Sex differences in depression symptoms and mental health service use in adolescents and young adults with type 1 diabetes

Elizabeth A. Mann MD[1], M. Tracy Bekx MD[1], Ellen L. Connor MD[1], Jolene Eggert Ciha, APSW[2], Whitney Beaton RN, CNS[2], Michael Lasarev MS[3] and Allison J. Pollock MD[1]

[1]University of Wisconsin - Madison School of Medicine and Public Health, Department of Pediatrics
[2]University of Wisconsin Hospitals and Clinics, Madison, WI
[3] University of Wisconsin – Madison Department of Biostatistics and Medical Informatics

UW Health
American Family Children's Hospital

Department of Pediatrics
UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

BACKGROUND

- Mental health services (MHS) can support self-management and quality of life in type 1 diabetes, particularly as many adolescents and young adults with diabetes also have mental health problems
- Screening patients for mental health problems in diabetes clinic can help identify those who may benefit from MHS
- **Study Aim:** Characterize associations between depression symptoms and use of MHS in adolescents and young adults with type 1 diabetes

METHODS

Participants

- Individuals with type 1 diabetes ≥ 12 years of age with ≥2 diabetes clinic visits during the 13-month study period

Data collection

- Automated data extraction from EHR

Variables

- Depression symptoms from PHQ-9 screen
  - None or mild: score ≤9
  - Moderate or severe: >9
- Self-reported MHS use from clinic intake question, "Since previous visit, have you seen a mental health professional?"
- Demographics
- Diabetes characteristics

Analyses

- Descriptive analyses of participant characteristics, depression symptoms, and MHS use
- Binomial logistic regression to summarize and explore relationships between demographics or diabetes characteristics and depression symptoms or MHS use

In adolescents and young adults with type 1 diabetes:

- Females and those who had used mental health services were more likely to report moderate or severe depression symptoms

- Mental health services were more likely to be used by females

CONCLUSIONS

- Depression symptoms were associated with MHS use, suggesting screening may help target services to those who need it
- Males and females had different patterns of depression symptoms and MHS use, which suggest these populations have heterogeneous mental health needs
- Future studies will further characterize these sex differences in depression symptoms and MHS use to identify key drives for MHS use and contribute to targeted screening and referral strategies

ADDITIONAL KEY INFORMATION

158 adolescents and young adults completed 402 PHQ-9 screens over 13 months

- 1 in 4 reported moderate or severe depression symptoms at least once (n=38, 24.7%)
- 1 in 4 reported using MHS at least once (n=40, 25.3%)

Table. Individual characteristics (n=158)

	% (n)
Demographics	
Female sex	50.6% (80)
Age in years, mean (sd) [range]	16.4 (2.4) [12-22]
Non-Hispanic white	94.9% (150)
Public health insurance	17.7% (28)
Lives outside Dane county	69.0% (109)
Lives in multiple households	19.6% (31)
Diabetes Characteristics	
Duration of T1D in years, mean (sd)	7.1 (4.5)
Mean (sd) HbA1c %	8.7 (1.7)
HbA1c <7.5%	24.1% (38)

RESULTS

Table. Odds of **moderate or severe depression symptoms (PHQ-9 score >9)** at least once during study period by individual characteristics

	Odds Ratio	p value
Female	**4.74**	**<0.001**
Age^		
Males		0.729
Females		0.067
Non-Hispanic white	0.99	0.993
Public health insurance	1.71	0.201
Lives outside Dane county	0.15	0.725
Lives in multiple households	1.71	0.211
Duration of diabetes in years^		0.334
HbA1c <7.5%	0.67	0.406
Use of mental health services	**6.70**	**<0.001**

Depression symptoms and use of MHS was more common in females

Table. Odds of **using MHS** at least once during study period by individual characteristics

	Odds Ratio	p value
Female	**2.07**	**0.033**
Age^		
Males		**0.018**
Females		0.150
Non-Hispanic white	1.20	0.801
Public health insurance	1.09	0.830
Lives outside Dane county	0.82	0.543
Lives in multiple households	1.03	0.944
Duration of diabetes in years		0.157
HbA1c <7.5%	0.97	0.931

Age associated with using MHS for males, but not for females

^ odds evaluated with linear and non-linear components

PHQ-9 score averaged 4.2 points higher in those who used MHS at least once (95% CI: 2.5-5.9)