Self-Management Strategies in Emerging Adults With Type 1 Diabetes

Elora Majumder, BA, Fran R. Cogen, MD, CDE, & Maureen Monaghan, PhD

ABSTRACT

Introduction: We examined changes in self-management behaviors after high school graduation in a cohort of emerging adults with type 1 diabetes.

Methods: Sixty-four emerging adults reported on diabetes self-management behaviors at three time points over a 1-year period. Glycemic control and blood glucose monitoring frequency data were collected from the medical chart.

Results: Collaboration with parents decreased, diabetes problem-solving and communication increased, and glycemic control worsened during the first year after high school ($p < .05$). Problem solving appeared to be protective against worsening glycemic control; higher baseline diabetes problem solving significantly predicted better glycemic control at the 1-year follow-up.

Discussion: Emerging adults demonstrate increased independence in diabetes problem solving and communication with health care providers in the year after high school. Problem-solving skills may help emerging adults adapt type 1 diabetes self-care in response to unpredictable schedules after high-school, and promoting these skills may prevent deteriorations in glycemic control during this risky period. J Pediatr Health Care. (2017) *31*, 29-36.

KEY WORDS

Type 1 diabetes, adolescents, self-management, adherence, glycemic control, problem solving

Elora Majumder, Research Intern, Children's National Health System, Washington, DC, and Medical Student, Case Western Reserve University School of Medicine, Cleveland, OH.

Fran R. Cogen, Director of Diabetes Services and Professor of Pediatrics, Children's National Health System, Washington, DC, and George Washington University School of Medicine, Washington, DC.

Maureen Monaghan, Assistant Professor of Psychiatry and Behavioral Sciences, Center for Translational Science, Children's National Health System, Washington, DC, and George Washington University School of Medicine, Washington, DC.

Dr. Monaghan is currently funded by the National Institutes of Health (NIH K23DK099250). This publication was supported by awards UL1TR000075 and KL2TR000076 from the NIH National Center for Advancing Translational Sciences. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the National Center for Advancing Translational Sciences or the National Institutes of Health.

Conflicts of interest: None to report.

Correspondence: Maureen Monaghan, PhD, Center for Translational Science, Children's National Health System, 111 Michigan Ave NW, Washington, DC 20010; e-mail: MMonagha@childrensnational.org.

0891-5245/$36.00

Published online February 6, 2016.

http://dx.doi.org/10.1016/j.pedhc.2016.01.003

Type 1 diabetes is a common childhood chronic illness that affects more than 1 in every 500 children; more than 165,000 American youth younger than 20 years are living with diabetes (Pettitt et al., 2014). The treatment of type 1 diabetes involves rigorous self-control and management, including several daily insulin injections or use of an insulin pump, measurement of blood glucose (BG) levels four to six times per day, regulation of carbohydrate intake, routine physical activity, and the prevention of acute and long-term complications (American Diabetes Association, 2015; Chiang, Kirkman, Laffel, & Peters, 2014). This need for self-control and management requires youth to be highly self-motivated and increasingly independent in order to meet glycemic goals and maintain a healthy lifestyle.

Emerging adulthood marks a point of transition for patients with type 1 diabetes, with its own unique set

of challenges and consequences (Garvey, Markowitz, & Laffel, 2012). In this developmental period that spans from ages 18 to 25 years, youth are no longer dependent adolescents reliant solely on parents, but they are not yet ready to assume the full responsibilities of adulthood (Arnett, 2000). During this period, youth typically assume full responsibility for key tasks related to their diabetes management, including but not limited to BG monitoring, scheduling medical appointments, planning and preparing meals, and awareness of hemoglobin A1c (A1c) goals (Hanna et al., 2013; Schilling, Knafl, & Grey, 2006). Many emerging adults with type 1 diabetes also experience a decrease in parental monitoring and involvement in part because they move from home to attend college or enter the workforce after high school graduation (Peters, Laffel, & American Diabetes Association Transitions Working Group, 2011). Likely influenced by these simultaneous transitions, emerging adulthood is associated with worsening glycemic control, acute complications, and poor long-term health outcomes for youth with type 1 diabetes (Bryden, Dunger, Mayou, Peveler, & Neil, 2003; Bryden et al., 2001; Peters et al., 2011). Few emerging adults meet the American Diabetes Association recommendation for glycemic control for adults (A1c < 7.0%; American Diabetes Association, 2015). However, research has shown that adolescence and emerging adulthood are critical times to establish lifelong healthy habits and routines (Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008; Schulenberg, Sameroff, & Cicchetti, 2004). Therefore, identification and evaluation of salient self-management behaviors in emerging adults with type 1 diabetes are needed to better understand which skills are important during this transition to adulthood and which factors are protective against worsening health outcomes.

The Self-Management of Type 1 Diabetes in Adolescents scale (SMOD-A) is a self-report measure that was designed to broaden the scope of measurement of diabetes self-care skills and provide clinicians with a tool to evaluate and promote self-management in youth with type 1 diabetes (Schilling et al., 2009). The SMOD-A identifies five separate categories of self-management: Collaboration with Parents, Diabetes Care Activities, Diabetes Problem Solving, Diabetes Communication, and Goals. It is a reliable self-report measure with good content validity with experiential experts (adolescents with type 1 diabetes and their parents), as well as professorial experts (Schilling et al., 2007). Therefore, this questionnaire is a valid tool that can be used to gather information about self-management skills in emerging adults and may provide insight into various aspects of behavior that facilitate better glycemic control.

Previous studies using the SMOD-A have found that youth with a shorter duration of diabetes perform more diabetes care activities and report more communication regarding their diabetes than do youth with a longer disease duration (Chao, Whittemore, Minges, Murphy, & Grey, 2014). Diabetes self-management also mediates the relationships between depression and family functioning with glycemic control and quality of life (Whittemore et al., 2014). Furthermore, investigators of one cross-sectional study examined differences in SMOD-A scores between early, middle, and late adolescents/emerging adults, finding less collaboration with parents and more problem solving capabilities in emerging adults compared with younger adolescents (Keough, Sullivan-Bolyai, Crawford, Schilling, & Dixon, 2011).

Although research has used the SMOD-A to evaluate the adolescent population cross-sectionally, little is known about its benefit in a longitudinal framework and potential applications in an emerging adult sample undergoing significant transitions over a 1-year period. By consistently using the same cohort of emerging adults, the variability between youth surveyed at different ages will be diminished, allowing interpretation of trends over a 1-year time frame. The specific aim of this study was to examine differences in self-management behaviors during a 1-year period in a cohort of emerging adults with type 1 diabetes as they transitioned from senior year of high school into their first year of college or work after graduation. We hypothesized that the SMOD-A would capture increases in self-management behaviors evidenced over this time and that self-report on the SMOD-A would be associated with indicators of diabetes care, including A1c, BG monitoring frequency, and mean BG level.

METHODS

Data were drawn from a longitudinal study evaluating executive function, adherence, and parental involvement in emerging adults with type 1 diabetes. A sample of 79 emerging adults was recruited from a large pediatric diabetes clinic in the Mid-Atlantic region. Inclusion criteria were emerging adults diagnosed with type 1 diabetes for at least 6 months, currently in the second half of their senior year of high school, with no other major chronic illnesses or psychiatric disorders and no pervasive developmental disorders or cognitive limitations, and who were fluent in reading and writing English. Recruitment letters were sent to 207 emerging adult patients who potentially met recruitment criteria. Forty-eight patients could not be contacted by phone; an additional four patients canceled their clinic visit after the initial letter was sent and were not reached. Of the 155 patients contacted, 50 were not interested in participating and 17 were ineligible, resulting in 88 patients who expressed interest in participating. Of these, 9 did not complete consent and baseline questionnaires, resulting in a total of 79 participants who enrolled in the study and completed the baseline time point. Trained research personnel obtained informed consent from the parents and assent from the