Role of Community Health Workers in Improving Diabetes Outcomes

Presenter(s): Janet Kegley, BA, Helen Collett, and Ralph Fugate
University of Kentucky
Center for Excellence in Rural Health
Hazard, KY

Abstract

Objective

Examine the effectiveness of using community health workers (CHWs) to support nurse-led diabetes self-management education (DSME) with medically underserved clients.

Methods

A pretest-posttest group design was used. A sample of 640 was non-randomly drawn from eastern Kentucky Homeplace division clients who reported that they had been told by a health professional they have type-2 diabetes. The sample size was reduced to 489 because of a decrease in project funding.

Inclusion criteria for the study were Kentucky Homeplace clients 18-65+ years of age who reported they had been told by a provider they have diabetes. Clients meeting inclusion criteria and who signed an IRB were enrolled until the sample size of 489 was reached.

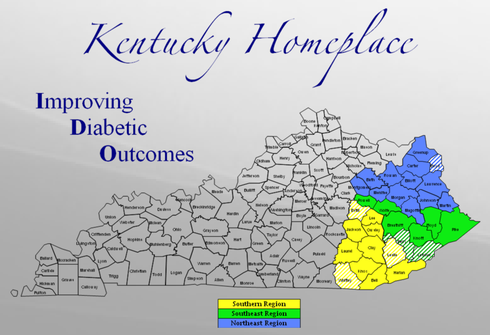
The treatment consisted of nurse-led DSME in 26 Eastern Kentucky Diabetes Belt counties. CHWs and a nurse educator assessed diabetes knowledge, self-empowerment, clinical profile, and self-care on a pre/post test basis. Health literacy was measured using the Ice Cream Label Test and health status using the SF12v2®. DSME tests were from a battery of measures from the University of Michigan Diabetes Research and Training Center. All study instruments had been tested for validity and reliability and had been used in published research.

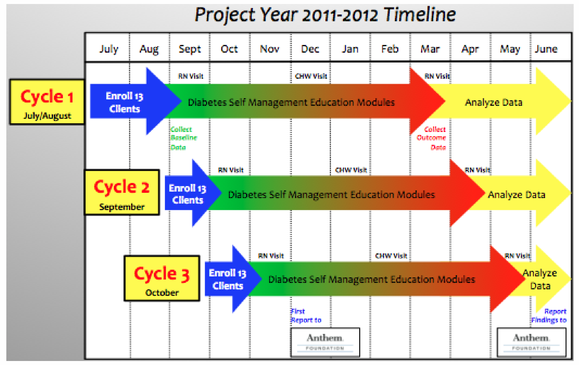
Results

Self-management education improved self-care knowledge and behavior among clients in the treatment group on re-testing after the intervention of DSME. There was improved glucose testing and modest lowering of A1C results as well.

Conclusions

CHWs were effective in providing support for DSME. The CHWs succeeded in screening clients, obtaining their IRB consent, and enrolling them in the study. They also successfully administered study instruments, provided follow-up assistance to clients regarding the DSME, and entered data in the Homeplace database.





Improving Diabetes Outcomes (I DO) study was from July 1, 2011 through June 30, 2012

CHW Research Training

CHWs were trained in the goals, objectives, and methods of the I DO research project in a hands-on environment in a computer lab. Active supervision and monitoring were available throughout the research project. Graphics and algorithms of the type depicted above were developed to aid the CHWs through the research process from screening, through enrollment of clients, and the administration of the pre/post measures. A hot-line process was established to quickly resolve issues and to share the results of frequently asked questions (FAQs) with all CHWs, principal investigator, and other study personnel.

Data Collection

Research process and procedures are always crucial. However, special attention was given to facilitate these for the CHWs to make the most efficient use of their time and to build an experience for future research through the Kentucky Homeplace Program.

The Kentucky Homeplace (KHP) web-based secure database was used to collect and store the I DO data. The KHP database tracks daily client related activities of the CHWs, client demographic and disease information, as well as study instruments. The design goal of the database development was to provide a clean interface - a cluttered screen would make accurate data entry more difficult. Most fields use drop-down or radio button lists to speed data entry, limit choices to valid values, and conserve disk space by saving codes instead of descriptions. The database includes skip patterns and enforced pre/post sequencing.

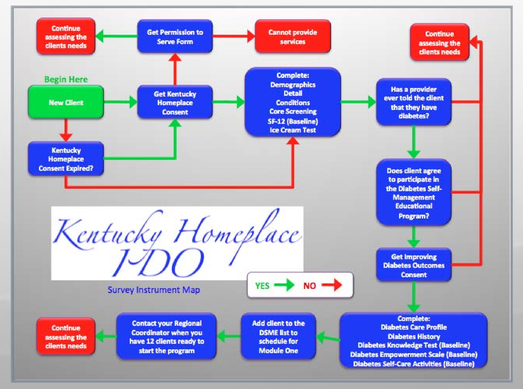
CHWs are provided lap tops that are used in the office or during home visits. Each laptop has been encrypted to provide security. Full security measures are in place to insure the protection of research information provided by the clients. Using VPN takes advantage of the University of Kentucky security infrastructure. Strong passwords are created and up-dated at regular intervals. The application is hidden from the public web

Sample Characteristics

- 3,523 new Kentucky Homeplace clients were processed in the Eastern region from July 1, 2011 through June 30, 2012.
- 29.5% (1,040) reported they had been told by a health professional they have diabetes.
- 489 (47.0%) of those with diabetes enrolled in the DSME intervention group.
- 10 clients withdrew from the study before the beginning of the DSME component, leaving an effective sample size of 479.
- There was a dropout or lost-to-follow-up of an additional 176 clients, with 303 (63.3%) of sample clients enrolling in the first-round of nurse-led DSME.
- A total of 212 (70.0%) clients in the intervention group received DSME and completed a full battery of pre/post testing.
- This is a 70% completion rate for clients who began the DSME.

Intervention Group Socio/Demographics

- Clients comprising the intervention group had substantially lower median household incomes ($15,990) compared to Kentucky ($41,576) and the US ($51,914).
- Their percentage below the federal poverty level based on household income and family size was much greater (45.7%) than the State (17.7%) and the US (13.8%).
- They were less educated, with 47.6% completing high school and 5.2% completing college when compared to the State (81% and 20.3% respectively) and the US (85% high and 27.9% respectively).
- I DO clients in the intervention group had both a higher rate of marriage (60.9%) and divorce (19.5%) when compared to Kentucky adults (52% and 12.4% respectively).
- The percentage of women (65.7%) was greater than men (34.3%), and the self-declared racial identification 98.1% White, 1.4% Black/African American and 0.5% other, reflecting the comparative lack of racial diversity throughout the I DO study area.
- A much higher rate of clients in the I DO intervention group reported not having health insurance coverage (58.1%) compared to (16.9%) for Kentucky adults, and (15.0%) for the US.



Findings

- ✓ Just over forty-four percent of the sample clients measured as having a high (8.5%) likelihood to possible (36.2%) limited health literacy using the "Ice Cream Label Test" quick assessment scale.
- ✓ Seventeen percent tested in an initial assessment using the BMI scale as being overweight and 77.8% as obese.
- ✓ Of the 212 clients receiving pre/post testing using BMI, 107 (50.5%) gained weight, with an average of 6.9 pounds.
- ✓ Ninety-eight clients lost weight, with an average of 7.0 pounds.
- ✓ The distribution among these 212 I Do clients by the classes of obesity was: Obese (48.1%), severe (22.2%), morbid (25.5%), and super (4.2%).
- ✓ While weight increased for those receiving pre/post testing from an average of 226.8 to 227.0 pounds after completion of nurse-led DSME, the difference was not statistically significant.
- ✓ The average A1C dropped from 7.7 to 7.4 (P<.001).
- ✓ Knowledge of diabetic conditions and self-management increased among clients in this group from an average score across all items of 66.2% to 73.9% (P<.001).

Limitations of Study

There are two major limitations for our study. The first is the lack of randomization in the selection clients. Enrollment was voluntary by clients up to the limit of the sample size after clients reported during screening interviews they had been told by a health professional they have diabetes. Second is the dropout rate of clients from the initial sample and after the first DSME session. There tends to be a lack of compliance among Homeplace clients with keeping appointments, and the impact of expense of travel to study meetings contributed to this problem. Efforts were made to lessen the effect of travel expenses for the intervention group by providing gasoline payment cards and meals during the nurse-led DSME.

Discussion

A program to lessen diabetes in this population has the opportunity to focus on modifiable behavioral risk factors that can be prevented or lessened and improved glycemic control through DSME. Based on CDC data from 2008, it was estimated that 12.5% of adults aged ≥ 20 in Kentucky's diabetes belt counties had type 2 diabetes, 32.3% were obese, and 36.1% were physically inactive. It is not surprising that 71.8% of I DO clients, who are characterized by these risk factors, report that their health as being fair (39.5%) or poor (32.3%).

One obvious approach to lessening these problems would be concentrated and sustained DSME led by Certified Diabetes Educators (CDEs), who would concentrate on reducing the modifiable risk factors and improved glycemic control.

Given the shortage and mal-distribution of CDEs and the long time that it takes to become a CDE, we recommend much greater use of CHWs linked with CDEs in DSME throughout Kentucky, especially in our 85 rural counties and our diabetes belt counties.

Acknowledgements

This research was supported by a gift from Wellpoint Foundation/Anthem.