Should Group Education Classes Be Separated by Type of Diabetes?

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Although the rising prevalence of type 2 diabetes and economic factors have resulted in more group diabetes education (1–4), little research has examined the effective use of group education or composition of groups. Regardless of group or individual education format, attention to individual learning needs through assessment of attitudes, health beliefs, motivation, and levels of self-care remain critical to tailoring programs to the adult learner. To maximize the benefit of the group format, educators must identify commonalities among group members to foster engagement and participation (5); however, this process can be difficult if participants vary in type of diabetes. In clinical practice, emphasis is typically on filling classes without attention to homogeneity; thus, assessing and addressing the needs of each group participant can be difficult (6). In this study, we examined whether adults with type 1 or type 2 diabetes requiring diabetes education differ in medical treatment issues, lifestyle, self-management, and psychosocial characteristics that may impact how they are educated in groups.

RESEARCH DESIGN AND METHODS

We evaluated the baseline data of 208 adults (type 1 diabetes, $n = 101$; type 2 diabetes, $n = 107$) enrolled in a longitudinal diabetes education study. The Committee on Human Subjects reviewed the study, and subjects provided informed written consent.

Subjects were eligible for the study if aged 18–75 years, if they had been diagnosed with type 1 or type 2 diabetes for ≥2 years, and if they had HbA_{1c} (A1C) ≥7.6 and ≤14%. To be eligible, type 2 diabetic subjects needed to be treated with oral agents or insulin for at least 1 year. Exclusion criteria to prevent confounding factors and to maintain patient safety in the larger study included *1*) initiation of intensive treatment within 6 months or current, or planning, pregnancy, as these may impact glycemia independent of diabetes education; and *2*) presence of severe complication or comorbidity of diabetes that may place a person at risk when increasing physical activity (e.g., microalbuminuria, recent cardiovascular event, congestive heart failure, severe hypertension, eating disorder, unstable psychiatric disorder, or substance abuse).

We measured A1C, fasting lipid levels (unavailable for 20 of 101 type 1 diabetic participants), blood pressure, height, weight, and waist circumference. Subjects completed measures of frequency of self-care behaviors (Self-Care Inventory-Revised) (7), depressive symptoms (Brief Symptom Inventory 18) (8), diabetes-related emotional distress (Problem Areas in Diabetes) (9,10), diabetes quality of life (Diabetes Quality of Life Scale) (11,12), and coping styles (13). Subjects completed the 24-h food recall survey (14,15) and Seven-Day Physical Activity Recall (16,17), wore a pedometer for 3 days, and monitored glucose levels with study-provided meters and strips.

Data are presented as mean ± SD unless otherwise specified. All survey scores were converted to a 100-point scale for ease of interpretation (18). We used Nutritionist Pro to analyze food recall data and SAS 8.2 statistical software for data analysis.

RESULTS

Type 2 diabetic subjects were 1 decade older and had less formal education (Table 1). They had shorter diabetes duration and less intensive diabetes treatment regimens. Type 1 and type 2 diabetic participants were similar regarding depression (51.6 ± 10.3 vs. 50.8 ± 10.9), diabetes distress (39.3 ± 21.0 vs. 35.7 ± 19.3), and percent receiving antihypertensive therapy (38 vs. 45%). More type 2 diabetic subjects were treated for hyperlipidemia (46 vs. 32%; $P = 0.04$).

More type 1 diabetic subjects met blood pressure targets (19) (61 vs. 40%; $P = 0.002$). Fewer type 2 diabetic subjects met lipid treatment goals; they were also heavier and had larger waists. Type 2 diabetic participants reported lower daily calorie consumption and walked 2,500 fewer steps per day. However, they reported greater physical activity energy expenditure. Type 1 diabetic participants monitored blood glucose levels more frequently, reported poorer quality of life, and relied on emotional coping styles more frequently than type 2 diabetic participants.

CONCLUSIONS

The principle of extending education to many, while using limited resources, has driven the transition to group-based diabetes self-management education. This transition assumes homogeneity among participants, and individuals with diabetes do not necessarily fit into a homogenous group (20). We believe that discordance in patient characteristics and lifestyle behaviors minimizes the potential benefit of sharing experiences during group discussion. This discordance may force the educator to use a "one size fits all" educational approach (21). Our data suggest that adults with type 1 and type 2 diabetes differ along a wide range of characteristics and behaviors; these differences influence

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A table elsewhere in this issue shows conventional and Système International (SI) units and conversion factors for many substances.

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Table 1—*Sample characteristics for individuals with type 1 and type 2 diabetes*

	Type 1 diabetes	Type 2 diabetes	*P* value
n	101	107	
Age (years)	44 ± 12.4	57 ± 9.2	<0.001
Diabetes duration (years)	24 ± 12.3	11 ± 7.8	<0.001
A1C (%)	9.0 ± 1.1	9.3 ± 1.3	NS
Blood pressure (mmHg)			
Systolic	121 ± 16.0	129 ± 13.4	<0.001
Diastolic	73 ± 9.0	76 ± 8.7	0.01
Serum lipids (mg/dl)			
LDL cholesterol	99 ± 29.1	112 ± 33.5	0.01
HDL cholesterol	63 ± 19.5	44 ± 12.1	<0.001
Triglycerides	83 ± 47.8	161 ± 105.6	<0.001
BMI (kg/m^2)	26.7 ± 5.0	32.6 ± 6.6	<0.001
Waist circumference (cm)			
Male	99.7 ± 13.2	110.0 ± 12.1	<0.001
Female	83.5 ± 12.1	106.8 ± 18.2	<0.001
PAR metabolic expenditure (kcal/day)	2,483 ± 690	3,034 ± 650	<0.001
Pedometer (steps/day)	8,008 ± 3,781	5,491 ± 3,828	<0.001
Self-care			
Self-Care Inventory-Revised	56.7 ± 14.9	54.0 ± 16.4	NS
Glucose monitoring (times per day)	3.5 ± 1.9	1.3 ± 1.1	<0.001
Psychosocial			
Coping styles			
Emotional	56.0 ± 13.9	48.2 ± 14.0	<0.001
Self-controlled	65.4 ± 12.8	66.4 ± 12.2	NS
Diabetes Quality of Life	63.6 ± 11.1	69.3 ± 10.3	<0.001
Sex (female)	63 (62)	47 (44)	0.008
Race/ethnicity			0.002
Non-Hispanic white	96 (96)	81 (76)	
Non-Hispanic black	1 (1)	16 (15)	
Hispanic	2 (2)	5 (5)	
Asian, mixed, or other race	2 (2)	5 (5)	
Education			0.02
High school or less	17 (17)	34 (32)	
Some college	24 (24)	32 (30)	
College graduate or higher	60 (59)	41 (38)	
Diabetes treatment regimen			0.001
Oral medications	0 (0)	48 (46)	
NPH*	19 (19)	31 (29.5)	
Glargine*	58 (57)	25 (24)	
Insulin pump therapy	24 (24)	1 (0.5)	
Treatment target goals met			
LDL cholesterol (n = 183)†	43 (54)	44 (42)	<0.001
HDL cholesterol (n = 191)†	76 (90)	50 (47)	<0.001
Triglyceride (n = 188)†	73 (90)	60 (56)	<0.001

Data are means ± SD or *n* (%) unless otherwise indicated. *May be combined with oral medications (type 2 diabetic subjects) or short-acting insulin (type 1 diabetic subjects). †LDL cholesterol <100 mg/dl on lipid-lowering agent or <130 mg/dl if not on lipid-lowing agent; HDL cholesterol >40 mg/dl male or >50 mg/dl female; triglycerides <150 mg/dl.

both participant learning requirements and educator's approach and strategy for teaching utilizing group process. Such differences in treatment regimens, cardiovascular risk, and lifestyle characteristics can negatively impact the success of education in facilitating lifestyle modification and treatment adherence (22).

Diabetes education focuses on self-care behavior, lifestyle issues, and understanding medications and prescriptions. Group education classes stimulate learning by allowing adults to incorporate their own experiences with diabetes into class discussion and, thus, actively engage in the learning process (5). To maximize the benefit of group education, participants must be able to relate to each other's shared experiences to inform or influence their own behavior (5).

Participants with type 2 diabetes reported lower caloric intake and higher physical activity levels, which are inconsistent with their much higher BMI, larger waist, and lower daily pedometer steps compared with type 1 diabetic subjects. The more objective measures (pedometer, BMI, and waist measurement) were consistent with the marked dyslipidemia and higher blood pressure found in the type 2 diabetic cohort. These reporting errors are consistent with prior research (23–25). Underreporting of caloric intake may be due to inattention to, or lack of knowledge of, healthy foods and portion size (26), both of which can negatively impact achievement of carbohydrate-counting proficiency. Overreporting of physical activity (23,24) may dampen motivation and impact strategies for setting and achieving goals. Both reporting errors may reflect the lack of awareness of their own lifestyle behaviors. Thus, in type 2 diabetic groups, awareness of one's behavior, basic healthy eating, and portion size activities may need to be a prerequisite before more sophisticated carbohydrate-counting activities can be meaningfully initiated. Different strategies for increasing physical activity may also be required. Setting physical activity goals as steps per day, rather than time spent exercising, may be more beneficial for those with type 2 diabetes (27). This study suggests that groups separated by type of diabetes may help participants when setting targeted, specific goals.

Our data support separating diabetes self-management education classes by type of diabetes to allow maximum benefit from group classes. Controlled trials are needed to further study this issue prospectively in order to provide evidence for defining high-quality diabetes education.

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