronic diseases in maintaining a healthy and functional life.13 Community-wide management of chronic diseases could lead to better health of community members, decreased mortality, and decreased medical cost. If hypertension control was maximized, it is estimated that the associated cardiac and cerebrovascular mortality would decrease by 49% and 64%, respectively.15

As determined by the community focus groups we conducted, the most significant obstacle to access of care was a barrier in communication. Affordability and accessibility to healthcare both were mentioned as factors impacting the overall health and wellbeing of the population studied. Respondents also explained that they felt the hours of health services provided in the community were oftentimes not conducive to their work schedules. Regarding more specific health concerns, the focus group identified diabetes, hypertension, and obesity, along with domestic violence, as of greatest concern. Along these lines, the community cited the importance of increased primary care services in the community to improve access to healthcare and reduce the use of the emergency room for routine treatment.

The use of peer facilitators with hypertension was included to allow the patient experience to be accepted, offer realistic hope through the shared experience, and acknowledge the patients’ expertise in their individual health state. The CCHC program developed multiple ongoing partnerships in the hopes of creating a better support system for each patient. Each patient collaborated with another patient as a “buddy” for check-in calls and help overcoming day-to-day challenges. Every patient was encouraged to bring a friend or family member to attend with them in the hopes of creating another form of support and partnership. The program also focused on education as a way to help promote advocacy for the patient. Additionally, the collaboration with the Camden AHEC allowed for continued access to such support services.

Following a literature analysis, a six-week curriculum, with focused follow-up, was designed. The curriculum was based on the importance of the team-based approach to managing the patient’s chronic hypertension. As such, communication was an integral part of the process, combined with the educational efforts to better understand the disease the patient was going through, and how their partner would be able to help. By documenting their blood pressure in a log, it nourished a degree of ownership to the patient that can provide a stronger desire to comply with the management protocols set forth by the health team.

**Intervention**

Clinic staff reviewed patient logs and compiled a list of established patients seen regularly for hypertension management. Eligible patients received three attempted contacts and information on the CDM program. Prospective enrollees were advised that the class would provide valuable medical information on their chronic condition and lifestyle and medication management advice. Furthermore, prospective participants were encouraged to bring a family member or friend (as part of the “buddy system”), and that a healthy lunch would be provided. Interested prospective
enrollees were contacted one month and one week prior to the start date.

Ultimately, eight participants attended the first group session. This included two community health workers from Camden AHEC, individuals with hypertension who also served as community leaders with the potential to implement a peer-to-peer teaching model. The program ran for six consecutive weeks, on Saturday mornings for three hours. At each session, the participants’ blood pressures were measured and recorded into their own personal log (provided), as well as their medical chart. Patients were assisted in establishing goals each week, which corresponded to the interactive lesson topic presented during the session, as well as personal action plans for health management. Each week, the participants and their guests were provided with a heart-healthy, low sodium lunch, as both incentive for attendance and example of good food choices. Additionally, a “buddy system” was established within the class, with participants instructed to call their “buddy” weekly to follow-up on goals and action plan implementation. Following the conclusion of the program, participants had follow-up appointments at the clinic, and their weekly blood pressure log and action plan goals were added to their medical charts. Throughout the duration of the program, no participant was lost to follow-up. Data continues to be collected on patient follow-ups as to the lasting impact the CDM program, and will continue for five years.

Evaluating Clinical Outcomes

Our preliminary observations were drawn from all eligible (that is, those who were contacted as “prospective enrollees,” including those who did participate in the CDM program) patients who sought the CCHC services for management of their hypertension from January 2011 to September 2012. Using this initial data, we were able to observe a demonstrable decrease in systolic blood pressure, diastolic blood pressure, and hypertension staging based off of JNC 7 guidelines for the twenty one patients included. By using the data collected from the Camden community needs assessment, we were able to meet the overall mission of the CCHC to empower patients to take better control of their health-related issues. This initial success seemed to be augmented by the implementation of our CDM program that has engaged the community in response to a prioritized issue, chronic hypertension. During this time, we established a protocol by which we will gather prospective data for research purposes. The data collected and presented in this report was approved by the Rowan University Institutional Review Board.

The patient population (n=21) includes chronic hypertensive patients with a minimum of three CCHC visits during this time period. The average decrease in systolic blood pressure was 26.3 mmHg. The changes in systolic blood pressure ranged from an increase of 12 mmHg to a decrease of 86 mmHg. The average decrease in diastolic blood pressure was 15.0 mmHg. The changes in diastolic blood pressure ranged from an increase of 12 mmHg to a decrease of 66 mmHg.

Over the interval the patients were surveyed, there was an average improvement in 1.14 JNC 7 stages (Figure 1). Sixteen patients were able to improve their blood pressure by one stage. Three prehypertensive patients remained prehypertensive. Fourteen of the fifteen patients with stage II hypertension were able to improve their blood pressure by a minimum of one stage. Two patients with stage II hypertension were able to improve by two stages, while three patients with stage II hypertension were able to improve their blood pressure to a normal range. Only one patient had an overall increase in blood pressure staging, moving from the normal range to the prehypertensive range.

Figure 1. Comparison of Hypertensive Stages from January 2011 to September 2012

The number of patients with stage II hypertension decreased from 15 to 1. The number with stage I increased from 2 patients to 9. Prehypertensive patients increased from 3 to 7. Normotensive patients increased from 1 to 4.
Discussion and Perspectives

The focus of hypertension management and implementation of a CDM program at the CCHC showed promising results that support a team-based approach. By combining the resources of the community via Camden AHEC, the physicians of Rowan SOM at CCHC, family, and peer support, many of the patients seen for management of their hypertension indeed lowered their blood pressure, established goals that they felt were attainable, and demonstrated a better understanding of their disease. It is important to understand the constraints and difficulties that patients in underserved, impoverished areas face when dealing with chronic diseases. Programs such as the CDM course are effective in overcoming some of the patient-identified obstacles such as poor physician communication, low family support, and financial problems. This program fostered support from community health workers, clinic staff, patients’ friends or family members, and was offered at no cost to the patient. Other obstacles our patient population mentioned was a lack of services offered at times when they would be available. To this end, the CDM program ran on weekends to better accommodate the schedules of these patients. This allowed all of the patients to attend the six weeks of meetings. This fact is also telling as to patients’ will to live better, appreciate the course and material, and understand the significance of their disease. In a community such as Camden, adherence and compliance are often issues, but this program demonstrated that with the removal of the aforementioned barriers, compliance becomes more attainable.

The program was designed to address the six goals, but participants were unable to identify which they felt was most helpful. Participants were able to identify barriers that had been lessened, including time of the meeting, communication, and family support. However, the most helpful accommodation made by our study structure was not qualified. It appears that removing multiple barriers can create a successful program and is the goal of future programs. Further observations from this six-week course, as well as the four years of prospective data since the CDM program was implemented, will be the crux of a future, more detailed and data-driven analysis of the CDM program’s success and lasting impact. However, the patients who partook in the CDM program were included in the set of 21 patients described in the data collected and presented in this descriptive report.

Although what we are presenting in this report is potentially far-reaching and impactful, we are aware of several limitations that cater this article to a descriptive report rather than to a full research study. We do not describe the intricate details and specifics of the CDM program, such as the materials included in each meeting, or a curriculum, as these aspects fall outside the scope of our intentions for this publication. Furthermore, pre- and post-test surveys were not included for the participants in the CDM program, which minimizes the findings that patients were indeed leaving the program more educated, at least quantitatively, than they started. The aim of this article is to address how the CCHC went about honing in on the direction to take efforts and funds to better address the community and its most problematic chronic disease. We were able to successfully interpret the needs assessment, and implement a program that furthered the goal of helping our patients to manage their chronic hypertension. A future study will analyze the actual effectiveness of the six-week course itself, with data from follow-up appointments to help interpret its long-term influence on chronic hypertension management.

The CCHC continues to work with the community to identify additional chronic diseases that can serve as future topics for the CDM course by implementing more prevention screenings for at-risk patients. Based on the focus group and needs assessment of the community, diabetes or asthma may be our next target and installment of the CDM program, given the promising results from the 20 months straddling the hypertension CDM course and preliminary data compiled from the participants.

Acknowledgements

We acknowledge the past members of the CCHC staff who were integral in helping to procure the SOH grant, implement the CDM, and compile the initial data – Eric Griffin, Clare Lipperini, Yewade Ng, Amy Schmelzer, and Patricia Hughes. Also, we thank the Rutgers School of Public Health for surveying the community and assisting in identifying community needs and chronic diseases.

Disclosures

This work was supported by a 2011 American Osteopathic Foundation Spirit of Humanities Grant. The authors have no conflicts of interest to disclose.
References

1. CDC. Chronic Diseases and Health Promotion. [Accessed December 02, 2014]. Link
17. CDC. Program Overview: Programs. Link