Community Partnerships for Diabetes Management in Rural West Virginia

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Abstract

Background: West Virginia has the second highest prevalence of diabetes in the United States. Rural, distressed counties in the state have a significantly higher prevalence of diabetes compared to non-distressed counties. Preventing and controlling diabetes, as well as other chronic conditions, requires both medical and behavioral interventions. In this article we present a model for mobilizing diabetes coalitions comprised of community-based organizations to help people adopt healthy behaviors that compliment medical care. We report on diabetes coalitions in Lincoln, Logan, McDowell, and Wyoming counties in West Virginia in 2015.

Methods: The coalitions in each county received $5,000 to sponsor evidence-based programs. Our team at Marshall led planning workshops, provided ongoing technical assistance, and conducted leadership training. Coalitions entered participation data quarterly on an online database.

Results: In 2015, 1,535 people completed physical activity programs, 598 completed self-management skills training and 308 monitored their blood pressure on a weekly basis. The coalitions surpassed their goal for physical activity by 330%, and blood pressure monitoring by 118%. The goal for skills training fell short by 21%.

Conclusion: It is possible to mobilize relatively large numbers of people in rural counties to engage in health behaviors. Physicians do not have to rely solely on the office visit to encourage patients to be active, they can partner with community-based organizations to do so.
Introduction and Background

West Virginia has the one of highest prevalence rates of diabetes in the nation. In 2014, WV was ranked second worst for diabetes among all states and territories with an age adjusted percentage of adults with diabetes of 12%, compared to the national average of 9.1%. The rates are not significantly different between genders but adults who were 65 and older had the highest diabetes rate amongst age groups and prevalence increased with decreasing income.

Rural, distressed counties are especially affected by diabetes. Residents in the poorest counties in Appalachia, designated as distressed by the Appalachian Regional Commission, have a significantly higher prevalence of diabetes than residents in counties with low and moderate income levels (odds ratio of 1.4; p>.01).

Controlling diabetes is a matter of both medical and behavioral interventions. Physicians can control the medical side of the equation; behavioral interventions that patients do outside the clinic setting are also needed for sustained glucose management. The challenge for controlling diabetes is engaging patients in managing both medical and behavioral interventions to control their diabetes. Non-adherence to physician instructions is a substantial barrier to diabetes management. The treatment regimen for diabetes is often complex, adverse outcomes occur, and patients can struggle with costs and provider-patient communications.

Methods

Context
In this article we present a model for mobilizing community-based organizations to help people adopt healthy behaviors of physical activity, blood pressure monitoring, and completing evidence-based self-management programs (EBP). It was developed through a partnership between the Appalachian Regional Commission, the Division of Diabetes Translation at the CDC, and the Marshall University School of Medicine. The coalitions represent community groups, non-profit organizations, faith-based organizations, health departments, cooperative extension services, and primary care centers. These organizations participate voluntarily, the coalitions do not have paid staff or a formal organizational structure.

While the project has been implemented in 73 distressed counties in nine Appalachian states, in this article we present the results of community mobilization in four of the most distressed counties in Southern West Virginia. These are, Lincoln, Logan, McDowell, and Wyoming counties. The diabetes prevalence of these counties is summarized in the following table.

<table>
<thead>
<tr>
<th>County</th>
<th>Diabetes Prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lincoln</td>
<td>12.8 %</td>
</tr>
<tr>
<td>Logan</td>
<td>14.8%</td>
</tr>
<tr>
<td>McDowell</td>
<td>15.2%</td>
</tr>
<tr>
<td>Wyoming</td>
<td>15.2%</td>
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</tbody>
</table>
The strategy for organizing the work with the diabetes coalitions began with a planning workshop using the CDC’s planning curriculum called *Diabetes Today*. Each coalition brought five or more representatives to a workshop. They went through a process of analyzing data on their county, identifying target populations, articulating objectives, and writing action plans.

Upon completing their plan, the coalitions received an implementation grant of $5,000 each. The funding was used to train leaders, support community events and provide incentives for participants to meet their goals. For example, those who completed walking 100 miles in 100 days received a water bottle or a t-shirt that proclaimed their accomplishment.

Our team at Marshall provided on-going technical assistance and leadership training to the coalitions. This included conducting site visits, webinars, telephone, and email communication. Onsite visits were done at least once a quarter.

**Interventions and Measures**
This study implemented three evidence-based self-management interventions. These are described in Table 2.

<table>
<thead>
<tr>
<th>Behavior</th>
<th>Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moderate to vigorous aerobic physical activity</td>
<td>Significant reductions in risk of cardiovascular disease occur at activity levels equivalent to 150 minutes a week of moderate-intensity physical activity.(^8)</td>
</tr>
<tr>
<td>Regular home-based blood pressure monitoring</td>
<td>Patients monitor their blood pressure at least weekly at home with the support of community health coaches and physician guidance to reach their target blood pressure.(^9)</td>
</tr>
<tr>
<td>Completion of evidence-based self-management programs</td>
<td>In a review of evidence-based programs appropriate to West Virginia, the authors found eighteen that led to improvements in weight, physical activity and glycemic control.(^10) For this project we used Stanford’s Chronic Disease Self-Management Program (CDSMP)(^11) and Shopping Matters.(^12)</td>
</tr>
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</table>

The physical activity programs implemented by the coalitions were team-based walking competitions, weekly line dancing and Zumba classes, and walking clubs. The team-based walking competitions were competitions where over multiple months teams competed to walk to California, or walk to Jerusalem, or walk 100 miles in 100 days. The advantage of the team-based competition was that they provided a concrete goal and participants received social support to keep going from their team members. The line dancing and Zumba classes were primarily organized for senior citizens. All of these intervention engaged participants in at least 150 minutes a week of physical activity.

The EBPs were Stanford’s Chronic Disease Self-Management Program (CDSMP) and Shopping Matters. CDSMP is a six week program that engages participants in practicing self-management skills. Health departments, cooperative extension agents and senior services organizations throughout West Virginia have qualified staff to train program leaders.
Shopping Matters is a program in which lay leaders are trained to lead grocery store shopping tours where participants learn to economically shop for healthy foods. Online leader training is available from the sponsoring organizations, Share Our Strength, complemented by onsite training from Marshall staff members.

Blood pressure monitoring was implemented by including it in group settings such as the self-management courses, diabetes support groups, and diabetes education classes. Blood pressure coaches were trained by staff from the American Heart Association and the Certified Diabetes Educator on our team. Participants used electronic monitoring machines that linked with a mobile phone or other such devices. At each weekly meeting or class, participants volunteered to have their blood pressure taken.

In reference to measurement, the CDC produced a compendium of measures that are pertinent to population-based programs.13 The measures in this study that were used from the CDC compendium were, numbers of adults who have access to physical activity with an emphasis on walking, numbers of participants who regularly monitored their blood pressure, and the numbers of completers of CDSMP workshops. A completer was defined as someone who participated in at least four the six workshop session. A completer in the Shopping Matters programs was defined as having completed the whole course. Coalition coordinators entered data quarterly on their programs using an online reporting system.

Results

Table 3 presents the number of participants who completed the recommended behavioral interventions in all four counties. In this table they are called, completers.

Table 3: Number of Completers

<table>
<thead>
<tr>
<th>Behavioral Interventions</th>
<th>Number of Completers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planned Physical Activity</td>
<td>1,535</td>
</tr>
<tr>
<td>Completed an Evidence-Based Program</td>
<td>598</td>
</tr>
<tr>
<td>Blood Pressure Monitoring</td>
<td>308</td>
</tr>
</tbody>
</table>

Each coalition had a system for documenting their interventions. In Wyoming County a coalition partner managed an abandoned school building that was turned into a community center. Depending on the weather, 30 to 50 people a week went there to walk. Participants check in each time they walked, which provided a record of the frequency that they walked each week. The Logan County coalition organized teams that walked 100 miles in 100 days competitions. Team captains reported their members weekly distances on the coalition’s webpage.

Participation in the evidence-based programs was documented by local leaders who were certified as trainers. They maintained a roster of program participants and submitted these to a coalition coordinator upon its completion.
The weekly blood pressure monitoring was accomplished by people volunteering to take their blood pressure during classes or group events such as at the beginning of walking club meetings. The Wyoming coalition sponsored a twelve week weight management course and participants checked their blood pressure as part of each class. In Lincoln county participants monitored their blood pressure when they met for exercise classes.

The level of achievement was assessed in reference to the goals set by the coalitions. For this project, the coalitions set goals in each of the intervention areas. Figure 1 presents the results achieved by the coalitions in relation to their goals.

**Figure 1: Percent of Goals Achieved by the Diabetes Coalitions**

![Percentage of Goals Achieved](image)

**Discussion**

As portrayed in Figure 1, the coalitions exceeded their planned physical activity goal by more than three times. The aggregate goal of all four coalitions for physical activity was 465 participants, in practice however, 1,535 people participated. The goal for completing EBP was 755 participants; the results fell short by just over 20%, with a total of 598 completing the courses. For blood pressure monitoring the goal was 260 participants in weekly monitoring events. The goal was surpassed by nearly 20%, with a total of 308 participants.

A barrier to physical activity that is often cited is that people in rural counties do not have access to places to walk or to exercise. In these counties however, the concept of team competitions may have provided internal motivation for people to problem-solve and find their own way to be active. There is intrinsic value to a strategy that incentivizes problem-solving rather than simply providing solutions.

The relative success of the blood pressure monitoring intervention was another example of the benefit of a group setting for facilitating self-management behaviors. There was the element of
social support from the group, and the integration of monitoring into the group’s program. It institutionalize the self-management behavior so that it was sustained over time. It also engaged the group in tracking their health outcomes to complement the monitoring done in the physician’s office.

The intervention where the coalitions did not meet their goal was completion of EBPs. They missed their goal by 52 participants, or 21%. Coalition leaders report that recruitment was the most challenging for CDSMP. One of the most commonly cited barriers was that people were reluctant to commitment themselves to a six week series of classes. Once participants were enrolled they found the classes highly participatory and reported a high level of satisfaction. The barrier apparently had to do with the initial perception that six weeks was a long time.

In contrast, the weight loss group in Wyoming County that implemented blood pressure monitoring was scheduled for 12 weeks, but the program leader stated people readily enrolled and continue through to the end of the course. One possible reason proposed by the leader was that she only advertised it as a weekly class, participants made a commitment one week at a time. The weekly commitment did not seem to have a negative effect on sustained attendance as attendance was consistently 20 to 25 people.

Limitations

A limitations of this study was that there was no relationship between its population-based measures and clinical measures. While a relatively large number of people engaged in healthy behaviors, the challenge is to strengthen the partnership between clinics’ patients with chronic conditions and self-management programs in the community. While the interventions were evidence-based, there was no documentation of extent to which the clinics’ patient population participated in the community-based programs. This program could be strengthened if the coalitions and local clinics had systems in place for referring patients to the community programs and referring participants without to a medical home.

Another limitation of the study was relatively few population-based measures in the CDC compendium that were relevant to this study. The study could be strengthened by adding qualitative measures such as documenting participants’ perceptions of the impact of the interventions on their quality of life.

Conclusion

Physicians do not have to rely solely on the office visit to encourage patients to be active and adopt self-management behaviors. In fact, the argument can be made that the office is not the best place for doing so. Physicians can have an impact on their patients’ health behaviors by partnering with organizations in their community.
References

1 CDC USDSS United States Diabetes Surveillance System


3 Barker, L; Crespo, R; Gerzoff, R; Denham, S; Shrewsberry, M; Cornelius-Averhart, D. Residence in a Distressed County in Appalachia as a Risk Factor for Diabetes. Prev Chronic Dis 2010 [serial online].


7 CDC Community Health Status Indicators: http://wwwn.cdc.gov/CommunityHealth


