DIABETES AND EATING DISORDERS

-prevalence, psychological correlates, and metabolic control

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HELSE SØR-ØST

Agenda

- Background type 1 diabetes (T1D) and eating disorders (ED)
- Diabetes psychology
- Research at Oslo University Hospital
  - Adolescents
  - Adults
- Treatment of T1D and ED at Oslo University Hospital
- Conclusions

Acknowledgements

- Professor Øyvind Rø (MD, PhD)
- Dr. Torild Skrivarhaug (MD, PhD)
- Professor Knut Dahl-Jørgensen (MD, PhD)

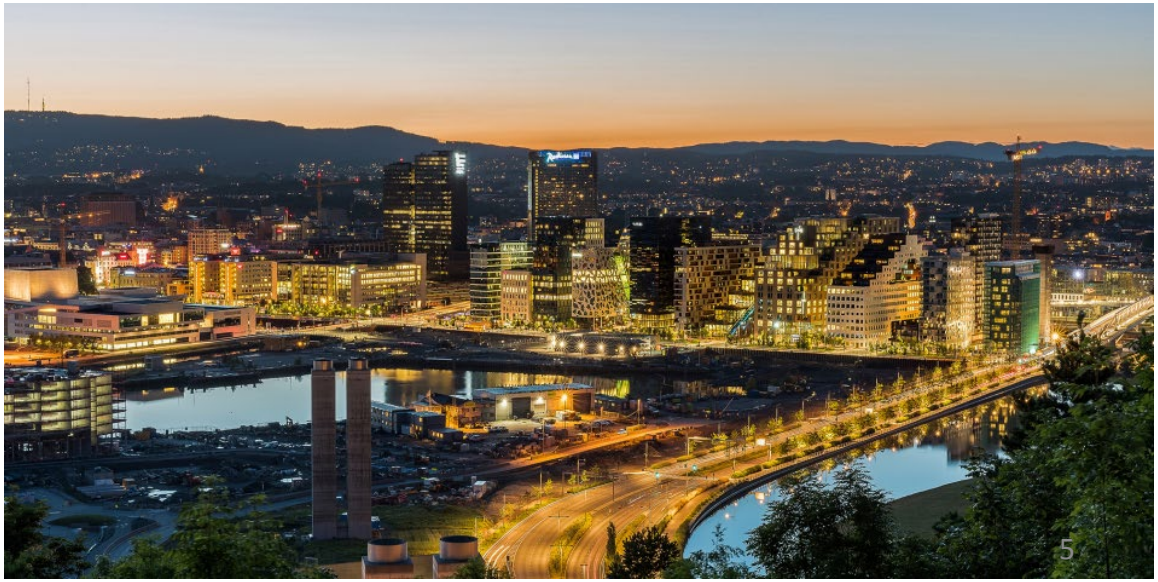
Conflict of interest

We declare no conflict of interest

Norway

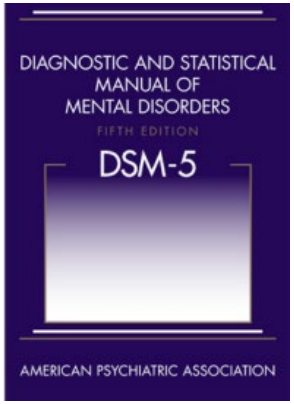
5.2 million inhabitants

Capital: Oslo



Eating Disorders (ED)

- DSM-5 (1)
  i. Anorexia Nervosa
  ii. Bulimia Nervosa
  iii. Binge Eating Disorder
  iv. Other Specified Feeding and Eating Disorder (OSFED)
- Disturbed Eating Behavior



1- American Psychiatric Association (2013)

Anorexia Nervosa (AN)

- Restrictive food intake
- Low body weight
- Intense fear of weight gain or becoming fat
- Compulsive exercise
- Distorted body image
- Over evaluation of weight and shape
- Two sub types
  i. Restrictive
  ii. Binge/purge
- Lifetime prevalence 0.8%

1- American Psychiatric Association (2013); 2- Stice et al (2013)

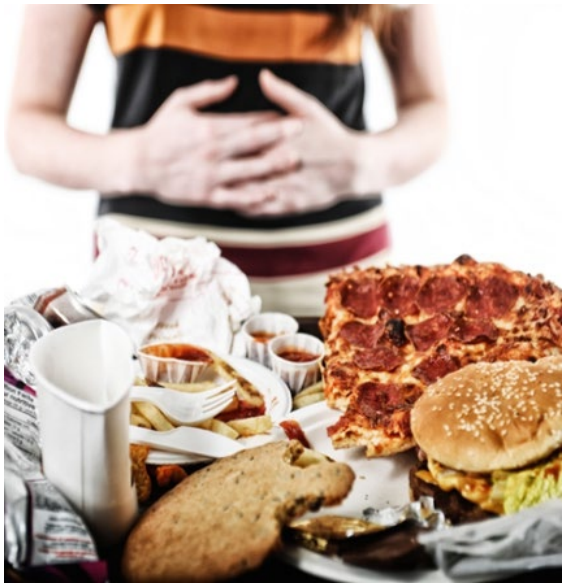
Bulimia Nervosa (BN)

- Recurrent episodes of binge eating (loss of control), with subsequent compensatory behavior
- Normal body weight for age and gender
- Over evaluation of weight and shape
- Distorted body image
- Lifetime prevalence 2.6%

1- American Psychiatric Association (2013); 2- Stice et al (2013)

Binge Eating Disorder (BED)

- Recurrent episodes of binge eating (loss of control), without subsequent compensatory behaviors
- Overweight and obesity
- Lifetime prevalence 3%



1- American Psychiatric Association (2013); 2- Stice et al (2013)

Subthreshold ED

- OSFED
- Disturbed Eating Behavior (DEB)
- Chaotic eating pattern
- Restrictive eating
- Binge eating
- Compensatory behaviors
  - T1D-specific: insulin omission
- Do not qualify for at formal ED diagnosis
- Significant somatic and psychological consequences
- Prevalence 10-25%

1- Olmsted et al (2008); 2- Johnson-Sabine et al (1988); 3- Morande et al (1999)

Type 1 Diabetes (T1D)

- Chronic condition characterized by lack of insulin
- Elevated blood glucose levels
- Onset usually during child- and adolescence
- Uncertain etiology
- Norway and other Nordic countries have the highest incidence worldwide [1]
- Treatment: insulin
- Treatment aims
  - HbA1c
    - Children and adolescents < 7.5% [2]
    - Adults: <7% [3,4]
  - Good quality of life

1- Norwegian Diabetes Childhood Registry; 2- ISPAD guidelines T1D; 3- ADA; 4- The Norwegian directory of Health guidelines

T1D-specific risk factors

- Weight loss associated with T1D onset
- Weight gain T1D diagnosis and initiation of insulin treatment
- T1D in ages 7-18 years in girls (1)
- Appearance based low self esteem, depression, BMI (2)
- Girls with T1D on average 7 kg heavier (3)
- Focus on diet
- Insulin omission (30-40%) (4, 5, 6)

1- Takii et al. (2011); 2- Olmsted et al. (2008); 3- Engstrøm et al. (1999); 4- Peveler et al. (2005); 5- Goebel-Fabbri et al. (2011); 6- Wisting et al. (2013)

Prevalence

- Prevalence of ED/DEB in T1D varies between 10-60% across studies
- Meta-analyses report 2-3 fold prevalence of ED in T1D compared to healthy controls (1-3)
- Prevalence of DEB reported in up to 60% of young females with T1D (4)
- Prevalence in Norway unclear (5,6)

1- Nielsen (2002); 2- Mannucci et al. (2005); 3- Young et al. (2012); 4- Colton et al. (2015); 5- Robinson & Rosenvinge (1990); 6- Haug (2010)

T1D & ED

Bulimia Nervosa

Insulin omission

EDNOS / OSFED

DEB

No increased prevalence of AN in T1D (1-3)

1- Nielsen (2002); 2- Mannucci et al. (2005); 3- Young et al. (2012)

Poor prognosis

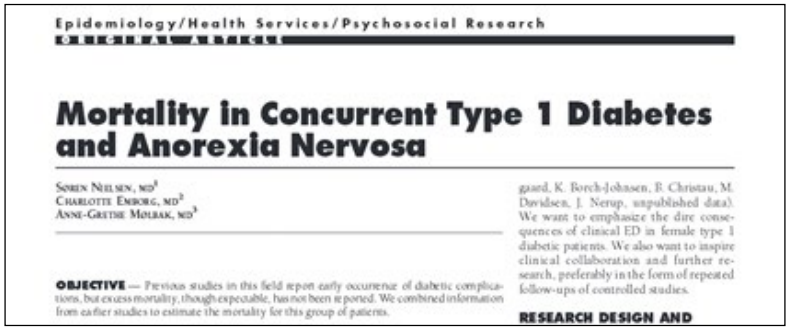
- DEB persistent and worsen over time in T1D (1)
- Poor metabolic control (1)
- Advanced onset of serious somatic complications (2-4)
- Increased mortality rates (2-4)

1- Colton et al. (2015); 2- Young et al. (2012); 3- Mannucci et al. (2005); Nielsen (2002)

Mortality

Mortality 10-year follow-up (1)

- AN: 6.5%
- T1D: 2.5%
- AN + T1D: 34.6%


Epidemiology/Health Services/Psychosocial Research

Mortality in Concurrent Type 1 Diabetes and Anorexia Nervosa

Sören Nielsen, MD[1]
Charlotte Emborg, MD[2]
Anne-Grethe Molbak, MD[3]

OBJECTIVE — Previous studies in this field report early occurrence of diabetic complications, but excess mortality, though expectable, has not been reported. We combined information from earlier studies to estimate the mortality for this group of patients.

gaard, K. Borch-Johnsen, B. Christau, M. Davidsen, J. Nerup, unpublished data). We want to emphasize the dire consequences of clinical ED in female type 1 diabetic patients. We also want to inspire clinical collaboration and further research, preferably in the form of repeated follow-ups of controlled studies.

RESEARCH DESIGN AND

Insulin omission

30% increased mortality associated with insulin omission at 11-year follow-up (2)


Clinical Care/Education/Nutrition/Psychosocial Research

Insulin Restriction and Associated Morbidity and Mortality in Women with Type 1 Diabetes

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Janna Fiokan, MA[1]
Debra L. Franko, PhD[3]
Kimberly Pearson, MD[2,4]
Barbara J. Anderson, PhD[3]
Katie Weinger, EdD[1,2]

OBJECTIVE — To determine whether insulin restriction increases morbidity and mortality in women with type 1 diabetes.

tients with type 1 diabetes to restrict necessary insulin doses (i.e., take less insulin than prescribed).

Improvements in diabetes treatment are associated with declining rates in diabetes complications and mortality; however, patients with type 1 diabetes

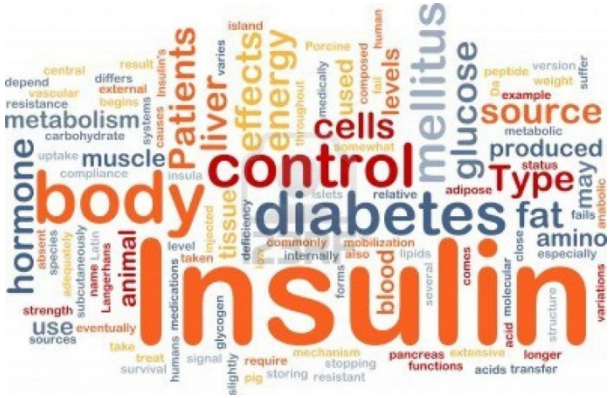
1- Nielsen et al. (2002); 2- Goebel-Fabbri et al. (2011)

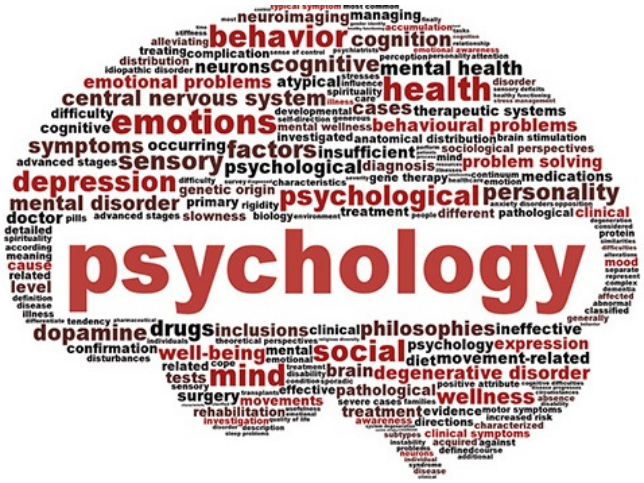
Prevention and treatment

?

T1D psychology

- What should treatment be focused on?
- T1D treatment is largely focused on somatic aspects
- Body and mind by many viewed as two separate things
- Health psychology





T1D psychology

- Psychological aspects of T1D
- «Psychopathology» versus «normal psychology»

↓

Depression

Anxiety

Eating Disorders

↓

Coping

Illness perceptions

Insulin beliefs

Adolescents

PhD study funded by the Research Council of Norway

Collaboration with the Norwegian Childhood Diabetes Registry

The Research Council of Norway

The Norwegian Childhood Diabetes Registry

- Quality register including all 27 pediatric outpatient clinics in Norway
- Annual somatic assessment
- > 98% of the Norwegian T1D population < 18 years
- A psychological questionnaire package added in 2011, including a new diabetes-specific screening measure for disturbed eating
  - The Diabetes Eating Problem Survey – Revised (DEPS-R)

ADOLESCENTS

Psychometric Properties, Norms, and Factor Structure of the Diabetes Eating Problem Survey–Revised in a Large Sample of Children and Adolescents With Type 1 Diabetes

LINE WISTING, MA[1]
DAG HELGE FRØISLAND, MD[2,3]
TORILD SKRIVARHAUG, PHD[4]
KNUT DAHL-JØRGENSEN, MD, PHD[5,6]
ØYVIND RØ, PHD[1]

OBJECTIVE—The purpose of this study was to examine the psychometric properties of the Diabetes Eating Problem Survey–Revised (DEPS-R) in a large sample of young patients with type 1 diabetes, to establish norms, and to validate it against the Eating Attitudes Test–12 (EAT-12).

RESEARCH DESIGN AND METHODS—A total of 770 children and adolescents aged 11–19 years with type 1 diabetes completed the DEPS-R and the EAT-12. In addition, age- and sex-standardized BMI and HbA_{1c} data were obtained from the Norwegian Childhood Diabetes Registry. In addition to tests of validity, principal axis factoring was conducted to investigate the factor structure of the 16-item DEPS-R.

RESULTS—The DEPS-R demonstrated satisfactory Cronbach α (0.89) and was significantly correlated with the EAT-12 (0.65; $P < 0.01$), indicating convergent validity. The mean (SD) DEPS-R scores were 11.0 (10.7) for the total sample and 7.7 (7.4) and 14.2 (2.4) for males and females, respectively.

CONCLUSIONS—This study replicates and extends previous research demonstrating the psychometric properties of the abbreviated 16-item DEPS-R. Findings support the utility of this important screening tool to identify disturbed eating in young patients with type 1 diabetes.

Diabetes Care 36:2198–2202, 2013

strategy uniquely available to patients with type 1 diabetes, and this behavior is reported in as many as 37% of adolescents and young adult females with type 1 diabetes (4,8,9). Insulin restriction is associated with physical complications, and in previous research self-reported insulin restriction at baseline led to a threefold increased risk of mortality during 11 years of follow-up (9).

Given the deleterious effects of comorbidity, routine screening is important to identify DEB in individuals with type 1 diabetes to facilitate early intervention and prevent the development of serious physical complications. In a clinical setting, with limited time and resources, it is important to have access to a valid and sensitive screening instrument that requires few resources and is easy to administer and interpret. There are several screening instruments for the detection of eating pathology, such as the Eating

DIABETES EATING PROBLEM SURVEY – REVISED (DEPS-R)

Living with diabetes can sometimes be difficult, particularly regarding eating and diabetes management. Listed below are a variety of attitudes and behaviors regarding diabetes management. For each statement, choose the ONE answer that indicates how often this is true for you during the PAST MONTH.

	Never	Rarely	Some-times	Often	Usually	Always
1. Losing weight is an important goal to me.	⓪	①	②	③	④	⑤
2. I skip meals and/or snacks.	⓪	①	②	③	④	⑤
3. Other people have told me that my eating is out of control.	⓪	①	②	③	④	⑤
4. After I overeat, I don't take enough insulin to cover the food.	⓪	①	②	③	④	⑤
5. I eat more when I am alone than when I am with others.	⓪	①	②	③	④	⑤
6. I feel that it's difficult to lose weight and control my diabetes at the same time.	⓪	①	②	③	④	⑤
7. I avoid checking my blood sugar when I feel like it is out of range.	⓪	①	②	③	④	⑤
8. I make myself vomit.	⓪	①	②	③	④	⑤
9. I try to keep my blood sugar high so that I will lose weight.	⓪	①	②	③	④	⑤
10. I try to eat to the point of spilling ketones in my urine.	⓪	①	②	③	④	⑤
11. I feel fat when I take all of my insulin.	⓪	①	②	③	④	⑤
12. Other people tell me to take better care of my diabetes.	⓪	①	②	③	④	⑤
13. After I overeat, I skip my next insulin dose.	⓪	①	②	③	④	⑤
14. I feel that my eating is out of control.	⓪	①	②	③	④	⑤
15. I alternate between eating very little and eating huge amounts.	⓪	①	②	③	④	⑤
16. I would rather be thin than have good control of my diabetes.	⓪	①	②	③	④	⑤

Methods

- 770 adolescent males and females with T1D aged 11-19 years (380 males, 390 females)
- T1D clinical diabetes data from the Norwegian Childhood Diabetes Registry

Results

The psychometric properties of the DEPS-R are good, and the questionnaire can be recommended for clinical use

ADOLESCENTS

Disturbed Eating Behavior and Omission of Insulin in Adolescents Receiving Intensified Insulin Treatment

A nationwide population-based study

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DAG HELGE FRØISLAND, MD[2,4]
TORILD SKRIVARHAUG, MD, PHD[3,7]
KNUT DAHL-JØRGENSEN, MD, PHD[5,6,7]
ØYVIND RØ, MD, PHD[1]

OBJECTIVE—To establish the prevalence of disturbed eating behavior (DEB) and insulin omission among adolescents with type 1 diabetes using intensive insulin treatment in a nationwide population-based study.

RESEARCH DESIGN AND METHODS—The Diabetes Eating Problem Survey–Revised (DEPS-R) is a diabetes-specific screening tool for DEB. Clinical data and HbA_{1c} were obtained from the Norwegian Childhood Diabetes Registry.

RESULTS—A total of 770 children and adolescents 11–19 years of age with type 1 diabetes completed the DEPS-R. A total of 27.7% of the females and 8.6% of the males scored above the DEPS-R cutoff. Participants scoring above the cutoff had significantly higher HbA_{1c} (9.2% [77 mmol/mol]; SD, 1.6) than participants scoring below the cutoff (8.4% [68 mmol/mol]; SD, 1.3; $P < 0.001$). The prevalence of DEB increased significantly with age and weight, from 7.2% in the underweight group to 32.7% in the obese group, and from 8.1% in the youngest age-group (11–13 years) to 38.1% in the oldest age-group (17–19 years). A total of 31.6% of the participants reported insulin restriction and 6.9% reported insulin omission after overeating. Patients reporting insulin restriction had significantly higher HbA_{1c} (9.0% [75 mmol/mol]; SD, 1.7) than nonrestrictors (8.3% [67 mmol/mol]; SD, 1.2; $P < 0.001$).

Although different terminology complicates the interpretation of prevalence rates across studies, the findings are sufficiently robust to indicate that there is a higher prevalence of DEB in type 1 diabetes compared with healthy controls. A meta-analysis reported a three-fold increase of bulimia nervosa, a two-fold increase of eating disorders not otherwise specified, and a two-fold increase of subclinical eating disorders in patients with type 1 diabetes compared with controls (2). No elevated rates of anorexia nervosa were found. DEBs have been found to be associated with higher weight and older adolescence (5,6). Although most studies focus on females, some research suggests that males with type 1 diabetes also may have an increased risk of development of DEB (7). However, the bulk of research investigating the prevalence of DEB in

Research Question

i. What is the prevalence of DEB and frequency of insulin omission in adolescents with T1D in a nationwide, population-based sample?

ii. Are DEB and insulin omission associated with poorer metabolic control?

Results (prevalence DEB)

	All	Males	Females	Chi-test
Whole sample	18.3%	8.6%	27.7%	< .001
11-13 years	7.2%	7.1%	9.4%	ns
14-16 years	19.2%	7.3%	32.8%	< .001
17-19 years	32.7	14.5	49.4%	< .001
Underweight	8.1%	6.3%	9.1%	ns
Normal weight	14.9%	6.9%	23.3%	< .001
Overweight	28.9%	15.2%	42.0%	< .01
Obese	38.1%	14.3%	53.3%	ns

Results (prevalence DEB)

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Whole sample	18.3%	8.6%	27.7%	< .001
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Results (prevalence DEB)

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Underweight	8.1%	6.3%	9.1%	ns
Normal weight	14.9%	6.9%	23.3%	< .001
Overweight	28.9%	15.2%	42.0%	< .01
Obese	38.1%	14.3%	53.3%	ns

Results (insulin omission)

31.6% of participants reduce their insulin dose, sometimes or more often after over eating

6.9% of participants omit their insulin dose, sometimes or more often after over eating

Results (metabolic control)

	DEB +	DEB -	Sig.	Insulin omission +	Insulin omission -	Sig.
HbA1c	9.2 (1.6)	8.4 (1.3)	< .001	9.0 (1.7)	8.3 (1.2)	< .001

Note: mean (SD)

Results (metabolic control)

	DEB +	DEB -	Sig.	Insulin omission +	Insulin omission -	Sig.
HbA1c	9.2 (1.6)	8.4 (1.3)	< .001	9.0 (1.7)	8.3 (1.2)	< .001

Note: mean (SD)

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Research Article

Metabolic Control and Illness Perceptions in Adolescents with Type 1 Diabetes

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Research Question

Is ED psychopathology associated with psychological correlates and metabolic control?

Methods

A subset of 105 adolescent males and females with T1D aged 12-20 years (44 males, 61 females)

Measures

Domain	Measure	Short
Disturbed eating	Child Eating Disorder Examination	ChEDE
Coping strategies	Adolescent Coping Orientation for Adolescents	ACOPE
Illness perceptions	Brief Illness Perception Questionnaire	BIPQ
Insulin beliefs	Beliefs about Medicines Questionnaire	BMQ
Metabolic control	Hemoglobin A1c	HbA1c
T1D clinical variables	Clinical assessment	

Results (associations HbA1c)

	All	Males	Females
BIPQ consequences	**.277****	ns	**.355****
BIPQ personal control	**.365****	ns	**.484****
BIPQ coherence	.155	ns	**.328****
BIPQ concern	***.198****	ns	**.340****
Eating restraint	***.265*****	ns	**.287***
COPE emotion-focused	*-.163*	ns	**-.260***

BIPQ = Brief Illness Perception Questionnaire; ChEDE = Child Eating Disorder Examination; ACOPE = Adolescent Coping Orientation for Problem Experiences

Results (associations HbA1c)

	All	Males	Females
BIPQ consequences	**.277****	ns	**.355****
BIPQ personal ctr	**.365****	ns	**.484****
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BIPQ = Brief Illness Perception Questionnaire; ChEDE = Child Eating Disorder Examination; ACOPE = Adolescent Coping Orientation for Problem Experiences

Results (associations HbA1c)

- Included the significant correlations among the girls in a regression analysis
- The whole model explained 30% of the variance in HbA1c
- Personal control (illness perception) alone explained 23% of the variance in HbA1c

Adults

Postdoctoral study funded by the Norwegian South-East Regional Health Authority

Methods

- Norwegian Diabetes Centre
- N= 282 males and females with T1D (60% females)
- Age 18-79 years
- Self-report questionnaire package

Participants

	All N= 282	**Males** N= 112 (40%)	**Females** N= 170 (60%)	**Sig.level**	**Effect size**
Age	42.11 (15.19)	44.57 (15.92)	40.47 (14.49)	.05	.27
Age T1D onset	15.14 (11.18)	15.43 (10.92)	14.94 (11.38)	ns	---
HbA1c %	7.75 (.91)	7.61 (.89)	7.85 (.91)	ns	---
T1D duration (yrs)	27.09 (14.44)	29.14 (14.82)	25.71 (14.05)	ns	---
BMI	25.96 (4.13)	26.47 (3.82)	25.63 (4.30)	ns	---
Insulin admin	56.3% pen 43.3% pump	60.9% pen 38.0% pump	53.4% pen 46.6% pump		

Data: mean (standard deviation). Significance level (p< .001, .01 og .05). Effect size (Cohen's d) calculated for significant differences; ns= non-sign.

Measures

Domain	Measure	Short
Disturbed eating	Diabetes Eating Problem Survey – Revised	**DEPS-R**
	Eating Disorder Examination Questionnaire	**EDE-Q**
Anxiety and depression	The Hospital Anxiety and Depression Scale	**HAD**
Coping strategies	Coping Orientation for Problem Experience	**COPE**
Illness perceptions	Brief Illness Perception Questionnaire	**BIPQ**
Insulin beliefs	Beliefs about Medicines Questionnaire	**BMQ**
T1D clinical variables	Norwegian Quality Register for adults	**NOKLUS**

ADULTS

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Journal of Eating Disorders

RESEARCH ARTICLE Open Access

Prevalence of disturbed eating behavior and associated symptoms of anxiety and depression among adult males and females with type 1 diabetes

Line Wisting[1,2*], Torild Skrivarhaug[2,3,4,5], Knut Dahl-Jørgensen[2,3,4,5] and Øyvind Rø[1,6]

Abstract

Background: The increased prevalence of disturbed eating behaviors (DEB), depression, and anxiety in type 1 diabetes (T1D) is generally well established; however the majority of existing research to date has focused on female adolescents and young adults. Data on males and older females is scarce. The aim of this study was to assess prevalence of DEB and symptoms of depression and anxiety among adult males and females with type 1 diabetes, to investigate differences between individuals scoring below and above the cut-off on psychopathology, and to examine patterns of eating disorder psychopathology by age and weight.

Methods: A total of 282 adults with type 1 diabetes aged 18–79 years participated in the study. Measures included the Diabetes Eating Problem Survey – Revised (DEPS-R), the Hospital Anxiety and Depression Scale (HADS), and clinical data from the Norwegian Quality Improvement of Laboratory Examinations (NOKLUS) system.

Results: A total of 20.3% of the whole sample (13.3% among males and 24.8% among females) scored above the DEPS-R cut-off score for DEB. As for depression and anxiety, the prevalence in the whole sample was 6.2% and 19.0%, respectively. The prevalence was generally higher in females than males across all psychopathology measures. HbA1c was significantly associated with the DEPS-R total score ($p < .01$) among females, but not with depression and anxiety

Research Questions

i. What is the prevalence of DEB and symptoms of depression and anxiety among adult males and females with T1D?

ii. Does level of ED psychopathology vary with age and weight?

Results (prevalence)

DEPS-R cut-off score
20: DEB, at risk of ED

HAD cut-off score
8: mild-moderate symptoms
11: moderate-severe (case)

Results (prevalence)

DEPS-R cut-off score
20: DEB, at risk of ED

HAD cut-off score
8: mild-moderate symptoms
11: moderate-severe (case)

Cut-off score 11

T1D Norway	All	Males	Females	Sig.level
DEB	20.3%	13.3%	24.8%	.05
Depression	6.2%	3.6%	7.8%	ns
Anxiety	19%	8.1%	26.4%	.001

Results (prevalence)

DEPS-R cut-off score
20: DEB, at risk of ED

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8: mild-moderate symptoms
11: moderate-severe (case)

Cut-off score 11

T1D Norway	All	Males	Females	Sig.level
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Results (prevalence)

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Cut-off score 11

T1D Norway	All	Males	Females	Sig.level
DEB	20.3%	13.3%	24.8%	.05
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Results (prevalence)

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8: mild-moderate symptoms
11: moderate-severe (case)

Cut-off score 11

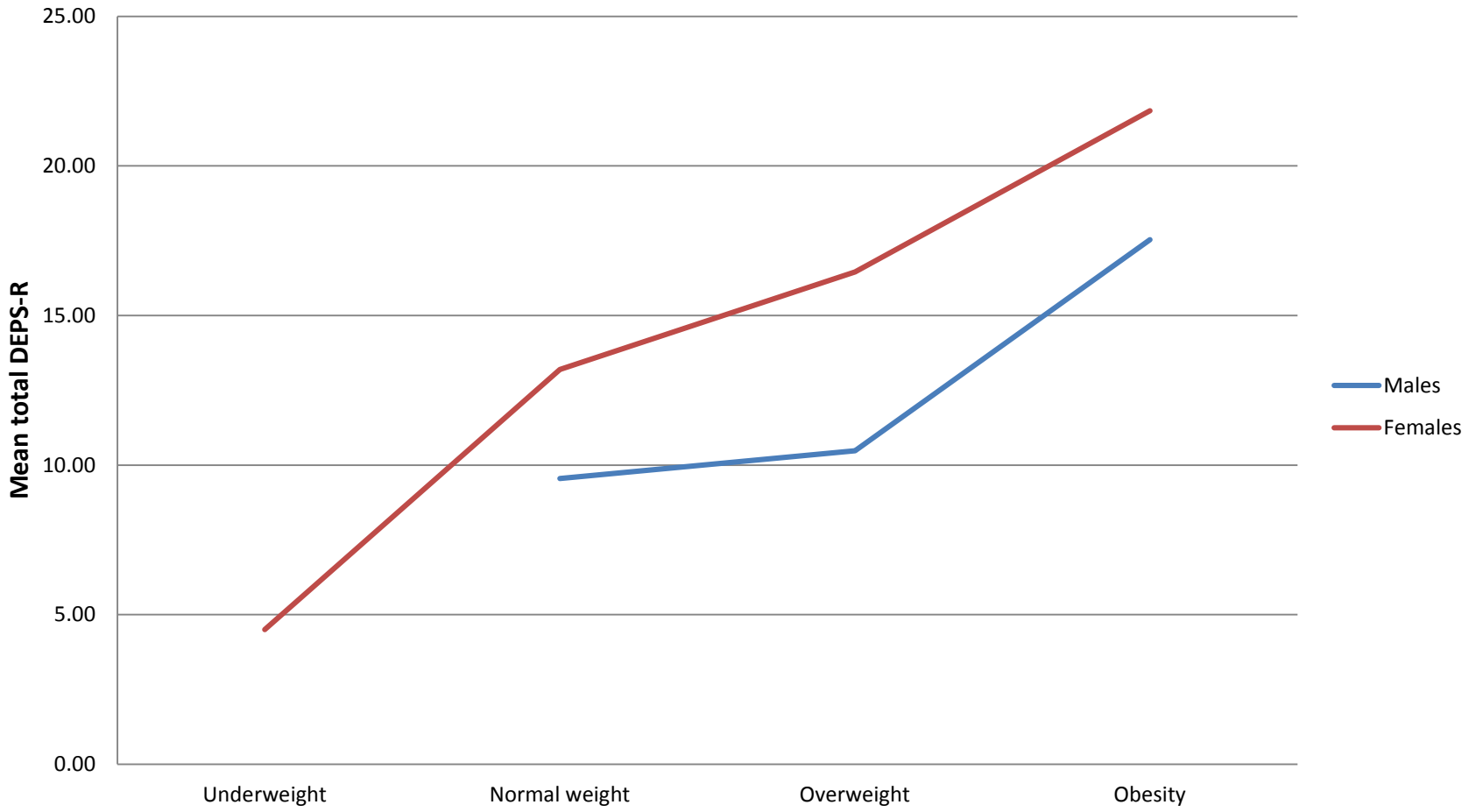
T1D Norway	All	Males	Females	Sig.level
DEB	20.3%	13.3%	24.8%	.05
Depression	6.2%	3.6%	7.8%	ns
Anxiety	19%	8.1%	26.4%	.001

Cut-off score 8

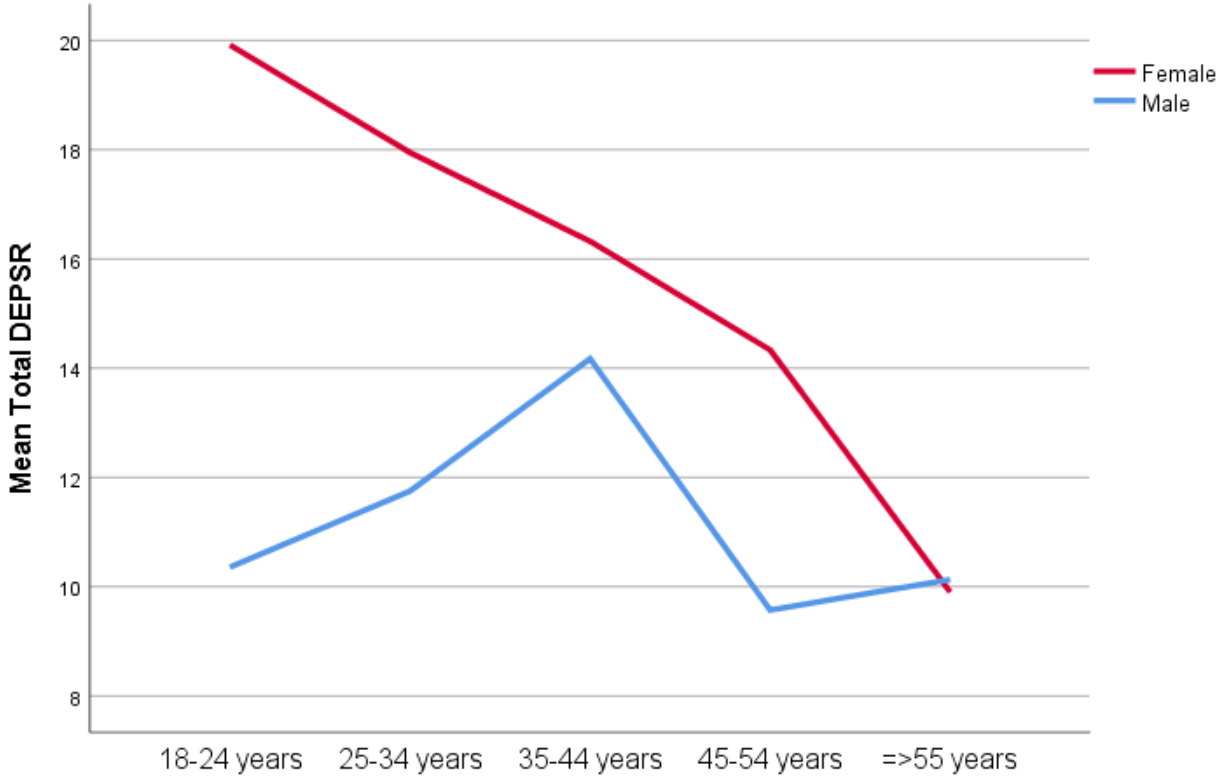
Norwegian T1D	Norwegian comparison [1]
HAD-D: 13.8%	HAD-D: 4.9%
HAD-A: 35.4%	HAD-A: 9.6%

1- The Norwegian HUNT 2 study,- Bjelland et al. (2009)

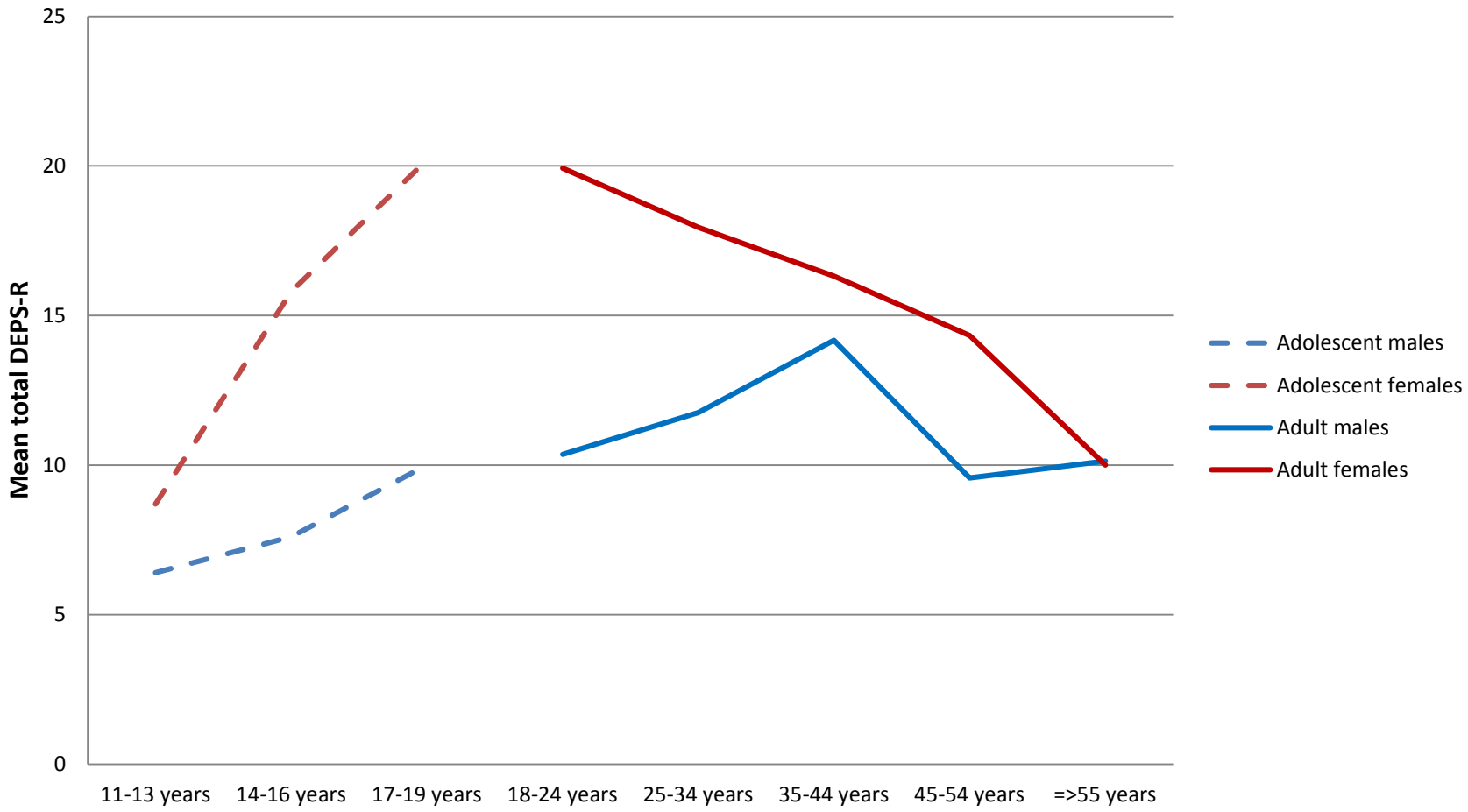
Results (weight trends)



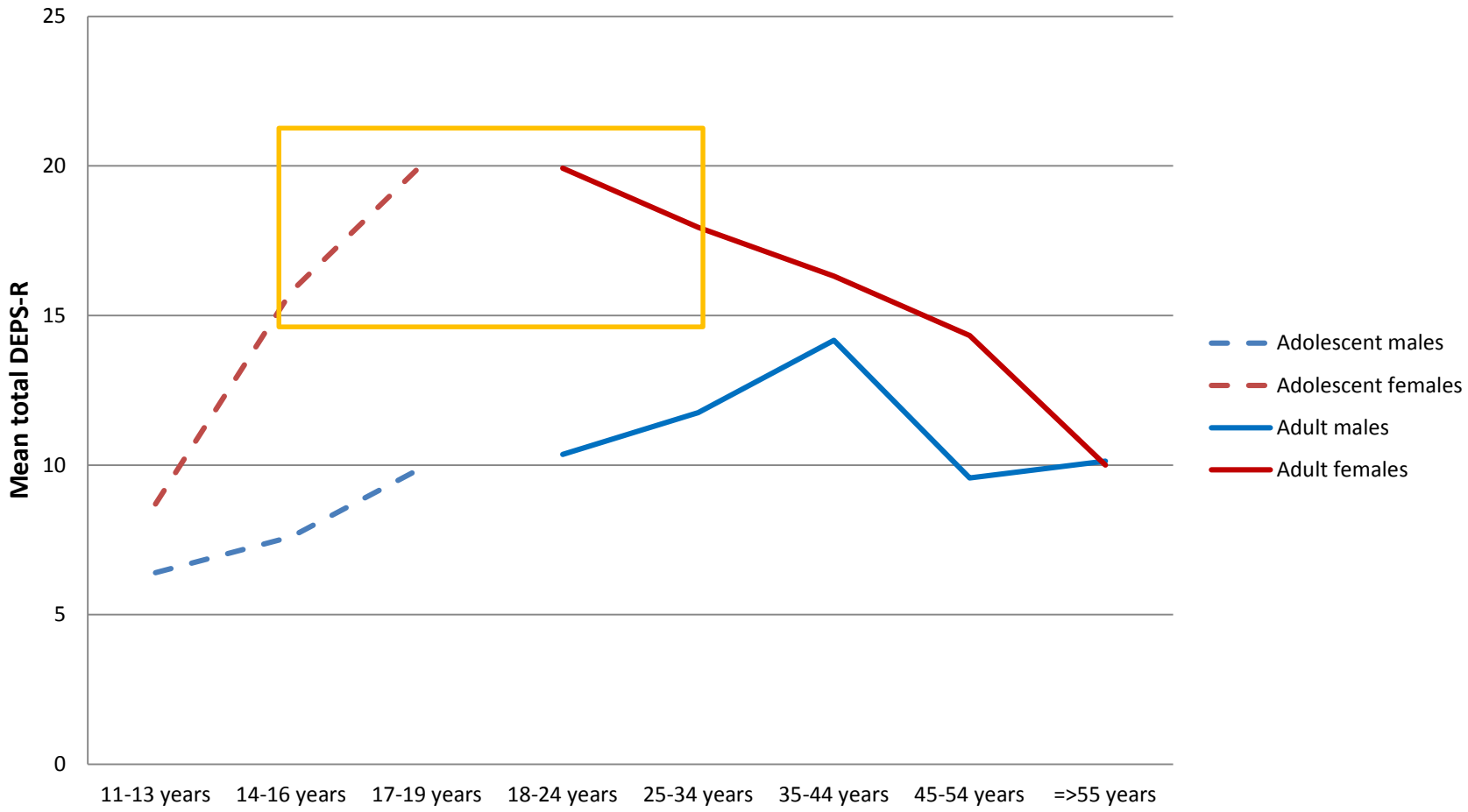
Results (age trends)



Results (age trends)



Results (age trends)



Research Question

i. What are the psychometric properties of the Norwegian version of the DEPS-R among adult males and females with T1D?

Results

DIABETES EATING PROBLEM SURVEY – REVISED (DEPS-R)

Living with diabetes can sometimes be difficult, particularly regarding eating and diabetes management. Listed below are a variety of attitudes and behaviors regarding diabetes management. For each statement, choose the ONE answer that indicates how often this is true for you during the PAST MONTH.

	Never	Rarely	Some-times	Often	Usually	Always
1. Losing weight is an important goal to me.	⓪	①	②	③	④	⑤
2. I skip meals and/or snacks.	⓪	①	②	③	④	⑤
3. Other people have told me that my eating is out of control.	⓪	①	②	③	④	⑤
4. After I overeat, I don't take enough insulin to cover the food.	⓪	①	②	③	④	⑤
5. I eat more when I am alone than v		①	②	③	④	⑤
6. I feel that it's difficult to lose weigh the same time.		①	②	③	④	⑤
7. I avoid checking my blood sugar v		①	②	③	④	⑤
8. I make myself vomit.	_	①	②	③	④	⑤
9. I try to keep my blood sugar high so that I will lose weight.	⓪	①	②	③	④	⑤
10. I try to eat to the point of spilling ketones in my urine.	⓪	①	②	③	④	⑤
11. I feel fat when I take all of my insulin.	⓪	①	②	③	④	⑤
12. Other people tell me to take better care of my diabetes.	⓪	①	②	③	④	⑤
13. After I overeat, I skip my next insulin dose.	⓪	①	②	③	④	⑤
14. I feel that my eating is out of control.	⓪	①	②	③	④	⑤
15. I alternate between eating very little and eating huge amounts.	⓪	①	②	③	④	⑤
16. I would rather be thin than have good control of my diabetes.	⓪	①	②	③	④	⑤

APPROVED

Research Question

i. Are psychological aspects associated with HbA1c and ED psychopathology?

ii. Are there any gender differences in these associations?

Results (association with HbA1c)

Regression analysis females

- BIPQ personal control
- COPE emotional support

Explained **23.2%** of the variance

Regression analysis males

- BIPQ personal control

Explained **13.9%** of the variance

Results (association with ED psychopathology)

Regression analysis females

- BIPQ personal control
- Age
- BMI
- Anxiety

Explained 50.8% of the variance

Regression analysis males

- BIPQ personal control
- BMI
- Anxiety

Explained 47.4% of the variance

Illness Perceptions

Personal control

How much control do you feel you have over your illness?

0	1	2	3	4	5	6	7	8	9	10
absolutely no control										extreme amount of control

Discussion

Strengths

- Large, representative adolescent sample
- Including a wide age range
- Both genders included

Limitations

- Modest adult sample size from one clinic only = questionnable generalizability
- Self-report measures
- Causality

Summary of our research

- DEB is common in T1D, especially among young females
- Poorer metabolic control
- Psychological aspects are associated with ED psychopathology and HbA1c
  - Illness perceptions
    - Personal control

Oslo University Hospital

Oslo University Hospital

Regional Department for ED

- Tertiary service in the Norwegian Health Region South-East (includes half of Norway)
- Three inpatient units
  i. Child- and adolescent unit (long term)
  ii. Adult unit (long term)
  iii. Short term unit > 16 years (4-6 weeks)
- One outpatient unit (all ages)
- Competence unit including a research team

T1D and ED at our unit

- All units admit patients with T1D and ED
- Multidisciplinary team
- Daily contact with a nurse and weekly contact with psychiatrist
- Psychoeducation about T1D and insulin
- Flexibility in terms of meal plan in case of hypoglycemia (low blood glucose which requires immediate extra food intake)
- Not a separate meal plan for patients with T1D, but this is an ongoing discussion

Challenges during treatment

- Fear of weight gain
- Reluctancy to administer insulin when blood glucose levels are high (hyperglycemia)
- Self-induced vomiting
- Hiding hypoglycemia from staff to avoid having to eat/drink
- Creates anxiety among staff
- Temporary control of T1D regulation by clinicians?

Clinical challenges in general

- Identification
- Special treatment services do not achieve «volume competence»
- No evidence-based agreed-upon treatment approach
- Individuals in need of help «fall between two chairs»

CLIN CARE/EDUCATION/NUTRITION/PSYCHOSOCIAL

Eating Disorders in Girls and Women With Type 1 Diabetes: A Longitudinal Study of Prevalence, Onset, Remission, and Recurrence

Patricia A. Colton,[1,2] Marion P. Olmsted,[1,2] Denis Daneman,[3,4] Jamie C. Farquhar,[1] Harmonie Wong,[1] Stephanie Muskat,[1] and Gary M. Rodin[1,2]

Diabetes Care 2015;38:1212–1217 | DOI: 10.2337/dc14-2646

OBJECTIVE

Girls and women with type 1 diabetes are at increased risk for developing eating disorders (EDs), and these disorders are associated with serious diabetes-related medical complications. This study describes the longitudinal course of disturbed eating behavior (DEB) and EDs in a cohort with type 1 diabetes.

Colton et al. (2015)

- 14-year follow-up study of young girls with T1D (N=126) [1]
- 7 assessment points
- Eating Disorder Examination (EDE)
- Mean age
  - Baseline: 11.8 years [2]
  - Follow-up: 23.7 years
- HbA1c
  - Baseline: 8.3%
  - Follow-up: 8.5%

1- Colton et al. (2015); 2) Colton et al. (2008)

Colton et al. (2015)

Prevalence DEB

- Baseline: 14% [2]
- Follow-up: 59% [1]

Prevalence ED

- Baseline: 0
- Follow-up: 32.4%

Frequency of insulin omission for weight control

- Baseline: 1%
- Follow-up: 26.8%

Mean age onset

- DEB: 18.3 years
- ED: 22.6 years

1- Colton et al. (2015); 2) Colton et al. (2008)

Colton et al. (2015)

CONCLUSIONS

In this longitudinal study, EDs were common and persistent, and new onset of ED was documented well into adulthood. Further research regarding prevention and treatment for this vulnerable group is urgently needed.

1- Colton et al. (2015)

To end on a positive note…

Thank you

- Diabulimia helpline (Erin Akers)
- Oslo University Hospital
  - The Regional Department for Eating Disorders
  - The Norwegian Childhood Diabetes Registry
- Norwegian Diabetes Centre
- Participants and participating clinicians
- Co-authors
- Funding agencies
  - Research Council of Norway
  - Norwegian Health Region South-East

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