



Opportunities and Lessons Learned to Support Didactic Experiential Learning through a Nutrition Education and Counseling Pilot at a Federally Qualified Health Center

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SUPERVISED STUDENT CARE IN safety-net clinics affords multiple benefits. These benefits include the expansion of students skills, empathy, and interprofessional education (IPE) opportunities, maintenance of clinical skills for faculty, and work to address gaps in care for low-income, underinsured, or uninsured patient groups.¹⁻⁷ Historically, many safety-net clinics have been managed by medical students, who have reported barriers to providing nutrition education and counseling to patients.⁸ Integration of supervised Didactic Program in Dietetics (DPD) students into these under-resourced clinical settings ensures access to quality nutrition care for patients and expands training opportunities for DPD students.

Literature around DPD student provision of nutrition education or counseling to patients in clinical settings is highly limited, with previous studies highlighting a need for more “meaningful” experiential learning opportunities.^{9,10} Although published studies are sparse, evidence suggests that patients have reported positive experiences and improvements in dietary behaviors from nutrition education and counseling provided by DPD students.¹¹ Experiential learning opportunities in clinical settings for DPD students offers hands-on skill development and IPE that could contribute to collaborative care with nursing, medical, and other students and providers to improve patient outcomes.¹² Additionally, integration of DPD students into safety-net

clinics offers a niche opportunity to address the burden of obesity and chronic diseases that underinsured and uninsured low-income populations disproportionately face.^{13,14}

Ultimately, integration of supervised DPD students into safety-net clinics could increase access to quality nutrition care to promote health equity with underserved patients, while supporting student’s experiential and IPE opportunities. Despite this wide array of potential benefits, little to no published studies exist to provide an example framework of how such initiatives could be established or implemented. This paper outlines a pilot nutrition program that integrated DPD students into a Federally Qualified Health Center (FQHC) to provide nutrition care. At the time of this pilot program, no nutrition-specific care or services were provided on-site at the FQHC.

SITE DESCRIPTION

A local FQHC was identified for this project that was less than 5 miles from campus, allowing easy access for faculty and students. FQHCs are recognized clinical settings that fill gaps in care, share common administrative, funding, and structural components, and therefore, present increasing plausibility for replication of our pilot initiative by other DPD programs. This FQHC serves a diverse, low-income population and provides comprehensive primary care to approximately 10,000 residents from three rural counties in South Carolina.¹⁵ The FQHC accepts most insurance plans in addition to using a sliding fee scale to ensure all services can be provided

regardless of ability to pay. In 2016, 50% of the center’s patients were at or below 100% of the federal poverty line, 24% were uninsured, 37% were diagnosed with hypertension, and 19% were diagnosed with type II diabetes.¹⁶

DEVELOPMENT OF ACADEMIC–COMMUNITY CLINIC PARTNERSHIP AND A PILOT PROGRAM TAILORED TO BOTH CLINIC AND PATIENT PREFERENCES

The partnership between DPD faculty, students, the FQHC’s administration, medical director, and clinicians (eg, physicians, nurse practitioners) were critical to conceptualizing, implementing, and evaluating this pilot nutrition program. To begin this clinical–academic project, DPD faculty who were also registered dietitian nutritionists (RDN) met with the FQHC’s administration, medical director, and clinicians to discuss potential for developing a collaborative nutrition program during the fall of 2016. After several face-to-face meetings, the first action agreed on was a survey to assess patient’s interests and preferences for various approaches and delivery of nutrition programming and care. A survey was co-developed between faculty and the FQHC’s leadership, and DPD faculty and patient preferences were assessed between November and December 2016 (Appendix 1, Survey and Results). The study was approved by the Institutional Review Board, and informed written consent was obtained by all patients. The patient survey examined sociodemographics, self-reported health conditions, as well as

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preferences for the nutrition program. The survey revealed patient's preference for face-to-face, individualized nutrition visits, with a focus on weight loss and chronic disease management. The investigators presented the preliminary patient survey results to the FQHC's administration, medical director, and clinicians, which highlighted the patient's preferences. Together faculty and the FQHC's leadership developed clinical procedures for a pilot program that included referral, documentation of patient encounters, and follow-up procedures.

An initial 3-month pilot ran from March 2017 through May 2017, with reassessment post-pilot targeted for June 2017. The FQHC clinicians and DPD faculty agreed that referrals for nutrition education and counseling would include weight status or obesity, general healthful diet counseling, or chronic disease management. It was also agreed between the FQHC clinicians and DPD faculty that patients who were referred for "general healthy diet" nutrition education could be seen by DPD students and that faculty RDNs would be present and guide care for patient referrals for medical nutrition therapy (eg, diabetes, renal disease, hypertension). The FQHC administration ensured appropriate space was available and provided a furnished office for nutrition education and counseling services on site.

PROGRAM IMPLEMENTATION FRAMEWORK

Patient Recruitment and Referral Process

The FQHC clinicians selected patients based on their clinical expertise and perceived interest/motivation of the patients. Once a patient was identified, a top referral portion of a paper nutrition chart was completed by FQHC clinicians (Appendix 2, Referral Form and Nutrition Chart). The chart was created by the nutrition faculty and integrated documentation of the nutrition care process's primary four components. Because of the initial pilot nature of the program and complexity of altering the electronic health record (EHR) software, electronic documentation was not used. The DPD faculty or student who led the patient's visit signed the chart to document the encounter. The

chart was completed during patient visits and then left in a box in the clinic to be scanned and added to a patient's EHR by FQHC staff so providers would have access to encounter notes and recommendations.

DPD Student Training and Provision of Nutrition Education and Counseling

The DPD students in an upper-division nutrition assessment course were selected and trained during several sessions by DPD faculty who were also RDNs at the University. Trainings included patient assessment, nutrition education, counseling (eg, motivational interviewing techniques), how to document encounters on the chart within the nutrition care process framework, and review of how to best use the educational materials available. The "scope of practice" for students were also outlined. Students were also required to purchase student liability insurance to participate as a volunteer in the pilot program.

Program Delivery

During the program, DPD students and faculty provided individual, face-to-face education and counseling sessions. For example, students were instructed to provide tailored advice on assessment of eating patterns and preferences, but they could not provide individualized meal plans or medical nutrition therapy. Students were allowed to see patients one-on-one to provide education and counseling around healthful eating or weight management and charted these encounters. Patients with chronic conditions (eg, hypertension, type 2 diabetes) could be referred to students for weight management and general healthful recommendations such as appropriate portion sizes, how to integrate more whole grains, fruits, vegetables, decreasing sugar-sweetened beverages, and physical activity promotion. Students assessed patients to identify individualized goals that centered around promotion of physical activity and weight management or loss, with a general target of 1 lb/week, MyPlate and dietary guideline patterns (eg, $\frac{1}{2}$ plate fruits and vegetables, appropriate portion sizes, whole grains, lean protein, 25 to 30 g fiber/

day, reducing sugar-sweetened beverages, reducing saturated fat, reducing sodium, reducing added sugars). Students could, for example, review how to read a food label for fiber, sodium, carbohydrates, but they could not make specific carbohydrate recommendations or any individualized nutrient or energy recommendations for patients. They could discuss appropriate carbohydrate portion sizes but not recommend specific meal plans and carbohydrate distribution. Student's nutrition education focused on how to read a food label, healthy eating on a budget and on the go, tips for incorporating more fruits and vegetables, and physical activity throughout the day. Faculty regularly reviewed charts from students' sessions and checked in with students to ensure and remind them of their scope as a DPD student. Faculty were referred to patients for medical nutrition therapy (MNT), and DPD students were allowed to observe these sessions; however, they were led by faculty.

Primary nutrition education handouts included USDA/MyPlate and resources from the Academy of Nutrition and Dietetics and the American Heart Association. Materials focused on portion sizes, food label reading, healthy recipes, and tips for eating on a budget and eating on the go as well as avoiding foods high in calories or fats and sugar-sweetened beverages. Resources for MNT were ordered from the Academy of Nutrition and Dietetics for DPD faculty to use and included "choose your foods" for diabetes and renal disease.

Nutrition services were available approximately 20 hours per week. Patients were scheduled by nutrition program volunteers (DPD students) via phone. After three failed attempts to schedule patients by phone, patients were dropped from the program. The duration of nutrition education and counseling sessions were typically 30 to 45 minutes. After the session, patients were asked whether they would like to schedule a follow-up. The appointment date and time was determined by patient preference. Patients could schedule as many follow-ups during the pilot as they desired at no cost, and we encouraged them to schedule a follow-up visit bi-weekly or monthly before leaving their nutrition encounter.

Extension of the Program

After the initial 3-month pilot (March–May 2017), the primary investigator and DPD faculty at the university met with the FQHC administration, medical director, and clinicians to discuss the program in June 2017. Because of positive support from the FQHC administration, medical director, and clinicians, the program was extended to August 2017, making the full pilot program 6 months in length.

EVALUATION OF THE PILOT PROGRAM

The program was evaluated in three areas: (1) paper nutrition charts for referrals and care to examine the focus of referrals and nutrition visits, (2) patient's EHR to examine clinical outcomes, and (3) a survey of the FQHC clinicians' perceptions of the program. Both the retrospective chart review (paper and EHR) and surveys were approved by the Institutional Review Board, and informed written consent was obtained by all FQHC clinicians before survey collection. Because no identifiable patient information was collected, the retrospective chart review was deemed exempt from patient consent requirements.

Clinician Survey Development and Data Collection

The survey for FQHC clinicians was developed and adapted from surveys of primary care physicians regarding nutrition in the primary care setting.^{17,18} The survey for FQHC clinicians was reviewed for content by four individuals with experience in primary care as a provider or researcher and were also reviewed for face validity by the FQHC's medical director and study co-author. The surveys were distributed to FQHC clinicians at their monthly meeting on June 13th, 2017, after the initial 3-month pilot, and they were given 2 weeks to complete.

Retrospective Chart Review Data Collection

Nutrition hard copy charts were reviewed to determine (1) number of patients referred, (2) number of patients scheduled, (3) number of patient no-shows, (4) number of patients never seen, (5) referral reason(s), (6)

nutrition diagnosis, (7) intervention strategies used, and (8) barriers to program delivery. The EHR chart review focused on clinical outcomes and included weight, blood pressure, blood glucose, and hemoglobin A1c (HbA1c). These clinical measures were collected at three points: pre-program (March 2017), during the initial pilot program (March–May 2017), and after the initial 3-month pilot (June–October 2017). Data collected from the EHR included patient data available from general visits over the course of the pilot program.

Data Analysis

Data were analyzed using IBM SPSS version 25.0 and included descriptive and bivariate analyses. Descriptive analyses were performed on data collected from FQHC clinicians' survey responses, the patient's paper nutrition chart, and EHR. Data were reported as frequencies, percentages, mean, and standard deviation where appropriate. The FQHC clinician responses from open-ended questions were so few (because of the sample size and few open-ended questions) that all responses were listed directly (vs content or thematic analysis). For bivariate analysis of clinical data, the Wilcoxon signed-rank test was used to examine changes in clinical outcomes (eg, weight, HbA1c, blood pressure) between baseline and the end of the initial pilot (3 months) and then from baseline to the end of the program (6 months), as well as patient's tendency to attend follow-up visits vs patient sociodemographic (eg, age, sex) and clinical factors (eg, referral reason).

Implementation Evaluation: Referrals and Program Delivery

A total of 93 patients were referred by FQHC clinicians to the initial pilot program between March 2017 and May 2017. Of those referred, 50 (53.7%) attended at least one (were seen by DPD students or faculty), and most ($n = 36$, 72.0%) attended only one visit, and less than one-third ($n = 14$, 28.0%) attended multiple visits. The most common referrals were for weight management, type 2 diabetes mellitus, and hypertension (HTN). Patient referral reasons were similar for both

patients referred and seen and patients referred that could not be scheduled (27% seen vs 20% not seen for weight management, 68.0% seen vs 63.4% not seen for HTN, and 52.0% seen vs 51.6% not seen for type 2 diabetes mellitus). Patients who were classified as "not seen" were referred to the program, but because of communication barriers were never scheduled (eg, incorrect numbers, voicemails left and call never returned). Baseline characteristics of patients referred to the program were similar, regardless of their attendance in the program. Patients were primarily female (72.0% seen vs 67.4% not seen), of similar age (mean age, 48.3 years seen vs 48.6 years for not seen) and similar initial body mass index (BMI) status (96% overweight/obese seen vs 86.1% overweight/obese not seen).

Impact Evaluation for the Initial 3-Month Pilot

Clinical measures were evaluated for patients who attended at least one visit during the initial pilot program (Table 1). At baseline, mean BMI was 37.8 ($n = 50$); post-pilot the mean BMI was 38.4 ($n = 35$). At baseline, the mean weight was 232.0 pounds ($n = 49$), and post-pilot the mean weight was 237.1 pounds ($n = 35$). After the pilot program, the average percent change decreased for BMI and weight by 1.03% and 1.36%, respectively, despite minimal changes observed in available mean BMI and weight measures. Approximately 72% of patients were classified as hypertensive (I and II), with a mean baseline blood pressure of 132.8/81.2 mmHg ($n = 49$), and post-program mean blood pressure was found to be 134.9/82.2 mmHg ($n = 37$). Mean HbA1c at baseline ($n = 37$) was 7.71, and mean HbA1c post-program was found to have declined to 7.169 ($n = 18$). Mean clinical measures examined via a Wilcoxon signed-rank tests for baseline vs during program and baseline vs post-program for clinical measures available for patients indicated non-statistically significant increases for blood pressure, weight, and BMI and non-statistically significant declines in HbA1c. Patients also varied by their likelihood of attending multiple visits, with older patients and patients with type 2 diabetes more likely to attend.

Table 1. Patient descriptives and clinical outcomes for patients referred to a DPD faculty and student led 6-month pilot nutrition program at a federally qualified health center

Patients' Descriptives			
Characteristic	Total referred (n = 93 [%])	Referred and seen (n = 50)	Patients referred, not-seen (n = 43)
Sex			
Male	28 (30.1)	14 (28.0)	14 (32.6)
Female	65 (69.9)	36 (72.0)	29 (67.4)
Age			
Male	—	48.64 (14.747)	53.73 (5.405)
Female	—	51.31 (10.566)	49.20 (13.484)
BMI			
Male	—	37.77 (9.009)	38.07 (11.20)
Female	—	39.41 (8.544)	41.55 (7.835)
Female	—	37.14 (9.222)	37.54 (9.580)
BMI Class			
Underweight	1 (1.1)	0 (0.0)	1 (2.3)
Normal	7 (7.5)	2 (4.0)	4 (9.3)
Overweight	12 (12.9)	8 (16.0)	6 (14.0)
Obese	72 (77.4)	40 (80.0)	31 (72.1)
Pregnant	1 (1.1)	0 (0.0)	1 (2.3)
Weight			
Male (n = 14)	—	231.98 (64.878)	
Female (n = 36)	—	231.42 (69.611)	
Blood pressure			
Male (n = 13)	—	132/81	
Female (n = 36)	—	134/83	
Female (n = 36)	—	132/81	
Hypertension categories			
Normal		10 (20.4)	
Elevated		4 (8.0)	
HTN I		16 (32.7)	
HTN II		19 (38.8)	
Clinical outcomes for patients seen (n = 50) during the initial 3-month pilot			
Clinical outcome	Median	Wilcoxon Signed-rank test P-value (Z-score)	
HbA1c-baseline (n = 17)	7.00		
HbA1c-during	6.50	0.176	(Z = -1.352)
HbA1c-post	6.30	0.119	(Z = -1.557)
Blood glucose—baseline (n = 11)	136.00		
Blood glucose—during	148.00	0.328	(Z = -0.978)
Blood glucose—post	182.00	0.213	(Z = -1.245)

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Clinician Perceptions and Practices

The pilot program was also examined from the perspective of the FQHC clinicians on site. Of the five FQHC clinicians, four completed the survey. Before the start of the program, all reported rarely or very rarely referring patients to a registered dietitian (100%), and most (75%) reported referrals for nutrition increased because of the program. Perceived barriers to referrals to an RDN before the pilot included cost for the patient (75%), perceived lack of patient interest (50%), and access (no available or no known nutrition professionals to refer to) (50%). Perceived barriers to delivering nutrition/lifestyle counseling during patient visits were also reported, with most (75%) strongly agreeing that lack of time prevents nutrition/lifestyle counseling during a patient visit as well as lack of counseling and nutrition training (75%). Patient noncompliance, lack of nutrition resources, and inadequate reimbursement received varying degrees of agreement. All FQHC clinicians surveyed agreed with the statement “the option to refer patients for nutrition counseling/education at the clinic reduced some of the burden to provide nutrition/lifestyle counseling by providers.” Three provided an explanation as to how this burden was reduced:

R1: Nutrition/lifestyle counseling is so vital to patient's overall health and their chronic diseases. Having a resource for our patients was priceless and very valuable.

R3: I spent more time assessing the need for counseling because I knew I had better access to counseling, if needed.

R4: Ability to refer for severe condition and time to provide detailed education...less pressure to address multiple issues in limited amount of time.

The FQHC clinicians did not indicate that office adjustments to accommodate nutrition counseling or education were complicated. Most (75%) agreed to feeling satisfied overall with the pilot program. Most (75%) reported not reviewing patients' nutrition charts and reported being neutral to the statement: “nutrition charts received from referred patients were scanned and received in a timely manner.” One offered improvements to the charting procedure:

R4: Difficult to search for nutrition chart. More a problem with current EMR

Table 1. Patient descriptives and clinical outcomes for patients referred to a DPD faculty and student led 6-month pilot nutrition program at a federally qualified health center (continued)

Clinical outcomes for patients seen (n = 50) during the initial 3-month pilot

Clinical outcome	Median	Wilcoxon Signed-rank test P-value (Z-score)
Systolic BP—baseline (n = 37)	132.00	
Systolic BP—during	130.00	0.868 (Z = -0.166)
Systolic BP—post	132.00	0.446 (Z = -0.762)
Diastolic BP—baseline (n = 37)	81.00	
Diastolic BP—during	82.00	0.330 (Z = -0.975)
Diastolic BP—post	82.00	0.241 (Z = -1.171)
BMI—baseline (n = 35)	37.00	
BMI—during	37.00	0.252 (Z = -1.444)
BMI—post	38.00	0.216 (Z = -1.238)
Weight—baseline (n = 35)	217.08	
Weight—during	221.00	0.122 (Z = -1.548)
Weight—post	224.80	0.084 (Z = -1.728)

Patient Factors Associated with Attending a Follow-up

Variable	n	Single visit, n (%)	Multiple visits, n (%)	P value
Sex				
Female	35	27 (77.1)	8 (22.9)	0.493
Male	15	10 (66.7)	5 (33.3)	
Age				
<50 y/o	23	21 (91.3)	2 (8.7)	0.012*
>50 y/o	27	16 (59.3)	11 (40.7)	
Referral Reason: Weight Management				
Yes	27	22 (81.5)	5 (18.5)	0.215
No	23	15 (65.2)	8 (34.8)	
Referral Reason: Dyslipidemia				
Yes	13	5 (38.5)	8 (61.5)	0.002*
No	37	32 (86.5)	5 (13.5)	
Referral Reason: Hypertension				
Yes	24	15 (62.5)	9 (37.5)	0.109
No	26	22 (84.6)	4 (15.4)	
Referral Reason: Diabetes				
Yes	26	16 (61.5)	10 (38.5)	0.054
No	24	21 (87.5)	3 (12.5)	

*Statistical significance set at P < 0.05.

organization. Would be more beneficial if chart was in the same area (electronically) as their medical visit notes.

When asked to give any other feedback regarding the pilot program, one offered the following:

R3: *Would be nice if counselors & providers were able to discuss patients referred after their sessions. This would give me specific areas I need to reinforce with patients during office visits.*

LESSONS LEARNED AND OPPORTUNITIES

This pilot program found it is acceptable and not overly burdensome to integrate DPD faculty–student-led nutrition care and services into an FQHC. In addition, results from this pilot provide evidence for the following: (1) academic–clinic relationships to integrate nutrition services and opportunities for dietetic students are plausible, (2) such programming is desirable for both clinicians and patients, and (3) on-site, no-cost nutrition services offer potential to increase access and reduce the preventative care burden on other clinicians. This pilot program provides a framework with which other DPD programs can work to integrate nutrition care, fill gaps in care, as well as provide meaningful clinical experience for DPD students and faculty. We discuss lessons learned and future opportunities in the subsequent section.

Barriers and Lessons Learned

Barriers experienced in the implementation of the program included difficulties scheduling visits and follow-ups, no-shows, and limited communication with FQHC clinicians during the program. Despite the removal of cost as a barrier, participation was low. The lack of participation may relate to many well-documented social–environmental burdens this low-income underresourced population faces that result in delaying or foregoing treatment, such as transportation barriers.^{19–22} Another barrier to the program included connecting with patients to schedule initial visits or follow-ups. Frequently during the program, attempts to schedule patients were hindered by disconnected phones, full voicemail boxes, outdated phone numbers, or failure to answer the phone. In comparison, a study investigating reasons for no-shows at a community health clinic demonstrated 37% of no-shows were associated with communication barriers.²³ Each of these factors could have contributed to the poor follow-ups or overall lack of use of services. Scheduling also may have impacted participation, because visits could only be scheduled during the 20 hours that aligned with DPD student and faculty schedules. Some patients requested that their nutrition visits be

coordinated with visits to their provider, and these requests were met as much as possible. Lastly, it is unknown whether providers expressed reasoning for referrals to patients, encouraged them to attend, or emphasized that the program was of no additional cost. The program was not advertised to all patients, and only patients identified by and referred by FQHC clinicians were contacted.

These barriers shed light on areas for improvement in future DPD-led programs. Possibly coordinating nutrition and medical or other visits may reduce barriers; however, nutrition visits may need to be more frequent to maximize impact.²⁴ To address barriers while promoting best practices, developing a combination of face-to-face visits coinciding with a patient's medical appointment along with additional check-ins via the phone or virtual telehealth may be warranted. The use of telehealth to remotely counsel patients has been found to offer promise for reaching underserved populations in the future and may be beneficial.²⁵ Clinicians also should be encouraged to communicate and reinforce the value and purpose of nutrition referrals to

patients, and depending on resources, the opportunity for no-cost nutrition care should be provided to all eligible patients and not be dependent on a medical referral. In addition, a wider range of strategies to remind patients of scheduled visits (eg, text messages) and transportation support as needed may increase participation in resource-limited patient populations.

In combination with the previously outlined barriers patients face, clinicians also experience barriers to providing lifestyle counseling and support to patients. The FQHC clinicians in this study also identified lack of time during patient visits as well as training as barriers to nutrition counseling, which aligns with reported barriers in other studies.^{4,26,27} This pilot program addressed these barriers by providing patients access to individualized, tailored nutrition education and counseling sessions. Although services improved access and reduced the burden on other providers, FQHC clinicians in this program reported a desire for more communication and care coordination. These preferences provide evidence of the value and benefit of having nutrition care on site. Future

programming and care should seek to expand mechanisms for interprofessional care coordination, which has demonstrated effectiveness in improving the quality of health care delivery.^{6,7,17,28,29} Furthermore, expanded care coordination with other clinicians, DPD students, and faculty not only follows best practices but greatly improves DPD student's training and clinical skills development.

Opportunities

It is important to highlight the potential for patient benefits from the integration of DPD student and faculty-provided nutrition care, for example, evidence of reduced HbA1c with only one to two visits. Other studies that have examined patient outcomes with vulnerable, resource-limited patients have also identified improvements to chronic disease management when medical students provided services and care.^{12,30} To these authors' knowledge, this is one of the first studies that examined patient outcomes associated with DPD student-provided "no cost" nutrition services and care. Most patients received one-

on-one nutrition assessment and general healthful diet counseling by DPD students; some improved clinical outcomes were observed. Possibly the weight management support and overall general healthful dietary recommendations of students (eg, decreased sugar-sweetened beverages, increased fruits and vegetables and whole grains, physical activity promotion, appropriate portion sizes) were impactful because they also align with current nutrition recommendations to manage diabetes.³¹ Regular MNT visits with faculty or supervised DPD students could likely achieve greater improvements in patient health outcomes. To accomplish this, faculty would have to be available for greater time periods to provide or supervise provision of MNT for patients.

Finally, we suggest three specific future opportunities based on our experience. These include (1) integration of DPD students into clinical settings to better meet expected experiential learning requirements of the future education model, (2) opportunities for IPE, and (3) potential to evaluate clinical services and its impact

on patient satisfaction with services and health outcomes, using The Academy of Nutrition and Dietetics Health Informatics Infrastructure for DPD faculty and student research or quality improvement initiatives.

In conclusion, this paper adds to the body of literature around dietetics education and (1) provides a framework for the process, and impact of piloting free nutrition care in an FQHC by nutrition faculty and DPD students; (2) demonstrates such initiatives are acceptable to clinic administration and staff and are not overly burdensome; and (3) provides a discussion for considerations in future DPD faculty-led initiatives based on our framework and experience. Limitations and program barriers were identified and suggestions for improvement outlined. Findings from this pilot program may be used to drive further expansion of experiential learning opportunities for DPD students in similar clinical settings to address gaps in care, improve patient outcomes, reduced nutrition-related obesity and chronic disease health disparities, as well as support IPE opportunities.

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AUTHOR CONTRIBUTIONS

R. M. King and L. R. Sastre developed study design. R. M. King and L. R. Sastre developed and validated the survey tool. R. M. King collected the data and analyzed data. R. M. King, J. Chua, D. Nunnery, and L. R. Sastre conceptualized and worked together to develop the manuscript, edit, and collaborate for the final submission. All authors reviewed and commented on subsequent drafts of the manuscript.

APPENDIX 1: ADULT SURVEY FOR INTEREST FOR FREE NUTRITION/HEALTH PROMOTION PROGRAM

I. Topics Interest:

Topic/skills	Interest level				
	Not interested	Somewhat	Neutral	Interested	Very interested
Using/reading food labels					
Healthy, tasty, quick dinners on a budget					
Healthy eating on the go/snacks					
Nutrition for blood pressure management					
Nutrition for diabetes management					
Nutrition for weight loss					
Physical activity Tips/resources/programs					

II. Type of Program Delivery

Preference (check preferred program, or both if equal interest)	
Individual (family)	Group

How Often?	Weekly	Biweekly	Monthly	For How Long?	2 months	3 months	4 months	6 months
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Program Preferences (How you would like to receive information)	Level of Interest (1–5) 5—very interested 4—interested 3—neutral 2—somewhat 1—not interested
Face-to-face visits—individual or group	
Phone counseling	
Online counseling/Skype	
Health/nutrition information: e-mail	
Health/nutrition information: social media group (eg, private Facebook page)	
Health/nutrition information: regular/snail mail	
Motivator/accountability partner in the program:	

(continued on next page)

III. Patient information

Age	Diagnosed with hypertension? When?
Birthdate	Diagnosed with diabetes? When?
Sex	Diagnosed with kidney disease? When?
Single/married	Diagnosed with heart disease? When?
Occupation	Primary health concern? Describe:
Annual income	Primary nutrition concern? Describe:
Household size Children? Ages?	Are you interested in being contacted to participate?
Race/ethnicity	E-mail address to contact for study:
Weight concern? Describe:	Primary phone/cell to contact for study:

Table 1. Results from preliminary patient interest and preferences (n = 75) at a FQHC in South Carolina (2016)

Variable	Mean (SD)	Frequency	Percent
Age	45.83 (15.953)	—	—
Income	11,069.29 (10,797.69)	—	—
<u>Household Size</u>	1.94 (1.13)	—	—
<u>Sex</u>			
Female	—	60	67.4
Male	—	11	12.4
<u>Marital Status</u>			
Single	—	46	51.7
Married	—	15	16.9
Divorced	—	3	3.4
Widowed	—	4	4.5
<u>Race/Ethnicity</u>			
Caucasian	—	32	36.0
Hispanic	—	2	2.2
African American	—	32	36.0
Asian	—	—	—
<u>Counseling Setting Preference</u>			
Individual (family)	—	50	56.2
Group	—	10	11.2
Either	—	15	16.9
<u>Frequency of visits</u>			
Weekly	—	19	21.3
Biweekly	—	19	21.3
Monthly	—	38	42.7
Either	—	1	1.1

(continued on next page)

Table 1. Results from preliminary patient interest and preferences (n = 75) at a FQHC in South Carolina (2016) (*continued*)

Variable	Mean (SD)	Frequency	Percent
<u>Duration of program</u>			
Two months	—	16	18.0
Three months	—	14	15.7
Four months	—	5	5.6
Six months	—	36	40.0
Either	—	2	2.2
<u>Self-Reported Chronic Disease Diagnosis</u>			
Diabetes	—	19	36.5
Kidney disease	—	4	11.4
Heart disease	—	4	11.4
Hypertension	—	22	40.0
<u>Program Delivery Preferences (interested)</u>			
Face to face	—	39	59.1
Snail mail	—	24	36.3
Social media	—	24	23.8
Email	—	34	52.4
Online/skype	—	15	38.1
Phone	—	24	48.4
Partner	—	25	42.3
<u>Nutrition/Health Topics of Interest</u>			
Food label	—	44	54.3
Dinning budget	—	54	68.4
Nutrition for blood pressure	—	60	74.1
Nutrition for diabetes mellitus	—	50	67.6
Nutrition for weight loss	—	53	70.7
Physical activity	—	54	69.2

APPENDIX 2: NORTH CENTRAL FAMILY MEDICAL CLINIC OUTPATIENT NUTRITION CHART

Referred by:

Referral Reason (circle):	Weight Management	General Healthful Diet	BMI
Patient name:	DOB:	Age:	Sex:
Ht:	Wt:	WtHx:	BMI:
Medical conditions:			
Medications:			

Medical Nutrition Therapy

Hyperlipidemia/Dyslipidemia	Hypertension	Diabetes	Renal Disease
Pertinent Labs:			

NUTRITION ASSESSMENT

Diet Hx/Assessment

NUTRITION DIAGNOSIS

NUTRITION INTERVENTION

Nutrition Prescription

Nutrition Education-Content:		Nutrition Counseling-Strategies:	
○ Purpose of nutrition education	E-1.1	○ Motivational Interviewing	C-2.1
○ Priority modifications	E-1.2	○ Goal setting	C-2.2
○ Survival Information	E-1.3	○ Self-monitoring	C-2.3
○ Nutrition relationship to health/disease	E-1.4	○ Problem solving	C-2.4
○ Recommended Modications	E-1.5	○ Social support	C-2.5
○ Other or related topics	E-1.6	○ Stress management	C-2.6
○ Other (specify):_____	E-1.7	○ Stimulus control	C-2.7
		○ Cognitive restructuring	C-2.8
		○ Relapse prevention	C-2.9
		○ Rewards/contingency management	C-2.10
		○ Other (specify):_____	C-2.11

Nutrition Counseling—Theoretical Basic/Approach:		Nutrition Education—Application:	
○ Cognitive-Behavioral Theory	C-1.1	○ Result interpretation	E-2.1
○ Health Belief Model	C-1.2	○ Skill development	E-2.2
○ Social Learning Theory	C-1.3	○ Other (specify):_____	E-2.3
○ Transtheoretical Model/Stages of Change	C-1.4		
○ Other (specify): _____	C-1.5		

Goal(s):

NUTRITION MONITORING AND EVALUATION

Notes: _____

Nutritionist _____

Date: _____