

Use of Recommended Communication Techniques by Diabetes Educators

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ABSTRACT

Background: Diabetes educators are challenged to teach diabetes self-management to patients, ensuring comprehension. Effectiveness with patients may be dependent on the communication skills of the diabetes educator. **Objective:** This study sought to determine diabetes educators' use of and perceived effectiveness of recommended communication techniques with patients to teach diabetes self-management and to determine differences in communication by educator characteristics. **Methods:** In this cross-sectional study, a convenience sample of 522 diabetes educators, comprised mostly of nurses, dietitians, and pharmacists, completed the American Medical Association (AMA) Communication Techniques Survey at a national conference. The AMA survey assessed diabetes educators' self-reported use of and perceived effectiveness of 14 communication techniques. Internal consistency for items reporting frequency of communication techniques was $\alpha = 0.83$ and for items reporting perceived effectiveness was $\alpha = 0.87$. **Key Results:** Simple language, written patient education materials, and using Teach-Back were the most frequently reported techniques. Follow-up phone calls and drawing pictures were the least reported. Educators of Hispanic ethnicity used significantly more communication techniques than Caucasian respondents ($p < .05$). Educators with more than 16 years in practice and those who provided more than 16 hours of diabetes education per week used significantly more techniques than those with less experience ($p < .01$). Nurses used significantly more techniques than dietitians ($p < .01$) and those who had health literacy or communication as part of their schooling used more techniques than those who did not ($p < .05$). No significant difference on the routine use of communication techniques was found by education level or diabetes educator certification status. **Conclusions:** The findings provide a baseline assessment of diabetes educator communication practice. Inclusion of health literacy and communication in health professional school curricula appears to support competency, suggesting opportunities for inter-professional health literacy and communication education and research. [*Health Literacy Research and Practice*. 2017;1(4):e145-e152.]

Plain Language Summary: We did a survey asking diabetes educators how they communicate with their patients with diabetes. They mostly used simple language, gave out pamphlets, and used Teach-Back. They did not draw pictures to help explain things. Diabetes educators who were Hispanic, nurses, and had health literacy training in school used more communication techniques. Health literacy and communication should be included in training of health providers.

Diabetes educators are challenged to teach complex psychomotor and conceptual skills in ways that ensure patient comprehension of diabetes self-management. According to national literacy statistics, diabetes educators can expect that 1 in 3 patients has low health literacy, lacking the skills to obtain, understand, or use health information to make decisions about their diabetes (Parker & Ratzan, 2010). Pa-

tients with low health literacy have less diabetes knowledge, poorer diabetes self-care, and are at greater risk for diabetes complications (Al Sayah, Majumdar, Williams, Robertson, & Johnson, 2013).

Patients with low health literacy depend on diabetes educators for health information, but can experience difficulties with communication (Howe, Cipher, LeFlore, & Lipman,

2015). The Institute of Medicine describe the attributes of a health literate organization, including that health care providers use health literacy strategies during interpersonal communications with patients (Brach et al., 2012). In a recent systematic review of health literacy sensitive diabetes interventions, the use of at least one spoken communication strategy such as plain language, limiting teaching to 3 to 5 key points, or incorporating Teach-Back to ensure comprehension was associated with significant improvements in self-care and diabetes control (Kim & Lee, 2016). Health care providers, however, have not consistently adopted these techniques (Rozier, Horowitz, & Podschun, 2011). Diabetes educators' effectiveness may be a function of their communication skills to reduce the health literacy demand during patient interactions (Nouri & Rudd, 2015). Although communication practices of several health professional groups have been described and evaluated, the communication practices of diabetes educators have not been examined.

The purpose of this descriptive, correlational study was to examine diabetes educators' use and perceived effectiveness of recommended communication techniques with their patients with diabetes. The specific aims were to describe the routine use of communication techniques in this sample of diabetes educators and to determine differences by ethnicity/race, professional role, years in practice, hours per week in diabetes education, professional role, educational level, and certification status. The findings from this study provide a baseline assessment of diabetes educators' communication skills, informing future professional development to support the Healthy People 2020 (U.S. Department of Health

and Human Services, 2017) objectives to improve health care providers' communication skills.

METHODS

Sample and Setting

The sampling frame included 3,700 attendees at the 2016 American Association of Diabetes Educators (AADE2016) conference held in San Diego, CA. Diabetes educators who provided structured, organized delivery of diabetes education occurring in any practice setting were eligible to participate. A desired sample size of 506 was estimated from standardized tables for *t* test and analyses of variance (ANOVA) statistical tests (Hulley, Cummings, Browner, Grady, & Newman, 2013).

Measures

The American Medical Association (AMA) Communication Techniques Survey assessed participant's self-reported use of 14 communication techniques during the past week (1 = never to 5 = always) and the perceived effectiveness of each technique (yes/no effective) (Schwartzberg, Cowett, VanGeest, & Wolf, 2007). The AMA survey was developed from a literature review, a review by health literacy experts, and a pilot survey of physicians (Schwartzberg et al., 2007) and has been used to assess the communication skills of physicians, nurses, pharmacists, dental hygienists, and dentists (Horowitz, Clovis, Wang, & Kleinman, 2013; Koo, Horowitz, Radice, Wang, & Kleinman, 2016; Schwartzberg et al., 2007; Turner et al., 2009). Reliability in this sample of diabetes educators was in the good to high range for items assessing how often communication techniques were used

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($\alpha = 0.829$) and for items assessing perceived effectiveness ($\alpha = 0.876$).

Procedure

The study was approved by the University Institutional Review Board. Data collection was completed during 4 days of the AADE2016 conference. Participants were recruited, provided written consent, and completed a paper and pencil AMA survey at the Research Booth or in the Exhibit Hall. The survey took approximately 10 minutes to complete. All data were entered into Qualtrics and exported into a Statistical Package for the Social Sciences (SPSS) (Version 23) database.

Statistical Analyses

The outcome variable of routine use of communication techniques was defined by the count of participant responses of 4 and 5 on the Likert scale, indicating “almost always” and “always” using a technique during the past week. Descriptive analyses including frequencies and percentages were determined for the sample characteristics and the routine use of each communication technique. Bivariate analyses between educator characteristics (ethnicity/race, years in practice, hours per week in diabetes education, health literacy education, professional role, education level, and certification status,) and mean number of routinely used communication techniques was examined using *t* test or ANOVA. All data were analyzed using SPSS.23.

RESULTS

A convenience sample of 522 diabetes educators completed the AMA Communication Survey, representing a racially and ethnically diverse sample of mostly women with a mean age of 50.1 years (standard deviation [*SD*], 12.1 years). The majority were nurses followed by dietitians, most were certified diabetes educators with 0 to more than 16 years in diabetes practice, and many provided diabetes education more than 16 hours per week (Table 1).

Reported Use and Perceived Effectiveness of Communication Techniques

Using simple language (93%), handing out printed materials (81%), and using Teach-back (76%) were the most frequently reported communication techniques used with patients. Follow-up with office staff to review instructions (43%), follow-up phone calls to ensure comprehension (40%), and drawing pictures (33%) were the least frequently reported. Educators perceived using simple language (93%), Teach-Back (88%), and models (81%) as the most effective

techniques. Drawing pictures (71%), asking patients how they will follow instructions at home (66%), and having patients follow-up with office staff to review instructions (53%) were perceived as the least effective. Respondents' reported frequency lagged their perception of effectiveness for most communication techniques (Figure 1).

Ethnicity. A one-way ANOVA ($p = .05$) revealed a significant relationship between the ethnicity of diabetes educators and their self-reported routine use of communication techniques, $F(5, 445) = 2.81, p < .05, \eta^2P = .03$. Post-hoc comparisons using the Tukey Honest Significant Difference (Tukey HSD) test found that Hispanic diabetes educators ($M = 10.30, SD = 2.89$) reported using significantly more communication techniques routinely as compared to Caucasian diabetes educators ($M = 8.99, SD = 2.82$). There were no significant differences observed for African American ($M = 10.07, SD = 3.75$), Asian ($M = 9.36, SD = 2.84$), or Native American ($M = 8.64, SD = 3.07$) diabetes educators.

Years in practice. A one-way ANOVA ($p = .05$) revealed a significant relationship between the number of years in practice as a diabetes educator and their self-reported routine use of communication techniques, $F(3, 443) = 5.18, p < .01, \eta^2P = 0.03$. Post-hoc comparisons using the Tukey HSD test found that diabetes educators who had been practicing for more than 16 years ($M = 9.97, SD = 2.80$) reported using significantly more communication techniques routinely as compared to those with 5 or fewer years in practice ($M = 8.77, SD = 3.04$), between 6 and 10 years in practice ($M = 8.86, SD = 2.80$), and between 11 and 15 years in practice ($M = 8.89, SD = 2.93$). There were no significant differences observed between any of the other groups.

Hours per week in diabetes education. A one-way ANOVA ($p = .05$) revealed a significant relationship between the number of hours per week in diabetes education and diabetes educators' self-reported use of communication techniques, $F(3, 447) = 5.76, p < .01, \eta^2P = 0.03$. Post-hoc comparisons using the Tukey HSD test found that diabetes educators who spent more than 16 hours per week doing diabetes education ($M = 9.60, SD = 2.80$) reported using significantly more communication techniques routinely as compared to those spending 11 to 15 hours ($M = 9.28, SD = 2.74$), 6 to 10 hours ($M = 8.84, SD = 3.03$), and 0 to 5 hours ($M = 7.85, SD = 3.34$). There were no significant differences observed between any of the other groups.

Health literacy and communication education. An independent samples *t* test was run to examine the differences between diabetes educators who had health literacy or communication training as a part of their school curriculum and those who did not. Results showed a significant differ-

TABLE 1
Characteristics of Diabetes Educator Respondents^a

Variable	n (%)
Licensed professional	
Nurse (61% APN)	314 (60.2)
Dietician	148 (28.4)
Pharmacist	28 (5.4)
Other	32 (6.2)
Gender	
Female	496 (95.4)
Male	24 (4.6)
Race/ethnicity	
Caucasian	348 (66.5)
Hispanic	68 (13)
Asian	38 (7.3)
African American	36 (6.9)
Native American	11 (2.1)
Other	22 (4.2)
Education level	
Associate	64 (12.3)
Bachelor	215 (41.2)
Master	192 (36.8)
Doctorate	51 (9.8)
Certified diabetes educator	
Yes	369 (71)
No	151 (29)
Years in practice	
0-5 years	167 (32.2)
6-10 years	87 (16.8)
11-15 years	87 (16.8)
Over 16 years	177 (34.2)
Hours/week diabetes education	
0-5 hours	65 (12.5)
6-10 hours	88 (16.9)
11-15 hours	74 (14.2)
Over 16 hours	293 (56.3)
Health literacy as part of school curriculum	
Yes	221 (43.5)
No	287 (56.5)
Health literacy as continuing education course	
Yes	332 (63.4)
No	189 (36.1)

Note. APN = advanced practice nurse.
^aMean age 50.1 years (standard deviation 12.1).

ence on the mean number of communication techniques used routinely, $t(438) = -2.81, p < .01, d = -.27$. Those who had health literacy as a part of their school curriculum ($M = 9.63, SD = 2.90$) reported using a significantly higher number of communication techniques routinely as compared to those who did not ($M = 8.85, SD = 2.92$). Those who had attended continuing education on health literacy outside of school ($M = 9.40, SD = 2.81$) reported using a higher number of communication techniques routinely as compared to those who did not ($M = 8.91, SD = 3.15$) although this result was a marginally significant difference, $t(449) = -1.74, p = .08, d = -.17$. More nurses than dieticians reported having health literacy in their school curriculum (35.3% vs. 27.6%) and in continuing education programs (34.1% vs. 29.9%), although these differences were not significant.

Professional role. A one-way ANOVA ($p = .05$) was run to examine the relationship between professional license held by diabetes educators and their self-reported use of communication techniques. A significant effect was found on this measure, $F(4, 445) = 3.21, p < .05, \eta^2P = 0.03$. Post-hoc comparisons using the Tukey HSD test found that nurses ($M = 9.51, SD = 3.01$) reported using significantly more communication techniques routinely as compared to dieticians ($M = 8.54, SD = 2.70$). There were no significant differences observed for pharmacists ($M = 9.42, SD = 3.59$) or advanced practice nurses ($M = 9.30, SD = 2.72$).

No significant difference in the mean number of routinely used communication techniques was found by education level or diabetes educator certification status.

DISCUSSION

This study is one of the first to describe the use of recommended communication techniques by diabetes educators with their diabetes patients. Consistent with previous studies, most diabetes educators in this national sample reported using the basic techniques of simple language and handing out printed materials to patients, perceiving both as highly effective (Koo et al., 2016; Schwartzberg et al., 2007; Weatherspoon, Horowitz, Kleinman, & Wang, 2015). Of note, 76% of diabetes educators in this sample reported using the Teach-Back method to ensure comprehension with their patients compared to 30% to 50% of health care providers reporting use of Teach-Back in previous samples (McCarthy, Cameron, Courtney, & Vozenilek, 2012; Schwartzberg et al., 2007; Weatherspoon et al., 2015). Considered an advanced communication technique, the Teach-Back method is used to check for patient understanding, asking the patient to reiterate in his or her own words or demonstrate health instructions to

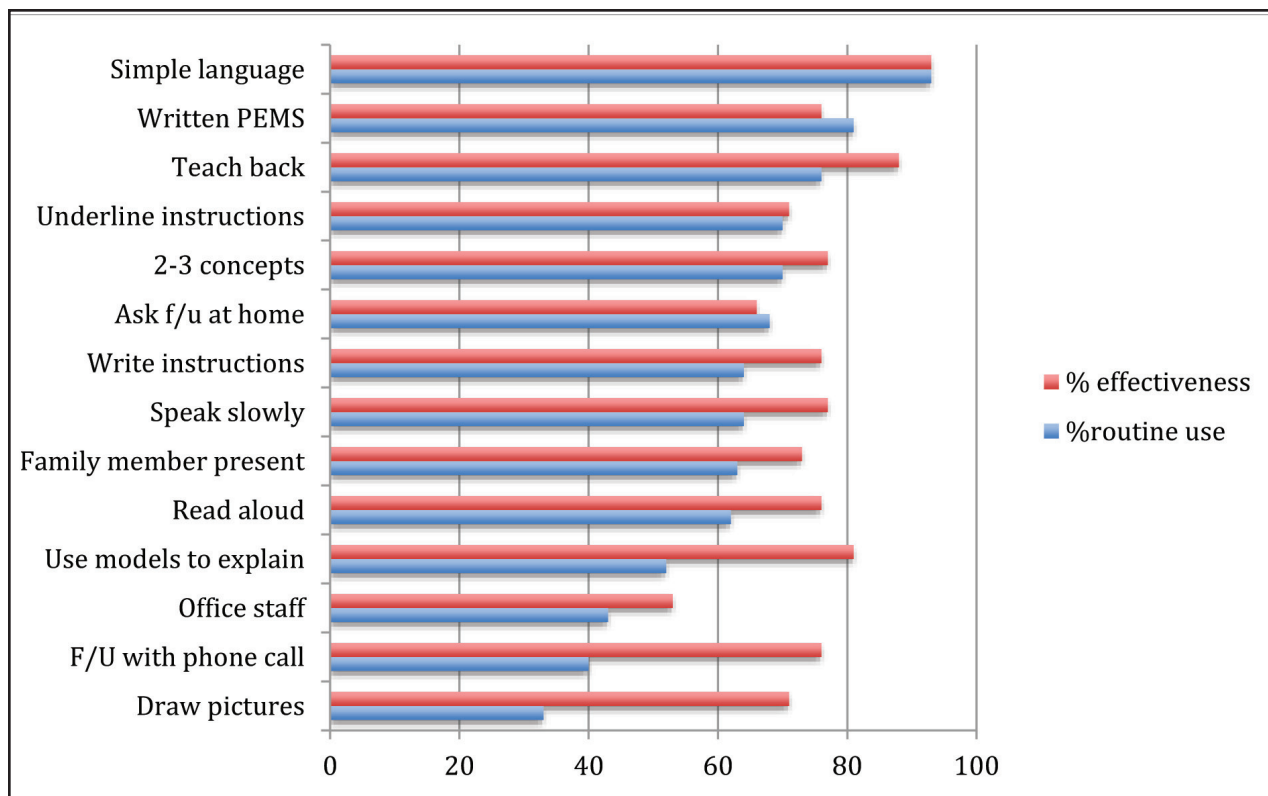


Figure 1. The percentage of diabetes educators who perceived effectiveness and use of communication techniques. f/u = follow at home; F/U = follow-up call; PEMS = printed materials.

confirm that the educator has communicated health information in an understandable way (Schwartzberg et al., 2007). Educators' high reported use of Teach-Back may indicate an increased awareness of health literacy issues, which may be a result of concerted efforts by health literacy advocates to incorporate Teach-Back into practice. With expected expertise in communication, counseling, and motivational interviewing, diabetes educators may be more skilled than other health care providers in using advanced techniques such as Teach-Back during diabetes self-management training.

However, our data suggest that diabetes educators may lack understanding between two closely related techniques: the use of Teach-Back and asking patients how they will follow instructions at home. Although 88% perceived Teach-Back as an effective technique, only 66% reported that asking how a patient would follow instructions at home would be effective. Without this connection, diabetes educators may have adopted the use of Teach-Back readily albeit superficially, failing to elicit the learning needs of patients to carry out health instructions at home. Add to this the low report of follow-up phone calls (75% believe effective, but

only 40% routinely use), these data suggest the necessity for health literacy education programs to emphasize patients' need for support and follow-up.

Most educators perceived all the communication techniques as effective. The biggest discrepancies between perceived effectiveness and routine use were in using models or pictures to explain health information and providing a follow-up phone call to ensure comprehension. More than 70% of educators endorsed these techniques as effective but less than 50% used them routinely. The discrepancy between perceived effectiveness and routine use of pictures and models was a surprising finding. Perhaps diabetes educators interpreted that this item asked about use of anatomic models rather than other models such as MyPlate and food replicas that would be more relevant to diabetes educator practice. Because the reasons for not using pictures or models was not asked, it is unknown whether the lack of availability or costs of these materials was a barrier for use in practice. Providing follow-up phone calls was also perceived as effective but was not done routinely. Here again, educators were not asked about barriers, but one could presume that time constraints may be an obstacle.

Several characteristics of diabetes educators influenced the routine use of recommended communication techniques. Diabetes educators who identified themselves as Hispanic reported a greater mean number of routinely used communication techniques than Caucasian respondents. This finding is similar to one study, reporting that non-Caucasian dental hygienists used a significantly greater number of communication techniques than Caucasian hygienists when providing education to prevent dental caries (Horowitz et al., 2013). All other studies using the AMA survey, however, have not found an association between ethnicity or race and the number of routinely used communication techniques (Koo et al., 2016; Maybury, Horowitz, Wang, & Kleinman, 2013; Weatherspoon et al., 2015). We can only speculate on the reasons that Hispanic diabetes educators reported more routine use of communication techniques. First, our sample of diabetes educators included a comparatively higher percentage of ethnic minority respondents compared to previous samples. Second, Hispanic educators may have honed their communication skills, being sensitive to misunderstandings in communication that may arise due to language and cultural differences of patients from different backgrounds. Finally, we did not query whether Hispanic educators spoke Spanish with their Spanish-speaking patients; therefore, we cannot evaluate whether language concordance improved educators' communication practice, an association that has been reported previously (Sudore et al., 2009). Because we did not collect sociodemographic characteristics of educators' patient populations, these assumptions are made with great caution.

Educators with more years of experience and educators who spent more hours per week in diabetes education practice reported using significantly more communication techniques routinely than their less experienced colleagues. In previous studies of nurse practitioners and physicians, no association was reported between years since graduation and use of communication techniques (Koo et al., 2016; Weatherspoon et al., 2015). Although different from previous findings, diabetes educators' main role is to teach diabetes skills and concepts to patients. Using continual feedback from patients of learning effectiveness, diabetes educators may intuitively fine-tune their communication skills over time.

Beyond clinical experience, however, our findings suggest that formal education in health literacy and communication techniques, but not general education level, develops clinician competency. Respondents who reported having health literacy or communication as part of their school curriculum used more communication techniques, corroborating positive associations between health literacy education and communication skills reported in earlier studies (Koo et al.,

2016; Weatherspoon et al., 2015). In the seminal report of "Health Literacy: A Prescription to End Confusion," the Institute of Medicine (US) Committee on Health Literacy (2004) recommended that health professional schools incorporate health literacy into curricula. Several reports indicate that health professional schools have begun incorporating health literacy content in courses (Coleman, 2011; Scott, 2016; Toronto & Weatherford, 2015), an effort that may be seeing real outcomes in practice. These findings are encouraging and support the continued need to advocate for the inclusion of health literacy and communication education in health professional curriculums.

Nurses in this sample reported a higher mean number of routinely used communication techniques than dietitians. Additionally, more nurses than dietitians reported having health literacy and communication in their school curriculum and in their continuing education programs. Perhaps these differences may be explained by the educational curricular standards for the different professions. In the national curriculum standards for nursing education, health literacy is included as a specific content item (Davis & Kimble, 2011). In response, schools of nursing have incorporated health literacy education in both didactic content and opportunities to practice skills using role play, case presentations, and standardized patients (Scott, 2016). In comparison, the Accreditation Standards for nutrition curricula do not mention health literacy specifically (Accreditation Council for Education in Nutrition and Dietetics, 2015). Instead they state communication competencies including the ability to identify and address barriers to communication, to communicate clearly and effectively, and to adapt a communication style to meet the needs of diverse people. Compared to nursing, less is known about the health literacy and communication skills of nutrition colleagues; health literacy education and research would benefit the dietetic profession (Carbone & Zoellner, 2012; Coleman, 2011). The national standards for diabetes education endorse a multidisciplinary effort to best meet the needs of patients with diabetes (Haas et al., 2012), suggesting an opportunity to develop inter-professional health literacy education programs for nursing and nutrition students.

LIMITATIONS

This study has several limitations. A convenience sample obtained at a national conference was subject to selection bias, assuming that respondents attending a diabetes conference may be more attuned to health literacy and communication issues than nonattenders. Addition-

ally, within the conference setting, diabetes educators who agreed to complete the survey may be more interested in the study topic than nonresponders. Collecting data at a diabetes educator conference, however, provided an efficient way to attain a sufficiently powered sample size.

The results of this study relied on diabetes educators' accurate self-report of communication techniques. Subject to recall and social desirability bias, educators may have overestimated their communication skills. Research substantiates this concern. For example, in a study comparing self-report and observed use of Teach-Back, 48% of resident physicians self-reported routine use of Teach-Back but only 22% of them were observed using Teach-Back in a simulated standardized patient encounter (Howard, Jacobson, & Kripalani, 2013). Future research with direct observation of diabetes educators' communication techniques during patient interactions may allow better evaluation of the quality of communication.

Although face validity was established during the development of the AMA Communication Techniques survey, reliability and validity of the AMA survey has not been previously reported. Internal consistency coefficients for both the frequency and effectiveness items were in an acceptable range for this sample of diabetes educators. Further psychometric testing of the AMA survey in other samples is needed to determine its usefulness in health literacy and communication research. Lastly, although the data suggest correlations among variables, this cannot be interpreted as cause and effect.

CONCLUSION

In conclusion, this study provides a baseline assessment of diabetes educator communication practice. Our findings suggest that health literacy and communication in health professional school curricula positively affects diabetes educators' communication practices, supporting efforts to develop standards for health literacy curricula and competencies (Coleman, Peterson-Perry, & Bumsted, 2016). In this study, Hispanic educators reported using more communication techniques than their Caucasian counterparts; future research examining the use of communication techniques by racial and ethnic minority health professionals are needed to further explore these findings. Our results indicate that health literacy advocates may have effectively brought Teach-Back into the consciousness of diabetes educators' practice; however, more research is needed to delve deeper. For example, research exploring if and how educators connect patient Teach-Back to communication related to how patients translate diabetes education into

self-care at home would advance our understanding of health literate sensitive strategies.

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