

Diabetes training for community health workers on an American Indian reservation

Judith M. Policicchio DNP, RN, APHN-BC¹  | Katherine Dontje PhD, FNP-BC²

¹Michigan State University College of Nursing,
East Lansing, MI, USA

²DNP Program, East Lansing, MI, USA

Correspondence

Judith M. Policicchio, University of Michigan
School of Nursing, Ann Arbor, MI, USA.
Email: policicj@med.umich.edu

Abstract

Objectives: To improve the knowledge and skills of community health workers (CHWs) on an American Indian (AI) Reservation related to the management of diabetes to allow CHWs, with no prior formal diabetes education to work more effectively with individuals in the community with diabetes. Training was provided in six “face-to-face” sessions with the CHWs using the Centers for Disease Control and Prevention CHW Training Resource on Heart Disease and Stroke.

Design and Sample: This is a quality improvement program guided by the Model for Improvement: Plan, Do, Study, Act and using a pre-post evaluation design. Ten AI CHWs were recruited for the training.

Measures: Knowledge and attitudes, participation rates, and participant satisfaction were measured.

Results: Knowledge increased overall with largest changes in diabetes, depression and cholesterol. Diabetes attitudes were high and consistent with those found in caregivers who support patient-centered care. Participants reported learning, liking the class, and finding the materials helpful.

Conclusion: This QI program provided by a public health nurse improved CHW's knowledge of diabetes and the management of diabetes. Next steps include formalizing the Reservation's CHW training program, expanding this training to other AI Health Service areas, and measuring the impact of CHWs in the community.

KEYWORDS

American Indian, community health worker, diabetes, education, public health nursing practice, quality improvement, training

1 | INTRODUCTION

More than 50 years ago, a community health worker (CHW) program was formed in a California Health Department by an interdisciplinary team that included public health nurses (PHNs), to bring health care to underserved communities and employment to persons living in poverty (Potts & Miller, 1964). A few years later, the United States Office of Economic Development created a community health aid (CHA) program that was adopted by the Indian Health Service [IHS] (n.d.a) to support the work of PHNs. The IHS CHA

program was designed to promote self-management and self-care in the American Indian/Native Alaskan (AI/NA) population, to improve communications, cultural awareness and understanding among clinic and hospital staff, and to increase access to basic health care services and instruction in Indian homes and communities. Both of these programs identified lay leaders within a community, provided them with training, and incorporated them into the public health team.

The AI population faces a serious health concern with rates of diabetes higher than any other ethnic population in the United States

(US) for both adults and children 10–19 years (Center for Disease Control and Prevention [CDC], 2014; Mayer-Davis et al., 2017). The CHA program, now known as a community health representative (CHR) program, is still an important and well established part of the IHS; however, specialty training related to diabetes is not part of the current IHS CHR training program (IHS, n.d.b).

In a 2017 study, the Community Preventative Services Task Force reported on strong evidence to support team-based care for the management of diabetes. While this study focused on adding a nurse or pharmacist to a physician lead team, evidence shows there is also value in nurse/CHW team (Esperat et al., 2012). In both community and public health settings, statistically significant changes in personal biomarkers in both infectious and chronic disease management programs occurred when nurses partnered with CHWs (Allen, Dennison Himmelfarb, Szanton, & Frick, 2014; Chang, Polesky, & Bhatia, 2013). In the management of diabetes, nurse/CHW teams helped clients address housing issues and access to community resources while reducing inpatient and emergency room utilization (Esperat et al., 2012). Other nurse/CHW partnerships accomplished significant reductions in HgA1c by focusing on the promotion of self-management activities and the development of self-management skills (Depue et al., 2013; Hamid et al., 2014; Lorig, Ritter, Villa, & Armas, 2009).

While evidence exists for nurse/CHW partnerships, reoccurring themes in the CHW literature include the lack of education and training in CHW programs (Brownstein, Bone, Dennison, Hill, & Lavine, 2005; Kaur, 2016). Where training of CHWs is documented, there is wide variation in the length and content as well as inconsistent reporting of the training purpose and its evaluation (O'Brien, Squires, Bixby, & Larson, 2009). The IHS (n.d.b), however, identifies the need for basic training and, depending on the CHW's roles and responsibilities, specialty training. Initial and continuing training for CHWs improves the capacity of CHW programs and is considered an essential component of a functional CHW program (Crigler, Hill, Furth, & Bjerregaard, 2013). As a result, this quality improvement (QI) study sought to determine if diabetes training could improve CHW knowledge of diabetes and the management of diabetes.

2 | METHODS

2.1 | Sample and design

This QI program took place on an AI Reservation with an estimated 3,000 members. The nurse reported that 10% of the Tribe was diagnosed with diabetes and CHWs had no formal training on diabetes. This convenience sample of 10 individuals was identified by the Tribal community and included CHRs (four) and elder activity coordinators [EAC] (six); all were employed by the Tribe. This group was collectively identified as CHWs. The average age of the CHWs was 49.9 years; there were nine women and one man. The CHWs had an average of 9.2 years of experience in their current Tribal position and each was an AI. The study was approved by a University Institutional Review Board and the Tribal Council.

2.1.1 | The quality improvement model

The QI Model with the Plan, Do, Study, Act (PDSA) cycle guided this QI program and is described by the Agency for Healthcare Research and Quality [AHRQ] (2013). The PDSA cycle employs a continuous improvement model and is well-known as a simple and powerful tool designed to guide QI programs (see Figure 1). The QI model guided this QI program, supported minor adjustments in the curriculum along the way, and now provides PHNs with the information necessary to replicate this QI program (Table 1 describes how the Plan, Do, Study, Act Quality Improvement Cycle was applied to this project).

During the planning phase of a QI program, a project plan is developed that includes a strategy for data collection (AHRQ, 2013). To begin, a community assessment provided information about the high rate of diabetes in the AI population (CDC, 2014), information about the IHS (n.d.b), and the CHR program that is an important part of the current IHS (n.d.a). An advanced public health nurse (APHN) contacted the local Tribe who expressed an interest in the project; a meeting was arranged to discuss next steps. The initial meeting occurred on the Reservation and was attended by the APHN and tribal representatives that included a health administrator and a Masters-prepared registered nurse who was a certified diabetes educator. At that first meeting, the group agreed on the need for a QI program that could address the need for CHW training on diabetes and the management of diabetes.

Potential training programs were identified by reviewing the literature, attending conferences, and searching nursing and government websites. The initial search revealed two evidence-based CHW training programs on diabetes: the Chronic Disease Self-Efficacy Program (Stanford Medicine, 2017) and the Eastern Shoshone Tribal Health Department & Sundance Research Institute (2014) developed for an AI community. These programs were discussed with the health administrator and nurse who did not believe that either program would be

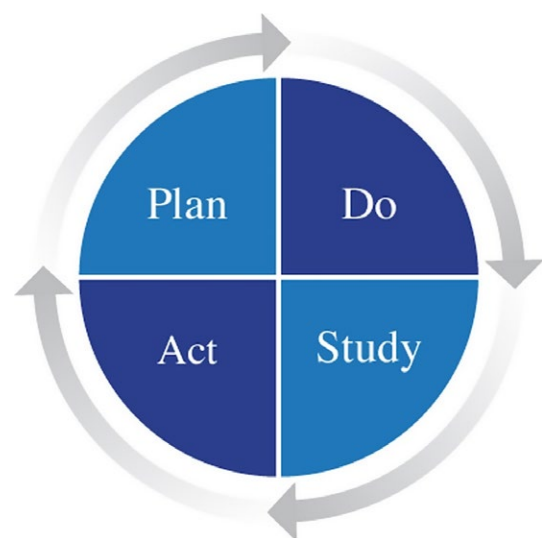


FIGURE 1 PDSA cycle

Source: The Deming Institute (2016). The PDSA Cycle. Retrieved from <https://deming.org/management-system/pdsacycle> [Color figure can be viewed at wileyonlinelibrary.com]

TABLE 1 Applying the plan, do, study act quality improvement cycle

Step	Description	Intervention component
Plan	Develop the QI program plan including a strategy for data collection	• A community assessment was performed • An initial planning meeting was scheduled • Assessment findings were discussed • A project plan was developed • Evidence-based training programs were identified and discussed • A new evidence-based training program was identified • A formal proposal was created and presented for approval • The training was scheduled • Training locations were identified and confirmed • Training materials were reviewed and prepared for presentation • Plan data collection: will people learn, how does culture influence beliefs and values, are the CHW satisfied with the training program, did they learn anything, did they think the program was necessary?
Do	The quality improvement plan is tested on a small sample	• 10 CHWs gathered for 4-hr sessions over a 6-week period • Feedback gathered after each class • Training program is adjusted as needed • Tools developed to re-enforce training, i.e., flip charts • Allow time to practice new skills, and working with new knowledge • Incorporate recipes, pictures that are a good cultural match • Engage professionals from the local and ethnic community to participate in the training.
Study	Analyze the data	• Gather both qualitative and quantitative data. • Consider the mean, range and standard deviation of the data you collect, regardless of the population size
Act	Put the new intervention in place	• Discuss next steps

AHRQ (2013).

a good fit for their people as both were designed to provide training in group settings in contrast to the individual one-on-one training this community prefers. The APHN worked with the nurse to explore other CHW training programs.

In 2015, the CDC published the first and only CHW Training Resource on Heart Disease and Stroke (CDC Training Resource). The 15-chapter curriculum contained information about the prevention and management of chronic conditions including heart disease, diabetes, stroke, high blood pressure, cholesterol, depression, stress, and the management of other lifestyle risk factors. For training on diabetes, the CDC Training Resource provided information on diabetes and how diabetes impacts the need for lifestyle changes and self-management skills. The CDC Training Resource was discussed with the nurse who reviewed and accepted the CDC Training Resource for use in this QI program. Because the CDC Training Resource chapters varied in length and took 2 hr or more to present, the training curriculum was reviewed with the health administrator and the nurse and narrowed down from 15 to 10 topics. The 10 topic areas were selected to coincide with the CHW's schedule, to focus on adults, and focused on chapters relevant to diabetes and the management of diabetes. Portions of the chapters on stroke and heart attack were added later at the request of the CHWs.

A formal proposal was developed with an outline about how the training program would be implemented. The proposal described the community assessment findings, the evidence behind the CDC (2015) Training resource, and the data collection process that would be included as part of the project. A cost/benefit analysis was also included along with a presentation on the possible long-term

benefits of CHW training and the development of potential nurse/CHW partnerships.

The CHW training was scheduled by with Tribal representatives and took place in an AI community center. The CDC (2015) Training Resource included course objectives, a materials and supplies list, resources, scripts and handouts, along with pre and post tests. The training was planned to occur in 4-hr sessions over a 6-week period (24 total hours of training). Coverage of two chapters from the CDC Training Resource were planned for most meetings. This allowed for the presentation of one chapter for the first and last day of class, allowing for data collection at these sessions.

The second step in the QI cycle is to test the intervention on a small sample. Ten CHWs gathered at the community center for the first class that started with a blessing offered by the health administrator. Introductions were made and the agenda was discussed. The evaluation surveys were distributed and filled out by participants.

PDSA is "shorthand for testing a change" in the real work setting by planning the change, trying it, observing the results, and acting on what is learned (AHRQ, 2013). Following the first class, the participants reported they enjoyed working with their peers, they liked the refreshments and the PowerPoint presentation, but would like to have a copy of the information provided in the training so they could follow along. It was clear the PDSA process would guide the QI program.

2.1.2 | Using the CDC training resource

The CDC (2015) Training Resource is a comprehensive training program for CHW that offers 15 independent chapters containing information, activities, visual aids and pre and post tests. For the first class,

an icebreaker activity was followed by a PowerPoint presentation and discussion on diabetes using information from the CDC Training Resource (Chapter 9). The CHWs were also provided with handouts from the CDC Training Resource and the IHS Diabetes website (n.d.c).

In response to the CHW's request, a course summary was developed for the first, second, and third chapters. Course activity sheets and teaching tools, like colored pictures of the heart, brain and blood vessels, a healthy plate, and a BMI chart were also printed for each participant. By the third class, the CHWs reported using these reference books and visual aids with family and clients. The CHW also report that the reference manual was helpful in guiding their conversations on diabetes and complications that can result from diabetes, like heart attack and stroke. A plan to provide the course summary, reference materials and visual aids for each class was put in place by the APHN, completing the first inter-project PDSA cycle (see Table 2 for a list of handouts that were provided for each class).

The CHWs received new information in each class and benefited from having the previous weeks' training re-enforced. To accomplish this, the CHWs developed flip charts containing normal ranges and signs and symptoms. These charts were reviewed at the beginning of each class. Role play was also introduced as a method to increase the CHW involvement in the learning process. For example, Chapter 13 focuses on physical activity and encourages setting goals. The CHWs practiced helping each other to set goals.

Active learning strategies were also planned to retain the group's interest over the 4-hr class and included slide presentations of the program information, games, art activities, short interactive lectures, small group discussion, and role plays; many of these activities came directly from the CDC Training Resource. A training manual included a course calendar and agenda for each class. Standard assessment checklists for glucose testing, blood pressure screening and foot assessment were also identified. Table 2 demonstrates how CDC (2015) Training Resource was applied to this QI program and includes a summary of each class, the content of the class, and the teaching strategies employed in each class.

Other professionals within the AI community showed an interest in the training that was occurring each week; presenting an opportunity to incorporate the use of an interdisciplinary team into the QI program. The Tribe's nurse taught the class on foot assessment and diabetes medications and the Tribe's psychologist provided information on stress and depression using Native symbolism to discuss how stress is managed and balance can be created. Their presentations occurred within the training sessions, met the objectives outlined in the CDC (2015) Training Resource, and significantly added to the sessions by bringing their personal experiences and expertise into the discussion.

At the last class, each CHW taught one of the topics they learned about to the rest of the class. This activity provided the CHWs with practice presenting information and helped to reinforce information taught in previous weeks. Each participant received a certificate of completion. A summary of the group's accomplishments was shared and discussed with Tribal leaders who were present for the celebration.

After the training ended, an executive summary was developed and presented in a meeting with the Tribe's nurse and health administrator. The two discussed how they would use the executive summary to inform the Tribal Council and incorporate the information into an article for the Tribal newsletter. Throughout this experience, open discussion and active listening skills were utilized to learn about unwritten customs, values and traditions in an effort to build a relationship and trust within the Tribal community.

2.2 | Measures

The PDSA Cycle also prompts users to study or evaluate the new process. Participant knowledge of diabetes and its management was measured by the Michigan Diabetes Training Center (2016), Diabetes Knowledge Test (DKT) using a pre-post evaluation process measured by 23 multiple choice questions. Cronbach's alpha for the DKT general test and the insulin-use subscale indicate that both are reliable, alpha $>$ or $=0.70$ (Fitzgerald et al., 1998). Diabetes attitudes were measured using the 33-item Diabetes Attitude Survey [DAS]. The DAS's five point Likert Scale measures participant beliefs in five areas; the need for special training, the seriousness of noninsulin dependent diabetes mellitus, the value of tight control, the psychological impact of diabetes, and patient autonomy. Reliability on the DAS ranged from 0.65 to 0.80; correlation between the measures ranged from 0.27 to 0.63 (Anderson, Donnelly, Dedrick, & Gressard, 1991). Pre-post evaluation tests included in each chapter of the CDC (2015) Training Resource were also administered. CHWs were provided with information about the evaluation plan at the first meeting. All data collection forms were coded so that they could not be linked back to an individual participant. As well, using a 10-point scale, participants were asked about their satisfaction with the class.

2.3 | Data analysis

Data were analyzed using SPSS version 23.0 (SPSS Inc.). Frequencies, descriptive statistics, and paired T-tests were calculated for all survey questions used in the pre-post evaluation. For the DAS mean pre-post scores were calculated by grouping and averaging several questions to determine a "belief score." In this instance, frequencies, descriptive statistics and paired T-tests were calculated. The statistical significance of the information is limited, however, due to the small sample size.

The sample size ($N = 10$) varied because all participants did not answer all questions or complete both the pre-post intervention evaluations included in the CDC (2015) Training Resource. Only those completing both pre-post intervention assessments were included in the analysis. Those with missing data or a wrong answer on the pre or post test were marked as incorrect. Also, because the pre-post evaluation assessments included in the CDC Training Resource often had more than one correct answer, one point was assigned for each answer. The CHWs were asked to comment on their learning experience and the materials they received as part of the training. This involved a short survey and the capture of a discussion that followed when

participants commented on the training and lifestyle changes they initiated as a result of the training.

3 | RESULTS

Knowledge, as demonstrated by the pre-post evaluation assessments supplied with the CDC (2015) Training Resource increased 13% overall. This change was driven by the rise in pre-post intervention scores associated with the chapters on cholesterol (17% increase in postintervention scores), diabetes management (18% increase in

postintervention scores), and depression (22% increase in pre-post intervention scores). Postintervention scores increased in all classes, ranging from 3% to 22%, whereas variation in post test scores declined (see Table 3 for mean pre and posttest scores for the CDC Training Resource pre and post tests).

Overall mean scores were high at the beginning of the training at 4.2 (range 3.4–5.0) and dropped slightly at the end of the training to 4.1 (range 2.8–5.0), likely related to the ceiling effect, the level at which an independent variable no longer has an effect on a dependent variable. Variance increased slightly overall in the post test scores and in four of the five areas surveyed. The subtle

TABLE 2 CDC (2015) training resource application

In all classes, handouts from CDC (2015) Training Resource and Activities from CDC's Training Resource were distributed and discussed in class along with the pre and post tests for each chapter.

Week	Lesson	Handouts	Teaching strategy
1	Introduction	- Class agenda - Diabetes Knowledge Test - Diabetes Attitude Scale	- Blessing by Health Administrator - Introduction of project team - Introduction of CHWs - Identify CHW similarities and differences
1	Diabetes	- Risk factors for type 2 diabetes - What are the signs of diabetes? - Steps to managing your life with diabetes - Know your diabetes ABC's - Eat well, Be active and Get routine care - Checking your blood glucose - Self-checks of blood sugar - Road blocks to checking blood sugar - Low blood sugar - High blood sugar - Managing diabetes at work, school and during travel - Sick days with diabetes - My goals - Actions people with diabetes can take - What CHWs can do for people with diabetes	- Small group discussion - Large group discussion - Compare and contrast (high and low blood sugar) - Flip chart development
2	Heart disease and stroke overview	- The heart - How the heart works - The brain	- Large group discussion - Distinguish between cardiovascular & cerebrovascular
2	Stroke	- Risk factors for stroke - Warning signs of stroke - What CHW can do to help those who already had a stroke	Role play: Recognizing the warning signs of stroke
2	Heart attack	- What is a heart attack - What CHW can do to help people get help - What CHW can do to help those at risk for heart attack	- Large group discussion - Small group activities - Students complete flip chart
3	High blood cholesterol	- What are healthy cholesterol - Cholesterol, saturated and trans fat - Tips for lowering cholesterol - What CHW can do to help persons at risk for high cholesterol	- Large group discussion - Flip chart of normal values
3	High blood pressure	- What do blood pressure numbers mean? - Know your numbers and what they mean - Blood pressure wallet card - Sources of sodium in your diet	- Large group discussion - Small group activities: - Practice taking blood pressure - Flip chart of normal values - Good habits flower activity

(Continues)

TABLE 2 (Continued)

In all classes, handouts from CDC (2015) Training Resource and Activities from CDC's Training Resource were distributed and discussed in class along with the pre and post tests for each chapter.			
Week	Lesson	Handouts	Teaching strategy
4	Healthy eating and weight control Physical activity Smoking Cessation	- Planning meals - Healthy Plate - AI Recipes - Use the BMI chart - What does your BMI mean? - The energy balance - Examples of moderate exercise - Tips to help control weight - Activity levels for men and women - How to read labels - The DASH diet - My personal activity plan - Personal activity log - Ways to add physical activity - Ideas for increasing physical activity - What communities can do to promote physical activity - Walking tips - Example of activity levels - How smoking, second hand smoke can harm you? - Am I ready to quit - Five steps to quitting - Do the math - Five steps to quit smoking - Alternatives to snuff and chew tobacco - What CHW can do to prevent tobacco use	- Large group discussion - Calculating calorie/energy needs—group activity - Healthy plate/serving size/eating out game - Reading labels - Role Play: Helping others develop goal statements - Large group discussion - Role Play: How to ask someone to stop smoking around you.
5	Talking to your doctor Taking medicine	- Health Diary - Good questions for your good health - When to ask questions and Tips for talking to your doctor - Emergency Information - Overcoming barriers to taking medicine - What CHWs can do to help people prepare for a doctor visit - How CHW can do to help community members get their medicines and take them.	- Staff RN (diabetes educator) reviewed and discussed diabetes medications - Large group discussion
6	Depression and Stress	- How can I cope with stress? - Signs of depression and suicide - Four steps to understand and get help for depression	- Large group discussion - Staff Psychologist stress and depressions wellness circle discussion

changes in attitudes over the course of the training, demonstrated by the small change in pre-post program scores, raises a question about the value of conducting this survey twice during an intervention (see Table 3 for mean pre-post scores for the Diabetes Attitude Survey).

The DKT demonstrated an increase in diabetes knowledge. Seven participants completed both the pre and post tests. The pre-test evaluation demonstrated that scores that ranged from 0.39 to 0.91 (standard deviation [SD] 0.17) and increased marginally for all participants resulting in a post test range of 43.4–95.6 (SD 0.18) and an upward movement in both the median and the mean.

Eight participants responded to the satisfaction survey. CHW reported they learned something (M 8.4, range 6–10, SD 1.47); they liked the training (M 9.4, range 8–10, SD 0.89); and they found the materials helpful (M 9.3, range 8–10, SD 0.85).

4 | DISCUSSION

In response to the high rate of diabetes in AIs and the need for CHW training on diabetes and the management of diabetes, this QI program focused on providing diabetes education for CHWs within a Tribal community. To learn about the cultural beliefs of the AI, this QI program conducted an assessment using the DAS. The results of this QI program suggest the value these 10 AI CHWs have for evidence-based patient-centered diabetes care and speaks to the experience each of these 10 CHWs have in working with people with diabetes. Higher scores on the DAS scale are an indicator of the CHWs support of patient centered care and generally increase with experience, not training (Anderson et al., 1991). In addition, relatively high overall scores on the DAS suggest this Tribal community appreciates the need for special training in the treatment of diabetes, recognized the

TABLE 3 Knowledge and attitude pre and post score range with standard deviation

	Pre score range (SD)	Post score range (SD)
Knowledge		
Diabetes	63.6–90.4 (9.1)	90.9–100 (4.1)
Cholesterol	72.7–90.0 (10.3)	81.8–100 (6.8)
Depression	68.7–81.3 (4.7)	88.5–93.8 (3.3)
High blood pressure	67.9–92.9 (11.4)	82.9–100 (6.3)
Heart disease	80.0–90.0 (8.2)	90.0–90.0 (0.00)
Physical activity	80.0–90.0 (5.5)	86.0–90.0 (0.00)
Weight control	87.5–100 (8.2)	91.7–100 (2.9)
Attitudes		
Need for specialized training	4.2–5.0 (0.37)	2.8–5.0 (0.84)
Value of tight control	3.4–4.9 (0.53)	3.0–4.3 (0.43)
Psychosocial impact of NIDDM	3.5–5.0 (0.46)	3.7–4.8 (0.61)
Patient autonomy	3.5–5.0 (0.55)	3.7–4.8 (0.61)
Seriousness of NIDDM	3.4–4.6 (0.49)	3.0–4.4 (0.72)

seriousness of noninsulin-dependent diabetes mellitus, appreciates the value of tight control, and acknowledges the psychological impact of diabetes with respect for patient autonomy.

The fourth stage of the PDSA Cycle is to put the program in place. This includes a plan to continue working with the Tribe to develop a formal CHR education program and expanding this training to other AI Health Services areas. The importance of assessing the impact of the CHW/CHR program on individual AI who utilize CHR services and the overall population on the Reservation who have access to the services of a CHR has also been discussed with the health administrator. CHW/CHR programs provide a cost-effective method to extend health care information and services into the community. However, little information is available about how the community utilizes and perceives CHR services. Answering this questions will provide an important contribution to supporting and evaluating the role of both CHR and PHNs.

The results of this QI program suggest how PHNs can add to the knowledge of experienced CHWs. More than 50 years ago, the AI community integrated CHAs into the IHS (n.d.a). For their current CHR program, the IHS has a defined mission, job roles and responsibilities, and offers an online basic CHW training program, but not specialty training (IHS, n.d.b). However, CHWs often require additional specialty training to address the needs of the community they are servicing and results of this QI project support this need (Minore, Jacklin, Boone, & Cromarty, 2009).

The results of this QI program provide information related to the ability of an APHN to utilize the evidence-based CDC (2015) Training Resource to improve CHW knowledge of diabetes and the management of diabetes. For public health nursing, this QI program focused not only on the need for further diabetes education in these 10 CHWs but also the importance of evaluation the QI program to measure the impact and potential for replication.

For PHNs, an opportunity exists in the modeling of CHW programs along with participation in the development and/or evaluation of CHW programs. PHNs have done such work in the past (Potts & Miller, 1964). The evidence shows that, for the most part, CHWs are receiving on the job training (Ingram et al., 2011; Malcarney, Pittman, Quigley, Horton, & Seiler, 2017), whereas the CDC (2015), and Crigler et al. (2013), define a functional CHW program as one that includes more than on the job training; functional CHW programs include initial and ongoing training. These publications provide a model for nurses looking to incorporate CHWs into their practice or programs. Collectively these tools and information offers new opportunities for public health nursing.

4.1 | Limitations

While the CDC Training Resource is available free and online, challenges exist. The biggest of which is the expense related to copying and providing resources to the CHWs for the use with clients. Another limitation of this QI program is that it was a small-scale QI program with a convenience sample.

5 | CONCLUSION

The CDC (2015) Training Resource in this circumstance was useful in providing education on diabetes and the management of diabetes and captured the interest of CHWs on an AI Reservation. The results of the program are an important first step in setting knowledge expectations for CHWs who service persons with diabetes, heart disease, and stroke and providing the tools and resources that are needed to make CHW training available in these areas. Further study is needed to evaluate the CHWs impact on the community, the perceptions of CHWs in the community, and the CDC's Training Resource and other evidence-based CHW training and education programs and their impact on CHW knowledge and skills. Federal legislative efforts have supported the use of CHWs and the creation of new state programs (Katzen & Morgan, 2014), but not necessarily local public health programs. These events along with the growing number of CHWs (United States Department of Labor, 2016) and the explosion of CHW training programs identified by a simple search on the Internet, establish the need for a discussion about of the role PHNs have in supporting the use of CHWs. Now is the time to demonstrate how public health nursing can support and sustain the implementation of successful CHW programs.

ORCID

Judith M. Policicchio  <http://orcid.org/0000-0002-0084-1841>

REFERENCES

Agency for Healthcare Research and Quality [AHRQ]. (2013). Innovations exchange: Plan, Do, Study, Act (PDSA) cycle. Retrieved from <https://innovations.ahrq.gov/qualitytools/plan-do-study-act-pdsa-cycle>

- Allen, J. K., Dennison Himmelfarb, C. R., Szanton, S. L., & Frick, K. D. (2014). Cost-effectiveness of Nurse Practitioner/community health worker care to reduce cardiovascular health disparities. *Journal of Cardiovascular Nursing*, 29(4), 308–314, 307. <https://doi.org/10.1097/JCN.0b013e3182945243>
- Anderson, R. M., Donnelly, M. B., Dedrick, R. F., & Gressard, C. P. (1991). The attitudes of nurses, dieticians and physicians toward diabetes. *The Diabetes Educator*, 17(4), 261–268. <https://doi.org/10.1177/01457217901700407>
- Brownstein, J. N., Bone, L. R., Dennison, C. R., Hill, M. N., & Lavine, D. M. (2005). CHWs as interventionist in the prevention and control of heart disease and stroke. *American Journal of Preventative Medicine*, 29(5 Suppl. 1), 128–133. <http://dx.doi.org.proxy.lib.umich.edu/10.1016/j.azepre.2005.07.024>
- Center for Disease Control and Prevention [CDC]. (2014). National Diabetes Statistics Report. Retrieved from <https://www.cdc.gov/diabetes/pdfs/data/2014-report-estimates-of-diabetes-and-its-burden-in-the-united-states.pdf>
- Center for Disease Control and Prevention [CDC]. (2015). A community health worker training resource for preventing heart disease and stroke. Retrieved from http://www.cdc.gov/dhdsp/programs/spha/chw_training/
- Chang, A. H., Polesky, A., & Bhatia, G. (2013). House calls by community health workers and public health nurses improve adherence isoniazid monotherapy for latent tuberculosis infection: A retrospective study. *BMC Public Health*, 13, 894–903. <https://doi.org/10.1186/1471-2458-13-894>
- Community Preventative Services Task Force. (2017). Diabetes Management: Team-based care for patients with Type 2 diabetes Services Task Force recommendations. Retrieved from <https://www.thecommunityguide.org/sites/default/files/assets/Diabetes-Management-TBC-Type2.pdf>
- Crigler, L., Hill, K., Furth, R., & Bjerregaard, D. (2013). *CHW Assessment and Improvement Matrix (CHW AIM): A Toolkit for Improving community health worker programs and services*. Published by the USAID Health Care Improvement Project. Revised Version. Bethesda, MD: University Research Co., LLC (URC).
- Depue, J. D., Dunsiger, S., Seiden, A. D., Blume, J., Rosen, R., Goldstein, M. G., ... McGarvey, S. T. (2013). Nurse-community health worker team improves diabetes care in American Samoa: Results of a randomized controlled trial. *Diabetes Care*, 36(7), 1947–1953. <https://doi.org/10.2337/dc12-1968>
- Eastern Shoshone Tribal Health Department & Sundance Research Institute. (2014). A comprehensive strategy for the prevention and management of diabetes for American Indians: Guide for replication of the Wind River Reservation Alliance for the Reducing Diabetes Disparities Project. Copy in possession of proposal author.
- Esperat, M. C., McMurry, C., DuFeng, L., Song, H., Billings, L., Yondell, M., & Flores, D. (2012). Transformacion Para Salud: A patient navigation model for chronic disease self-management. *Online Journal of Issues in Nursing*, 17(2), 10913734. Retrieved from <https://doi.org/10.3912/ojin.vol17no02man02>
- Fitzgerald, J. T., Anderson, R. M., Funnell, M. M., Hiss, R. G., Hess, G. E., Davis, W. K., & Barr, P. A. (1998). The reliability and validity of a brief diabetes knowledge test. *Diabetes Care*, 21(5), 706–710.
- Hamid, S., Dunsiger, S., Seiden, A., Nu'usolia, O., Tuitele, J., DePue, J. D., & McGarvey, S. T. (2014). Impact of a diabetes control and management intervention on health care utilization in American Samoa. *Chronic Illness*, 10(2), 122–134. <https://doi.org/10.1177/1742395313502367>
- Indian Health Service [IHS]. (n.d.a). Community health representatives. Retrieved from <https://www.ihs.gov/chr/>
- Indian Health Service [IHS]. (n.d.b). Indian health service. Retrieved from <https://www.ihs.gov/>
- Indian Health Service [IHS]. (n.d.c). Division of diabetes treatment and prevention. Retrieved from <https://www.ihs.gov/diabetes/>
- Ingram, M., Reinschmidt, K. M., Schachter, K. A., Davidson, C. L., Sabo, S. J., De Zapien, J. G., & Carvajal, S. C. (2011). Establishing a professional profile of community health worker: Results from a national study of roles, activities, and training. *Journal of Community Health*, 37, 529–537. <https://doi.org/10.1007/s10900-001-9475-2>
- Katzen, A., & Morgan, M. (2014). Affordable Care Act opportunities for community health workers: How Medicaid Preventative Services, Medicaid and State Innovations Models are including community health workers. Retrieved from <http://www.chlpi.org/wp-content/uploads/2013/12/ACA-Opportunities-for-CHWsFINAL-8-12.pdf>
- Kaur, M. (2016). Community health workers: Birth of a new profession. *Generations – Journal of American Society on Aging*, 40(1), 56–63.
- Lorig, K., Ritter, P. L., Villa, F. J., & Armas, J. (2009). Community-based peer-led diabetes self-management: A randomized trial. *Diabetes Educ*, 35(4), 641–651. <https://doi.org/10.1177/0145721709335006>
- Malcarney, M. B., Pittman, P., Quigley, L., Horton, K., & Seiler, N. (2017). The changing role of CHWs. *Health Services Research*, 52(1), 360–382. <https://doi.org/10.1111/1475-6773.12657>
- Mayer-Davis, E. J., Lawrence, J. M., Dagelea, D., Divers, I., Isom, S., Dolan, L., ... Wagenknecht, L. (2017). Incidence trends of type 1 and type 2 diabetes among youths, 2002–2012. *New England Journal of Medicine*, 376(15), 1419–1429.
- Michigan Diabetes Training Center. (2016). Tools for health professionals. Retrieved from http://diabetesresearch.med.umich.edu/Tools_SurveyInstruments.php
- Minore, B., Jacklin, K., Boone, M., & Cromarty, H. (2009). Realistic expectations: The changing role of paraprofessional's health workers in First Nation communities in Canada. *Education Health*, 22(2), 298.
- O'Brien, M. J., Squires, A. P., Bixby, R. A., & Larson, S. C. (2009). An examination of the selection and training process in intervention literature. *American Journal of Preventative Medicine*, 37(6 Suppl. 1), S262–S269. <https://doi.org/10.1016/j.amepre.2009.08.011>
- Potts, D., & Miller, C. W. (1964). The community health aide. *Nursing Outlook*, 12, 33–35.
- Stanford Medicine. (2017). Chronic disease self-management program. Retrieved from <http://patienteducation.stanford.edu/programs/cdsmtp.html>
- United States Department of Labor. (2016). Occupational Employment and Wages: Community Health Workers. Retrieved from <https://www.bls.gov/oes/current/oes211094.htm>

How to cite this article: Policicchio JM, Dontje K. Diabetes training for community health workers on an American Indian reservation. *Public Health Nurs*. 2018;35:40–47. <https://doi.org/10.1111/phn.12370>