

Potential Effect of Vouchers on the Completion of Self-management Education Among Patients With Diabetes

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ABSTRACT

Diabetes is a significant public health problem in eastern North Carolina, and completion of formal diabetes self-management education (DSME) is low. To seek methods to increase DSME completion, patients with diabetes in an eastern North Carolina regional health care system who had not completed DSME ($n = 58$) were surveyed during wellness visits to examine attitudes toward the use of vouchers (eg, coupons that purchase healthy food, exercise classes, gym memberships). There was an extremely low awareness (19%) of and referral (5%) to DSME. Most respondents (77%) said they would or might be more likely to complete DSME if they received a voucher at the end. Vouchers for healthy food venues such as farmers' markets were most preferred, and 6 months or less was found to be an acceptable time frame to use the voucher. This study offers some evidence for DSME providers to explore vouchers as one approach to increase program completion.

KEY WORDS: diabetes self-management education, financial incentives, type 2 diabetes

Diabetes is a significant public health problem in eastern North Carolina (ENC). In 2016, the overall prevalence of self-reported diabetes was 13.3% and was even higher among African Americans (18.8%) and individuals living in households with annual incomes of less than \$15 000 (19.8%).¹ The 2015 age-adjusted diabetes mortality rate for ENC (18.7 per 100 000) was similarly high compared with North Carolina (NC) as a whole (15.9 per 100 000).² Many ENC counties are included in the Centers for Disease Control and Prevention–defined diabetes belt, a geographic area in the southern United

States consisting of 644 counties in which people are more likely to have type 2 diabetes than those living in other parts of the country.³

Diabetes self-management education (DSME) is an effective way for people with diabetes to learn about this complex disease and the skills needed to manage it.^{4,6} DSME programs have been shown to improve glycemic control, increase healthful eating and physical activity patterns, reduce diabetes complications, and lower rates of hospital admissions and readmissions.⁷⁻¹⁰ The American Diabetes Association recommends that all newly diagnosed patients with diabetes complete a nationally recognized DSME program,¹¹ which is available in most NC counties.¹²

Despite the effectiveness of DSME, there continue to be problems recruiting and retaining DSME participants.¹³ Analysis of administrative data indicated that during 2011-2012, only 6.8% of privately insured adults aged 18 to 64 years with newly diagnosed diabetes participated in DSME within 12 months of their diagnosis.¹⁴ Results from the 2015 NC Behavioral Risk Factor Surveillance System indicated that 49.5% of adults with diabetes in ENC had ever attended any course or class on how to manage their diabetes.¹⁵

Financial incentives such as coupons and vouchers that can be exchanged for free or discounted goods have been shown to increase health-promoting behaviors.^{16,17} Use of financial incentives has been

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associated with increases in vaccinations, mammography screening, tuberculosis screening, and both short-term (≤ 6 months) and long-term (> 6 months) smoking cessation.^{17,18} A systematic review found that coupons had a positive influence on program attendance levels in 83% of simple programs, which required only 1 visit, and 67% of more complex programs.¹⁹ Monetary incentives have been shown to successfully increase medication adherence among a small sample of adults with diabetes (in conjunction with text message reminders)²⁰ and have been associated with a small, but not statistically significant, decrease in hemoglobin A_{1c} among African American veterans with diabetes.²¹

To our knowledge, there is limited research on the effect of financial incentives on completion of DSME programs. This study examined attitudes toward offering a voucher incentive at DSME program completion among diabetes patients in a large regional health care system in ENC. Findings from this study add to the body of evidence regarding the impact of incentives on participation in health-promoting programs.

Methods

A 17-question, self-administered, paper-and-pencil questionnaire was developed to address awareness of and experience with DSME, likelihood of attending and completing DSME, and factors that would encourage attendance and completion of DSME, including vouchers (see Supplemental Digital Content Appendix, available at <http://links.lww.com/JPHMP/A563>). An iterative process of review by diabetes and survey methods experts, followed by revisions, was used to develop the questionnaire. The Flesch-Kincaid reading grade level for the questionnaire was 6.1. This study was determined to be exempt by the East Carolina University, University and Medical Center institutional review board.

The study population was a convenience sample of patients with diabetes receiving health care within a large health care system in 4 ENC counties. Health coaches, registered nurses or dietitians who work one-on-one with patients to address health problems such as diabetes or high blood pressure within primary care clinics, were asked to recruit patients with diabetes into this study. The coaches were trained on study protocol, participant recruitment, inclusion criteria (age ≥ 18 years, diabetes diagnosis), and questionnaire administration. Health coaches were instructed to explain the study at the beginning of appointments with patients with diabetes and to ask patients whether they would be willing to participate. If the patient agreed, the health coach gave them a copy of the questionnaire, asked them to complete it

after the appointment in a space provided, and return the questionnaire back to the health coach. Questions were read to participants with limited reading skills. Data were collected for approximately 6 weeks, starting on February 1, 2017. The target sample size was 100; however, multiple other demands on health coaches resulted in inconsistent recruitment and fewer participants than expected.

The main analysis variable was likeliness to attend DSME if incentivized by a voucher, as measured by the question, “Would you be more likely to complete the DSME program if you could receive a voucher at the end?” (“yes,” “no,” “maybe”). This construct was also measured by response to the statement, “I would be more likely to attend DSME if I received a voucher at the end.” (“strongly agree,” “agree,” “disagree,” “strongly disagree”). General likeliness to attend DSME was measured using the question, “If you were invited and encouraged to attend DSME by your doctor at this time, what would be your response?” Response categories included “I would attend all classes,” “I would likely not attend,” “I would attend one class and see if it would help me,” “I would attend only if I had time and transportation,” and “I would attend if I could join the class on my cell phone.” For analysis, the latter 3 responses were combined into one category, “might attend.” The following demographic variables were analyzed: age (18–49 years, ≥ 50 years), gender (male, female), and race (white, African American).

Univariate and bivariate analyses were conducted using SPSS version 22. Fisher’s exact test was used to assess statistical significance because of small cell sizes ($P < .05$).

Results

Sixty adults completed the questionnaire; 2 reported having already completed DSME and were excluded from the analysis ($n = 58$). Most were female (75%), 50 years or older (69%), and health-insured (100%). The most common source of health insurance was an employer (43%), followed by Medicare (31%). Similar proportions were white (55%) and African American (45%), and employed (55%) versus unemployed (45%).

Only 11 of 58 respondents had ever heard of DSME, 3 had ever been referred, and 3 had attended at least one DSME class. If encouraged by their doctor to attend DSME, 23% ($n = 13$) reported that they would attend all DSME classes, 61% ($n = 34$) might attend, and 16% ($n = 9$) reported that they would likely not attend.

When asked, “Would you be more likely to complete the DSME program if you could receive

a voucher at the end?” 55% replied “yes,” 22% “maybe,” and 22% replied “no.” A higher proportion of females than males (64% vs 29%) reported that they would be more likely to complete DSME if they received a voucher at the end, as did African Americans compared with whites (64% vs 48%); however, the race difference was not statistically significant (Table). Age was not associated with an anticipated effect of vouchers. The proportion more likely to complete DSME with a voucher varied by general likelihood to attend DSME, from 69% of those who would attend all DSME classes if a doctor encouraged them to 65% who might attend to only 11% of those who were unlikely to attend even with doctor’s encouragement. When asked more indirectly about the influence of a voucher on DSME completion, 69% strongly agreed or agreed with the statement, “I would be more likely to complete DSME if I received a voucher at the end.”

Of the 4 categories specified, vouchers for farmers’ markets were the most frequently preferred type of voucher (43%), followed by vouchers for a gym (31%), swimming pool access (15%), and yoga classes (7%). Two participants chose the “other” response category and indicated they would prefer a voucher to a grocery store or supermarket. When asked for how long they would expect to be able to

use the voucher, 18% reported 1 to 3 months, 45% 3 to 6 months, 18% 6 months or more, and 18% reported they would be happy with any amount of time.

Discussion

Our study provides some descriptive preliminary support for the possibility that financial incentives may help adults with diabetes to complete a DSME program, with most respondents (55%) reporting that they would be more likely to complete a DSME program if they received a voucher at the end and an additional 22% reporting that they might be more likely to complete. Vouchers for farmers’ markets and gym access were the 2 most desired types of vouchers, and the majority would be happy with a voucher that lasted for 6 months or less. These findings on desired type of voucher and length of use could help programs design incentives for DSME programs.

Results from 2 studies by Blondon and colleagues²² also indicated interest among adults with diabetes to use financial incentives to improve their diabetes self-management. In a qualitative study, 10 of 12 patients with diabetes thought that small financial incentives might help them adopt healthier behaviors²² and 96%

TABLE 1

Proportion More Likely to Complete DSME Program if Voucher Were Available Upon Completion, by Demographic Characteristics and Likelihood of Attending DSME if Encouraged by Doctor

Characteristic	Subgroup Sample Size	More Likely to Complete DSME If Voucher Available ^a	Fisher’s Exact Test, <i>P</i>
Total	58	55% (32)	
Age			
18-49 y	17	47% (8)	.56
50 y and older	38	58% (22)	
Gender			
Female	42	64% (27)	.03
Male	14	29% (4)	
Race			
White	31	48% (15)	.29
African American	25	64% (16)	
Intention to attend DSME if encouraged by doctor ^b			
Yes, would attend	13	69% (9)	.01
Might attend	34	65% (22)	
No, likely not attend	9	11% (1)	

Abbreviation: DSME, diabetes self-management education.

^aResponse to the question, “A voucher is a coupon or ticket that would allow you to go for free or at a discounted price. Would you be more likely to complete the DSME program if you could receive a voucher at the end?”

^bResponse to the question, “If you were invited and encouraged to attend a DSME by your doctor at this time what would be your response?”

Implications for Policy & Practice

- Our findings suggest that adults with diabetes may be open to the possibility of using vouchers to motivate themselves to complete DSME if incentives were offered by the program.
- Financial incentives may be a useful tool for diabetes educators to explore in their search for ways to encourage completion of DSME programs, especially using vouchers that would assist in purchasing healthy food items.

of respondents to an online survey of US adults with diabetes thought that financial incentives would be useful, especially for making food habit changes.²³ Our results add to the growing literature indicating that the use of financial incentives may be moderately effective in motivating adults in the areas of health promotion and behavior change.

Limitations of this study include the use of a convenience sample of insured patients with diabetes attending regularly scheduled appointments. Recruitment by the health coaches was intermittent due to competing demands; it is possible that patients with fewer health difficulties may have been recruited more frequently than those with greater difficulties. These limitations may have resulted in a sample that is different from the general diabetic population in terms of health care access, transportation, and/or severity of disease. Data were self-reported and the voucher question was hypothetical, both of which may have resulted in an overestimation of the potential effect of a voucher due to social desirability. The sample size was small and limited our ability to look at subgroup comparisons.

As a next step, we recommend assessing the effect of financial incentives among adults with newly diagnosed diabetes by using an experimental design in which some groups of DSME participants receive a voucher upon completion and others do not, and attendance records and completion certificates are used to objectively measure levels of attrition and completion.

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