# Shared Visits for Health Care Consumers in a Rural Free Clinic Setting

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## Abstract

**Background*:*** One of every four adults in the United States lives with two or more chronic diseases. Current care delivery models may not adequately address diabetes or hypertension management challenges. Shared visits may provide more efficient chronic illness care.

**Purpose*:*** The purpose of this advanced practice registered nurse-led study was to conduct a pilot program to test the effectiveness of shared visits for low-income, uninsured, rural health care consumers who have uncontrolled chronic type II diabetes or hypertension and who receive care at a rural free clinic.

**Methods*:*** A convenience sample of two groups of adults with diabetes and one group with hypertension engaged in shared health care visits that included shared education and discussion. Data were analyzed using descriptive and inferential statistics.

**Findings*:*** Fifty-three percent of diabetes participants had reduced hemoglobin A1c. A statistically significant difference in systolic blood pressure ($p$= 0.01) was found for the hypertension group. Seventy-eight percent of participants had lower diastolic pressure.

**Conclusion*:*** Shared visits show good potential for better self-management and improved outcomes among rural, low-income, uninsured health care consumers who have uncontrolled chronic type II diabetes or hypertension.

***Keywords***: Advanced Practice Registered Nurses; Chronic Disease; Diabetes Mellitus, Type 2; Primary Health Care; Rural Health; Self-care

## Shared Visits for Health Care Consumers in a Rural Free Clinic Setting

Adults with chronic health conditions encounter multiple challenges. Making lifestyle changes to improve long-term health outcomes and accessing person-centered health care providers are particularly challenging (Schwartz et al., 2017). Individuals and providers who partner in chronic illness care may change the disease process trajectory toward improved outcomes (Cabana & Jee, 2004; Hibbard & Greene, 2013; Kurek, Teevan, Zlateva, &Anderson (2016; Schwartz et al., 2017). Current models of primary care delivery often do not adequately address the challenges in such a way that the individual can "take charge" of his or her health. Shared visits, also called group visits, shared medical appointments, cluster visits, or centering care are gaining attention as a more efficient model of chronic illness care (Burke & O'Grady, 2012).

"Chronic diseases are non-communicable illnesses that are prolonged in duration, do not resolve spontaneously, and are rarely cured completely." (Centers for Disease Control and

Prevention, [CDC] 2012, para 1). Nearly half of all adults in the United States are affected by chronic diseases (CDC, 2009). Approximately 75 million (CDC, n.d.) adults in the United States have hypertension and 30.3 million (CDC, 2017) have diabetes. These chronic diseases increase health costs and place individuals at higher risk for co-morbidities such as heart disease, stroke, and kidney failure (CDC, 2009, CDC, 2017). The economic burden for diabetes was $245 billion in 2012 (American Diabetes Association [ADA], 2013). Hypertension costs the nation approximately $48.6 billion annually (CDC, n.d.). Rural residents have disproportional higher rates of chronic disease than urban residents (Zeng et al., 2015; Meit et al., 2014). Given the personal health effects and the economic burden of chronic diseases, self-management education is critical to improved health outcomes and lower health costs.

## Literature Review

### Shared Visits

From Noffsinger's initial work on the shared visit model (Noffsinger & Scott, 2000; Noffsinger & Atkins, 2001) it was suggested that shared visits may be a less expensive way to provide a greater intensity of monitoring and self-care education; of particular importance in rural settings. Shared visits are effective as patients experience improved quality of life, more provider-patient satisfaction, and fewer hospitalizations (Brennan, Hwang, & Phelps, 2011). While definitions may vary, shared visits typically consist of several health care consumers with a common chronic diagnosis, such as hypertension, meeting with a licensed independent practitioner (LIP), and a multidisciplinary team for monitoring and education regarding management for the chronic condition. Shared visits involve a small cohort of health care consumers (8-10) who meet to learn and discuss disease specific self-care management for approximately 90 to 120 minutes per meeting (Brennan, et al., 2011; Jones, Kaewluang, & Lekhak, 2014). Groups meet regularly,

such as monthly, for on-going support and education to include partnering with providers, self-management skill building, medication management, and decision making (Edelman, Gierisch, McDuffie, Oddone, & Williams, 2015). Group problem solving, modeling, and peer support may encourage behavior change and enhance self-efficacy for disease management. Experiential learning, motivational interviewing, and staff support enhance the effectiveness of the shared visits (Jaber, Braksmajer, & Trilling, 2006; Loney-Hutchinson et al., 2009; Simmons & Kapustin, 2011). Best practices for shared visits have yet to be fully determined, but the model has been successful within the larger health care systems that have instituted this care approach (Burke & O'Grady, 2012).

**Diabetes**

Self-efficacy and glycemic control are improved through shared visits and quality of life may also be enhanced (Quiñones et al., 2014). Australian nurses who led chronic disease self-management groups were satisfied with the intervention, the feasibility of implementation, and the acceptance by patients (Hegney, Patterson, Eley, Mahomed, & Young, 2013). In another study, patients in advanced practice registered nurse (APRN)-led shared visits had better glycemic control, more disease related knowledge, and experienced higher self-efficacy than the usual care group in an Appalachian primary care setting (Jessee & Rutledge, 2012). Underserved patients from a free clinic in a non-rural area who participated in a patient-centered model of care and shared visits for diabetes management were satisfied with shared visits, gained diabetes knowledge, and perceived better self-efficacy (Esden &Nichols, 2013). American Indian adults participated in a quasi-experimental study focused on diabetes self-management. The intervention group partook in diabetes self-management education and culturally appropriate talking circles to discuss diabetes self-management. Compared to American Indians who had diabetes self-

management education alone the intervention group had better follow-up adherence at six months ($p$ = 0.010) and lower glycated hemoglobin (HbA1c), blood pressure (BP), and weight; although there was not statistical significance (Wilken & Nunn, 2017).

**Hypertension**

Patients with elevated systolic BP who participated in shared medical visits at an urban free clinic and learned self-management behaviors had a decrease in BP following the visits. The decreases were small and not statistically significant, but every patient demonstrated some decrease in systolic BP (Dickman, Pintz, Gold, & Kivlahan, 2012). Lynch, Leibman, Ventrelle, Avery, and Richardson (2014) conducted intensive group interventions among African Americans with type II diabetes and hypertension. The groups included peer support for weight loss and education on diet and physical activity. Reductions in both systolic and diastolic BP were found, but they were not statistically significant. In a study designed to promote hypertension control among veterans, shared medical visits were conducted once a month for four months. Forty-seven veterans participated in the study, but 34 participants (72.3%) attended only one meeting and were not included in the data analysis. There were no significant differences regarding adherence to medication before and after the shared visits. The number of veterans with adequately controlled hypertension increased significantly ($p$ = .03) and there were reductions in both systolic and diastolic BP (Kirk et al., 2017). Then Himmelfarb, Commondore-Mensah, and Hill (2016) concluded that APRNs and registered nurses (RNs) are essential to reducing ethnic disparities and quality gaps in hypertension care. Hypertension programs led by APRNs, RNs, and teams of providers promote excellence in hypertension care and control.

## Rural

The body of literature addressing shared visits with rural and/or free clinic health care consumers is small. At this time no rural free health clinics have been identified as using a shared visit model of care in the state where this research was conducted, however, one rural free clinic in a neighboring state provided shared visits for diabetes care (Mallow, Theeke, Whetsel, & Barnes, 2013). In a first known randomized clinical trial pilot study in which rural residents participated in diabetes self-management shared visits positive trends in self-care were evident. Although the results were not statistically significant, there is promise that patients from federally qualified health centers in rural Appalachia may benefit from culturally appropriate shared visits for diabetes care (Schoenberg, Ciciurkaite, & Greenwood, 2017). Access to care is often challenging in rural areas due to lack of transportation, distance, and a limited number of health care providers (National Rural Health Association [NRHA], n.d.). These barriers are particularly poignant because rural dwelling adults have more poverty, chronic illnesses, and limited access to health promoting activities and social support (United States Department of Agriculture [USDA], 2016; Peterson, & Cheng, 2013). Rural residents are often lacking as participants in health research and better representation is needed (Edelman, Yang, Guymon, & Olson, 2013).

For the purposes of this study, a rural area is one which encompasses all population, housing, and territory not included within an urban area of 50,000 or more people (United States Census Bureau [USCB], 2010). The Rural-Urban Continuum Code is 7, meaning a Non-metro – Urban population of 2,500 – 19,999, not adjacent to a metro area (USDA, 2013).

## Purpose

The purpose of this APRN-led quantitative intervention study was to conduct a pilot program to test the effectiveness of shared visits for low-income, uninsured, rural health care consumers

who have uncontrolled chronic type II diabetes or hypertension and who receive care at a rural free clinic.

### Research Questions

Research questions addressed in the study include:

- Research Question # 1: Does a shared visit contribute to improved control of diabetes in the low-income, uninsured rural health care consumers?
- Research Question # 2: Does a shared visit contribute to improved control of hypertension in the low-income, rural uninsured health care consumers?

## Methodology

### Study Design

The study design was a pre-post APRN-led intervention study. Pre-intervention baseline (BL) biometric data were collected prior to the shared visit intervention. Post-intervention (PI) biometric data were collected after the intervention. Narrative data are from APRN notes and the final participant evaluation.

### Study Sample

A non-randomized, convenience sample was selected from a population of community dwelling adults diagnosed with uncontrolled hypertension defined as BP measures above 140/70 millimeters of mercury (mmHg) and/or type II diabetes (HbA1c above 7%). All participants obtained health care at a rural free clinic for individuals between the ages of 18 and 65 who are at 150% of the poverty level in income, uninsured, and not eligible for medical financial assistance such as Supplemental Security Income (SSI), Medicaid, or Medicare. Potential participants who agreed to participate in the shared visits upon verbal invitation by the APRN, were sent a written invitation to attend the shared visit detailing the time and place of the visit. A follow-up phone

call was made to ensure the individuals had the correct information regarding the date, time, and place for the visit. Potential participants were excluded from the groups if they preferred to continue with the usual care individual visits; would not be able to carry out the self-management concepts, as identified by the APRN or self-reported, due to cognitive ability; mental health issues; transportation problems; living situation or housing issues; and other chronic diseases that would impact attendance or follow-through with self-care. Data were not included in the study if a participant chose to leave the group, or had unforeseen circumstances preventing participation. While race and ethnicity were not delineated by group, most participants were Caucasian and there were also participants from the African American residents within the rural community. This composition is similar to the population in this rural setting which is 88.7% White, 7.9% African American, and 3.3 % Hispanic or Latino as of July, 2016 (USCB, 2016).

**Groups.**

Two groups were formed at the beginning of the study in September, 2012. Clinic patients with a primary diagnosis of diabetes who met the inclusion criterion of uncontrolled type II diabetes and agreed to participate were assigned to the diabetes group I. Patients with a primary diagnosis of hypertension, which was uncontrolled, were assigned to the hypertension group. Seven clinic patients volunteered for the diabetes group I and nine volunteered for the hypertension group. Three participants in the diabetes group I with a primary diagnosis of diabetes were also hypertensive. The diabetes I and the hypertension groups met between September, 2012 and August, 2013.

A second diabetes group was formed when additional funding to support one more group was confirmed. Patients who met the same criteria as the diabetes group I were invited to participate. The group was established under the same procedures as the diabetes group I. Six clinic

patients volunteered to participate. The diabetes group II began in January, 2013 and ended in August, 2013, when the project funding ended.

Goals were set for each group. The goal for the diabetes groups was to reduce the individual HbA1c level by 0.5. The hypertension group goal was to reduce by 10 mmHg the systolic, diastolic, or total blood pressure readings (Heart Heath study, unpublished data).

Table 1

*Groups*

| Group | Number of Members | Gender | Age | Group Duration |
|---|---|---|---|---|
| Diabetes I | 7 | Women = 5<br>Men = 2 | Mean = 53.8 yrs.<br>Range = 34-63 yrs. | 12 Months |
| Diabetes II | 6 | Women = 4<br>Men = 2 | Mean = 54.4 yrs.<br>Range = 46-62 yrs. | 8 Months |
| Hypertension | 9 | Women = 4<br>Men = 5 | Mean = 51.8 yrs.<br>Range = 38-62 yrs. | 12 Months |

**Ethics**

The Institutional Review Board of the rural free clinic parent organization approved the research to study the shared visits with the diabetes and hypertension groups (IRB00004199). All individuals signed a consent form before participation. Participants were informed that no individual data would be identified during the evaluation and reporting process to insure anonymity. Both consent and privacy were addressed within the group and participants were encouraged to only speak to the educational topics. They were not required to share any personal information; nevertheless, some individuals may have shared information in or outside the group. There were no monetary or other rewards for participating in the study. However, participants may have benefited by improved disease self-management, chronicity control, enhanced patient experience, and/or fewer emergency room visits (Burke & O'Grady, 2012).

**Study Procedures**

The initial shared visits involved group formation and registration, a group orientation that included ground rules for participation, and review and signing of the consent forms. Pre-intervention baseline biometric measures of blood pressure, height, and weight were documented for all participants, and HbA1c for participants with type II diabetes. Hypertension group participants received a BP cuff for home monitoring and a log for maintaining BP readings. Participants identified educational topics related to self-management of diabetes and/or hypertension and met with the APRN for a brief individual visit. The shared visits were held monthly for approximately 90 minutes per session at the rural free clinic and were facilitated by the APRN and a RN. Brief individual visits of 15 to 30 minutes with the APRN were available following the shared visit as needed. Criteria for an individual meeting included an emergent health condition, such as an infection; medication adjustment or prescription renewal; review of laboratory data; and/or a participant concern regarding his/her health status or social condition.

Other professionals contributed in the group sessions as appropriate to the participant needs. Pharmacy residents assisted with education on diabetes as well as medications, a local university agricultural extension service agent discussed meal preparation, and a dietitian engaged participants in nutritional topics. A physical therapist and a wellness trainer provided content on exercise and activity. Volunteer RNs obtained vital signs and reviewed lab work and prescription refills. College students in a scholarship program dedicated to alleviating poverty and improving education through active community service (Bonner Program, 2017) participated in registration and data management. Registered nurses with expertise in cardiovascular health and mental health presented education in their specialty areas. Family nurse practitioner students also participated in

the educational sessions. Final measurement included post-study biometric measurements. Participant satisfaction was measured by two open-ended questions.

**Data Analysis**

Quantitative data were analyzed using Microsoft Excel Data Analyzer. Demographic data were analyzed with descriptive statistics (mean, range). Pre and post-intervention bio-metric data were analyzed with descriptive statistics (mean, range) and inferential statistics (paired *t*-tests). Simple linear regression was used to predict HbA1c and BP based on group attendance. A $p$ value of $<.05$ established statistical significance. Narrative data from the two open ended questions are presented in Table 5.

## Findings

Research Question I: Does a shared visit contribute to improved control of diabetes in the low-income, uninsured health care consumer?

**Diabetes Group I and Group II HbA1c**

HbA1c data were analyzed for both diabetes group participants. The paired *t*-test results were not statistically significant for either group I ($p = .07$) or group II ($p = .81$). Three individuals (43%) in group I and one individuals in group II (17%) met the goal of a reduced HbA1c level of 0.5. One individual in group I showed a clinically significant change in HbA1c from 7.9 to 6.7 and another from 10.5 to 8.6. All group I participants had a lower HbA1c except for one person who maintained the same HbA1c and another person who increased by 0.2. The group I mean decreased from 8.3 BL to 7.7 PI. Activity levels were not measured for all participants, but an increase in HbA1c for one person was attributed to a decrease in physical labor (APRN notes).

Group II participants also showed clinically significant changes at the end of the collection period. In one case the HbA1c was reduced from 6 to 5.7 and in another from 15.8 to 5.7, a

potentially life-saving change. The other four participants showed slight increases in the HbA1c, but the group II mean decreased from 8.8 BL to 8.3 PI.

Two of the three participants who had a primary diagnosis of diabetes and had hypertension showed decreased HbA1c. One decreased from 15.8 to 5.7 and the other decreased from 10.5 to 8.6. One participant had a slight increase in HbA1c from 7.4 to 7.6.

In summary, there were no statistically significant differences in HbA1c for either of the diabetes groups. There were clinically significant changes in both groups including participants with diabetes and hypertension (See Table 2 and Table 3).

Table 2

*Diabetes Group I*

| **Time Diabetes Group I** | **Weight in Pounds** | **HbA1c (%)** | **BP (mmHg)** | |
|---|---|---|---|---|
| | Range (Mean) | Range (Mean) | Range Systolic (Mean) | Range Diastolic (Mean) |
| Baseline September. 2012 | 182.6 - 315.2 (238.9) | 7.1 - 10.5 (8.3) | 121 - 168 (141) | 73 - 104 (86.7) |
| Post Intervention August, 2013 | 165.4 - 315.6 (238.5) | 6.7 - 9.8 (7.7) | 109 - 151 (134.5) | 72 - 90 (81.5) |
| *p* value | | $p = .07$ | $p = .45$ | $p = .12$ |

Table 3

*Diabetes Group II*

| **Time Diabetes Group II** | **Weight in Pounds** | **HbA1c (%)** | **BP (mmHg)** | |
|---|---|---|---|---|
| | Range (Mean) | Range (Mean) | Range Systolic (Mean) | Range Diastolic (Mean) |
| Baseline January, 2013 | 130 - 319.4 (214.9) | 6 -15.8 (8.8) | 126 - 168 (146.5) | 77 - 98 (88) |
| Post- Intervention August, 2013 | 118 - 298 (207.7) | 5.7 -11.2 (8.3) | 101 - 160 (140.5) | 71 - 93 (83) |
| *p* value | | $p = .81$ | $p = .60$ | $p = .32$ |


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Research Question # 2: Does a shared visit contribute to improved control of hypertension in the low-income, rural uninsured health care consumers?

**Hypertension Group Blood Pressure**

Paired *t*-test results were statistically significant between the BL and PI systolic BP ($p$ = 0.01). Seventy per cent of participants had a lower systolic BP following the intervention (range = 14-49 mmHg). Paired *t*-test results for diastolic BP readings (Table 4) were not statistically significant *(*$p$ = 0.08). Three individuals met the goal of a reduced diastolic BP of 10 mmHg. Seventy-eight percent of participants (7) had a reduction in diastolic pressure (range = 3-24 mmHg).

**Diabetes Group I and Group II Blood Pressure**

The measurement focus of the diabetes groups was HbA1c. However, since three participants in diabetes group I were also hypertensive, BP was monitored. A paired *t*-test analysis of BL and PI systolic BP was not statistically significant for group I *(*$p$ = .45) or group II ($p$ = .60). Four individuals in group I (65%) and three individuals in group II (50%) met the goal for reduced systolic BP of 10 mmHg. There were no statistically significant changes in diastolic BP. Two individuals in group I reduced diastolic BP by 10 mmHg (29%) and two in group II (33%) reduced diastolic BP. The $p$ values were ($p$ =.12) and ($p$ = 0.32) respectively.

All three participants who had a primary diagnosis of diabetes and had hypertension showed decreased systolic and diastolic BP. One participant's BP decreased from 168/95 to 160/83, another from 144/91 to 101/71, and the other from 168/104 to 160/83.

In summary, within the hypertension group there was a statistically significant difference between BL and PI systolic measurements ($p$ = 0.01), but no significant differences in diastolic measurements. There were no statistically significant differences in systolic or diastolic BP

measurements for either diabetes group. There were clinically important decreases in BP for several participants.

Table 4

*Hypertension Group*

| Time Hypertension | Weight in Pounds | BP (mmHg) | |
|---|---|---|---|
| | Range (Mean) | Range Systolic (Mean) | Range Diastolic (Mean) |
| Baseline January, 2013 | 133.4 – 341 (213) | 134 – 187 (155.3) | 84 -118 (93) |
| Post- Intervention August, 2013 | 127 – 333 (213.5) | 115 – 178 (136.3) | 72 -118 (86) |
| *p* value | | *p* = .01 | *p* = .08 |

**Shared Visit Meeting Attendance**

The diabetes group I shared visit attendance ranged from 5 to 9 out of 12 shared visits. Participants attended a mean of 7.57 (63%) shared visits. Two participants attended nine visits (75%), two attended eight visits (67%), two attended seven visits (58%), and one attended five visits (42%). One participant who attended only five shared visits was absent due to a work schedule conflict (APRN notes).

Diabetes group II participants attended half or more of the eight shared visits (range = 4-6). Participants attended a mean of 5.5 (69%) shared visits. One participant attended four visits (50%), one attended five visits (63%), and four attended six visits (75%).

The hypertension group participant attendance ranged from 4 to 10 out of 12 shared visits. The mean number of visits attended was 6.7 (56%). One participant attended 10 visits (83%), two attended eight visits (67%), two attended seven visits (58%), one attended six visits (50 %), two attended five visits (42%), and one participant attended four visits (33%).

A simple linear regression analysis was conducted to predict HbA1c or BP *(y* dependent variable) based on shared visit attendance (*x* independent variable). There were no statistically significant results for the diabetes or hypertension groups. There was no correlation between the dependent and independent variables. The results for the diabetes group I were *(F* (1, 5) = 0.0821, $p = .7859$), with an $R^2$ of 0.0161. The diabetes group II results were (*F* (1, 4), = 0.7543, $p = .4341$), with an $R^2$ of 0.1586. The hypertension group systolic BP results were (*F* (1, 7), = 2.0974, $p = .1908$), with an $R^2$ of 0.2305. The diastolic BP results were (*F* (1, 7), = 0.0114, $p = .9179$), with an $R^2$ of 0.0016.

**Individual Participant and APRN Meetings**

All participants met individually with the APRN during the course of the study. Participants met to address emergent health needs such as headache, limited mobility, and infections (APRN notes). A few participants needed referral for medical care. The APRN arranged referrals to health care providers in gastroenterology, neurology, surgery, and the wound center. Clinic staff tracked referrals to assure that appointments were kept and that participants received needed medical care (APRN notes). Participants who needed prescription refills met once every three months to review medication appropriateness and to receive new prescriptions as needed. A few participants met for approximately 10 minutes following each shared visit attended to discuss challenges in achieving goals (APRN notes).

**Family Participation**

Two participants were accompanied by family members to the shared visits. One participant in the diabetes group I accompanied by a spouse attended eight shared visit meetings (67%). The participant's HbA1c increased by 0.2 from BL (6.8) to PI (7.0). One participant in the hypertension

group accompanied by a spouse attended five (42%) shared visit meetings. This participant's BP improved from 141/90 mmHg (BL) to 119/80 mmHg (PI).

**Satisfaction with Shared Visits**

Participants were asked "What did you find most helpful during the first year of shared visits?" and "What would you recommend we change about the shared visit process?" Fourteen of 22 participants responded. All 14 reported satisfaction with the shared visits by identifying what was most helpful. Eleven participants stated that what they learned was most helpful, for example, "foods that are good for you to eat", "information about diabetes or hypertension", and "way to read back of food boxes". Two responded that the questions and answers helped them and one person stated that "the people" were helpful. Participants liked the shared visit experience and 12 individuals said "nothing" needed to be changed. One of the 12 said "if it is not broke don't try and fix it. You guys are great!" Two individuals did not respond to the question.

Table 5

*Shared Visit Evaluations*

| | **What did you find most helpful during the first year of shared visits?** | **What would you recommend we change about the shared visit process?** |
|---|---|---|
| 1. | It was okay. Helped me a lot. | Nothing. |
| 2. | I learned some things about high blood pressure that I wasn't aware of & learned about some food that are good to eat when you are diabetic. | I think the process is good as it. No changes needed. |
| 3. | Discussion of foods that are good for you when you have diabetes. | I don't know of anything that needs to be changed. I learned a lot in the group. |
| 4. | Learning information about diabetes and getting things to help with it. | Nothing. |
| 5. | The people. What I learned. | Nothing. |
| 6. | Help me to learn about diabetes and what is good and bad for me. | No response. |
| 7. | A lot a about stuff like the way to read the back of food boxes. | Nothing. All is great. |
| 8. | Questions and answers. | Nothing. |
| 9. | Questions and answers. | Nothing. |
| 10. | Learning more about what is important for my blood pressure. | Nothing. |

| | What did you find most helpful during the first year of shared visits? | What would you recommend we change about the shared visit process? |
|---|---|---|
| 11. | Lot of information on diabetes and high blood pressure. | Nothing. |
| 12. | Learned a lot of information. | Nothing. |
| 13. | A lot of info that I didn't know about a lot of different things. | Nothing at all (if it is not broke don't try and fix it). You guys are great! |
| 14. | More of what foods to eat. | No response. |

## Discussion

The purpose of this APRN-led quantitative intervention study was to conduct a pilot program to test the effectiveness of shared visits for low-income, uninsured, rural health care consumers who have uncontrolled chronic type II diabetes or hypertension and who receive care at a rural free clinic. A small convenience sample of individuals with superimposed self-selection consented to participate in the study. They comprised three study groups; diabetes group I, diabetes group II, and a hypertension group.

Research Question I: Does a shared visit contribute to improved control of diabetes in the low-income, uninsured health care consumer?

### HbA1c

There were no statistically significant findings related to the shared visits and HbA1c. The lack of significance could be due to the small sample size and/or sporadic meeting attendance. However, there is an encouraging trend of improvements in HbA1c in the groups as five out of seven group I participants lowered HbA1c. The greatest reduction in HbA1c was from 15.8 to 5.7 for one individual in group II. Previous studies also resulted in reduced HbA1c values following shared visits. Riley (2013) conducted a study with 22 patients with type II diabetes from a private primary care practice in which self-care education was provided in shared visits over a three month period. Reduced HbA1c levels were seen in 82% of patients (mean = 1.1). Reductions in weight and diastolic BP were also reported. In another study, 76.9% of participants in a four week diabetes

shared visit program decreased HbA1c levels by the end of the program (Reitz, Sarfaty, Diamond, & Salzman, 2012).

The length of the study groups may have made a difference in the outcomes. Group I participants had more time to develop trust with the providers (Reitz et al., 2012) and more time to develop a sense of ownership and accountability for self-care management (Langford, Sawyer, Gioimo, Brownson, & O'Toole, 2007). Reports on duration of group visits show mixed results. Lin et al. (2014) found that lifestyle counseling was associated with better health outcomes following 12 to 24 months of counseling. In a study of self-management among African Americans that included "culturally tailored education, behavioral skills training, and peer support" (Lynch et al., p. 1) intense community shared visits over six months were effective in reducing HbA1c.

Group intensity and participant composition may have influenced the group dynamics and could have prompted individuals to better manage their chronic disease. Two participants were helped most by the questions and answers in the shared visits (Table 5). The consistent APRN and RN presence and/or the participation of other health care providers may have caused participants to closely examine their self-care. For example, the nutritionist and the personal trainer may have provided challenges that led to improved outcomes. A good relationship among providers and patients enhances communication, promotes adherence to care guidelines, and influences health outcomes (Schwartz, et al. 2017). The intensity of the shared visits, length of the groups, and the group composition may have empowered participants with education and skills to translate into the future for better health.

**Blood Pressure and Weight**

Patients who have diabetes and hypertension are faced with the additional challenge of trying to manage both chronic diseases at the same time. Managing both simultaneously may be overpowering and lead to lack of success in reducing BP and/or HbA1c (Lynch et al., 2014). In the current study two participants with both diabetes and hypertension diagnoses reduced HbA1c and three participants reduced BP. This suggests they may have had better management skills or even a better understanding of how diabetes and hypertension care are synergistic. Only one participant lost weight. Systolic and diastolic BP and weight reductions were evident in both diabetes groups, although there were no statistically significant differences. Even small reductions in HbA1c, BP, and weight are clinically important changes for improved health and well-being. Blood Pressure and weight monitoring should be continued in future studies because better glycemic control and BP control in patients with type 2 diabetes result in fewer complications. Weight loss achieved through concentrated lifestyle interventions is associated with better "fitness, glycemic control, and CVD [cardiovascular disease] risk factors in individuals with type 2 diabetes." (Wing et al., 2010, p. 1575). "…each 1 percent reduction in mean HbA1c is associated with a 21 percent reduction in diabetes-related death risk…, 14 percent reduction in heart attacks…, and 37 percent reduction in microvascular complications" (Stratton et al., 2000, p. 405) such as renal disease, amputations, and vision loss. "Each 10 mmHg decrease in updated systolic blood pressure was associated with reductions in risk of 12% for any complication related to diabetes…15% for deaths related to diabetes…11% for myocardial infarction…and 13% for microvascular complications" (Adler et al., 2000, p. 412).

The average weight for participants in this study exceeded 200 pounds before and after the intervention. Obesity is prevalent in rural areas and clearly represents risk for poor health outcomes (Befort, Nazir, & Perri, 2012). The weight variable might be given more emphasis in

future studies given the recent recommendation of the United States Preventive Services Task Force [USPSTF] (LeFevre, 2014) of "offering or referring adults who are overweight or obese and have additional CVD risk factors to intensive behavioral counseling interventions to promote a healthful diet and physical activity for CVD prevention" ( p. 1). On-going support and education about diabetes, BP, and weight are critical to reducing risk, but this important recommendation may go unheeded in rural areas because residents may not have access to "intensive behavioral counseling interventions". Physical activity is also a challenge for rural residents because exercise facilities are limited and there are transportation and financial barriers to accessing these services (Peterson & Cheng, 2013). Multiple factors may play a role in managing diabetes, hypertension, and weight in rural America. Self-efficacy; age; financial issues; personal and social issues such as homelessness, food insecurity, transportation, and other health issues may affect self-care or even a vision for change (Langford, et al., 2007; Payne, 2005). Shared visits may offer opportunities to challenge the barriers to change and to desire better health.

Research Question 2: Does a shared visit contribute to improved control of hypertension in the low-income, uninsured health care consumers?

The shared visit experience, self-management education, and BP monitoring may have improved hypertension control for some participants. Evidence supports a statistically significant difference in systolic BP ($p$ = 0.01) and improvements in diastolic BP for 78% of participants, although not statistically significant. The findings should be interpreted cautiously because of the small sample size. Hypertension is better controlled when patients understand their disease and engage in self-management (Bosworth, Powers, & Oddone, 2010). Health literacy is another potential variable in how patients understand hypertension and make care decisions. In a study where patients were interested in decision-making the patients with low health literacy had less

BP control and asked fewer medical questions in physician-led shared visits than patients with higher literacy (Aboumata, Carson, Beach, Roter, & Cooper, 2013). Health literacy was not measured in the current study, but group presentations were delivered in narrative and graphic forms to promote understanding and to accommodate different learning styles (APRN notes). More information about learning styles and health literacy could possibly improve shared visits.

Improved BP control may be associated with self-management through home BP monitoring. Home monitoring engages patients in their care and may help them to connect health behaviors with improved outcomes of lower BP (Bosworth et al., 2010). Patients who make these connections may have a better understanding of the disease process and potentially make better care decisions (Bosworth, et al., 2010).

Disease management education is crucial to better health, but having the knowledge does not always assure behavior change for any chronic disease. More study is needed to understand this phenomenon (Wang, Inouye, Davis, & Wang, 2013). One premise is that health education coupled with socialization and support in a shared visit may inspire individuals to engage in self-care (Yehle, Sands, Rhynders, & Newton, 2009). Results from a study conducted at one free clinic with shared appointments for patients with diabetes and/or hypertension showed that attendees increased self-management behaviors and goal achievement. Every patient with hypertension had reduced systolic BP, although the results were not statistically significant. The shared appointments also eased the burden of chronic disease for the organization and for the vulnerable clinic population (Dickman et al., 2012).

**Shared Visit Meeting Attendance**

Patients were excluded from the current study if they had known attributes that would interfere with attending shared visits, but attendance at the shared visits was less than ideal. Nationally clinic attendance is sub-optimal (Torres et al., 2015) and more than 30 % of patients in Appalachia missed diabetes appointments (Schoenberg, et al., 2017). The simple linear regression analyses to predict HbA1c or BP based on meeting attendance findings were not significant. The results could be related to the small sample size and further studies with more participants are needed for meaningful analysis. Dontje and Forrest (2011) found that participants who attended more than three group visits compared to those who attended one to two visits showed better adherence to diabetes management goals. Edelman et al. (2010) improved shared visit attendance by including an attendance contract and by providing a transportation voucher.

Stigmatization may also play a role in meeting attendance and chronic disease self-management. Individuals who live with chronic illness may experience stigma regardless of whether the illness is visible or invisible. They may be less likely to socialize, to engage in shared visits, and to assume self-care behaviors (Engebretson, 2013). However, individuals who do participate in shared visits may find a milieu of acceptance that promotes learning, engagement, and reduces stigmatization. More information is needed on how to improve group attendance and how weight, diabetes, and hypertension relate to stigmatization and group participation.

**Individual Participant and APRN Meetings**

All participants attended at least one individual meeting with the APRN throughout the course of the study. Perhaps more visits could have been requested, but the RN, pharmacists, or other team members also addressed participant questions and potentially negated a meeting with the APRN. Participants in a study of shared visits for diabetes self-management were encouraged to arrange individual meetings with pharmacists, nutritionists, or other presenters (Dontje &

Forrest, 2011). There is insufficient information to determine if the individual participant and APRN meetings affected the outcomes of this study. More detailed information could be documented in future studies.

**Family Participation**

Two participants were accompanied by spouses at the shared visit meetings. One participant who attended eight shared visits (67%) had a slight increase in HgA1c from BL (6.8) to PI (7.0). The other participant had improved BP from 141/90 mmHg (BL) to 119/80 mmHg (PI) and attended five (42%) of the visits. There are too few participants and data to determine whether family participation in the shared visits made a difference in the current study outcomes. However, family dynamics play an important role in chronic disease management. Family members may "sabotage" (Mayberry & Osborn, 2012, p. 1239) self-management or promote a positive experience by supporting and engaging in the challenging process of disease control. There is also evidence that patient experiences are improved when participants are engaged and empowered, their specific needs are addressed, and when families share in the process (Institute of Medicine [IOM], 2003). Family members may be under involved in chronic disease management (Powers, 2017) and focused study is needed on how they might better contribute to care.

**Patient Satisfaction**

When participants were asked, "What did you find most helpful during the first year of shared visits?" they responded that they had learned to read labels and how to make appropriate food choices. In rural areas where country cooking is highly desired and access to fresh fruits and vegetables may be limited (Befort et al., 2012) building skills on how to read labels and how to

make appropriate food choices is critical to patient activation and disease management for better outcomes (Hibbard & Greene, 2013).

Participants were asked, "What would you recommend we change about the shared visit process?" and they responded that the shared visit process did not require any changes. A positive outcome of this study is that participants viewed the shared visits and group processes as good. Patients are not always satisfied with their educational experience and more information is needed on the patient and caregiver experience of obtaining education in order to improve educational processes (Danzl, et al., 2016). In future studies a valid and reliable evaluation tool specific to satisfaction with the group visit and the educational components would be useful. The response to the satisfaction questions may also indicate that participants learned new skills in an environment that aligned culturally with their needs for better chronic disease management. Individuals have remarkable capacity for change given the opportunity for education and support provided by the shared visits. Even small successes may be the impetus for a vision of better health, acting on successes, developing self-efficacy, and achieving healthier lifestyles (Pender, Murdaugh, & Parsons, 2006). Patient satisfaction is important in today's health care environment (Mehta, 2015) and measurement should be continued.

## Limitations

As a pilot study, the sample was small and the participants were self-selected based on their diagnoses of type II diabetes or hypertension. The study is limited by the small convenience sample and the absence of a control group. Participants who agreed to participate may be different from those who preferred not to participate in the shared visits. Most of the participants were Caucasian and better representation of minority groups would improve the study. The small sample size may have affected the statistical analyses. Therefore, the results cannot be generalized beyond the study

sample. Despite the small sample, there were some promising findings for reductions in HbA1c and blood pressure indicating that individuals have the potential for health behavior change over time within the caring environment of the shared visit (Burke & O'Grady, 2012). Larger and more diverse rural samples are needed in future studies to determine best practices in shared visits and self-management interventions.

Another limitation may be the lack of specific measurements for demographic data, for self-efficacy, and other potential variables. However, in this pilot study the researchers sought to provide a non-intrusive, supportive, and culturally appropriate shared visit. Rural residents may be hesitant to participate in research studies led by individuals from outside their community, or that require reading questionnaires with unfamiliar language. Therefore, "knowing the patients" (Kelley, Docherty, & Brandon, 2013, p. 351), building trust, and including local providers in the shared visit were important. Hometown providers use culturally appropriate language and value the community norms that enhance the shared visit experience. Therefore, it was decided to not seek specific demographics or use standardized questionnaires (Lindberg et al., 2012; Young, Barnason, & Do, 2015). Future studies might provide a better balance of measurements and culture. The final evaluation questionnaire was designed specifically for this study by the researchers. Reliability or validity data are not available for the questionnaire.

**Recommendations**

This study focused on a population of patients living with chronic illness and illustrates the multidimensional and complex nature of disease management among low-income, rural individuals with limited social and environmental resources. There are many barriers to chronic disease self-care management in rural areas. Individuals may not always be motivated to actively engage in self-care or they may miss visits and compromise quality care. Transportation, fuel costs,

work schedules, illness, and lack of insurance are barriers to meeting attendance that need further exploration (Jessee & Rutledge, 2012; Schoenberg et al., 2017; Torres et al., 2015), It is recommended that more culturally appropriate longitudinal studies are conducted to better understand how engagement affects costs as well as individual and population health outcomes (Hibbard & Greene, 2013).

Given the USPSTF (LeFevre, 2014) recommendation of offering intensive behavioral counseling to overweight or obese adults for better diet and exercise, communities and providers might seek better telehealth services. Where finances allow, telehealth may help to link rural residents with the behavioral counseling, shared visits, and/or other health services unavailable within their communities (Win, 2015).

It is recommended that more attention be given to better family engagement in chronic self-care management including home BP monitoring (Bosworth, et al.; Danzl et al., 2016) and how family engagement affects health outcomes. Patient and family satisfaction with health care continue to be important in today's health environment and need further exploration using valid and reliable tools.

Population health is receiving renewed attention from health care providers, policy makers, and public health advocates as a promising framework for improving health in the United States. In this approach poverty, social status, stigmatization, and other barriers to good health are critical components to improving well-being (Mahony & Jones 2013). Health care providers could partner with community leaders to increase available housing, improve access to fresh produce venues, improve health literacy, and to address other social determinants of health that create barriers to better care. APRN-led shared visits for chronic disease management are becoming more prevalent and represent another way to address population health. Barriers to self-care management could

be addressed in shared visits. Research should be continued in order to develop best practices for shared visits in the unique rural free clinic and for efficient care delivery. Rural residents should be encouraged to participate in research and to thereby improve community health. They need adequate support to meet the research requirements and to complete the study (Young, et al., 2015). Future studies might include a comparison group with randomization, a larger sample, and the inclusion of additional variables such as self-efficacy or barriers within a rural cultural context.

Measurement limitations may be addressed by using culturally appropriate, reliable and valid tools to measure concepts such as self-efficacy, disease specific knowledge, patient satisfaction, and costs. While cost was not addressed in this rural free clinic setting, future "studies may incorporate cost related variables relevant to economic sustainment of shared visits for chronic disease management (BlueCross BlueShield of North Carolina, n.d.; Dontje & Forrest, 2011).

## Summary

This study is unique in that it addresses salient variables specific to shared visits in a rural free clinic setting. Chronic disease management is complex and it is particularly challenging in the face of poverty, limited access to care, and other rural cultural barriers. APRN-led shared visits show particular promise in empowering patients to self-manage chronic diseases and to engage in health promoting behaviors (Burke & O'Grady, 2012; Jessee & Rutledge, 2012). The direct and sustained access to health care providers who partnered with participants to acquire self-management skills in a culturally appropriate person-centered environment is key to this study. An APRN-led team engaged participants in education and provided support to prepare them to "take charge" of their health. Some rural low-income participants may have lacked education for complex health care decision-making until the shared visits filled a void (Schoenberg et al., 2017). Patient satisfaction, statistically significant lower systolic BP, and meaningful improvements in

diastolic BP and HbA1c are strong incentives for continuing rural shared visits for chronic disease self-management. The findings from this study may be useful to other APRNs who provide care to rural health care consumers. In times of turbulence in how health care will be financed and delivered shared visits may gain prominence.

## Conclusion

APRN-led shared visits show good potential for better self-management and improved outcomes among rural, low-income, uninsured health care consumers who have uncontrolled chronic type II diabetes or hypertension.

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