

Postprint Version	1.0
Journal website	<a href="http://onlinelibrary.wiley.com/doi/10.1002/erv.2185/abstract">http://onlinelibrary.wiley.com/doi/10.1002/erv.2185/abstract</a>
Pubmed link	<a href="http://www.ncbi.nlm.nih.gov/pubmed/22678930">http://www.ncbi.nlm.nih.gov/pubmed/22678930</a>
DOI	10.1002/erv.2185

This is a NIVEL certified Post Print, more info at <http://www.nivel.eu>

## Eating Disorders in the General Practice: A Case–Control Study on the Utilization of Primary Care

GABRIËLLE E. VAN SON<sup>1,\*</sup>, HANS W. HOEK<sup>2,3,6</sup>, DAPHNE VAN HOEKEN<sup>2</sup>, FRANÇOIS G. SCHELLEVIS<sup>4,5</sup>, ERIC F. VAN FURTH<sup>1</sup>

<sup>1</sup>Center for Eating Disorders Ursula, Leidschendam, The Netherlands

<sup>2</sup>Parnassia Bavo Psychiatric Institute, The Hague, The Netherlands

<sup>3</sup>Groningen University Medical Center, Department of Psychiatry, Groningen, The Netherlands

<sup>4</sup>NIVEL, The Netherlands Institute for Health Services Research, Utrecht, The Netherlands

<sup>5</sup>VU University Medical Center, Department of General Practice/EMGO Institute, Amsterdam, The Netherlands

<sup>6</sup>Columbia University, Department of Epidemiology, New York, NY, USA

### ABSTRACT

**Objective:** To investigate primary care utilization between patients with an eating disorder (ED) and other patient groups, and between the ED subgroups anorexia nervosa (AN) and bulimia nervosa (BN).

**Method:** The present study was an observational case–control study. In total, 167 patients with ED were matched with two control groups (with and without mental disorders). General practitioners (GPs) kept electronic records and provided all patient contacts, prescriptions and referrals with a diagnostic code.

**Results:** Although patients with BN have the highest number of face-to-face contacts compared with all other groups, these patients less often seek help for eating problems compared with patients with AN, even when the ED diagnosis is known to the GP. Overall, patients with mental disorders showed a comparable rate of GP care, which was elevated compared with patients without mental disorders.

**Discussion:** Patients with BN might need more active encouragement by the GP to talk about their eating problems because there are indications that point at an unmet need for GP care.

### INTRODUCTION

Patients with eating disorders (ED) often suffer from medical complications of which many are specific to the diagnostic subgroups anorexia nervosa (AN) and bulimia nervosa (BN) (Sharp & Freeman, 1993; Wolfe, Metzger, Levine, & Jimerson, 2001; Mitchell & Crow, 2006).

Preceding the diagnosis of an ED, patients demonstrated increased utilization of primary health care (Ogg, Millar, Pusztai, & Thom, 1997; Striegel-Moore et al., 2008); however, there is little knowledge about the utilization of primary care *after* the diagnosis is made (Simon, Schmidt, & Pilling, 2005). Two US studies on health-care utilization of patients with an ED made use of claim data from health insurance companies (Striegel-Moore et al., 2008; Mitchell et al., 2009). These data were limited to selected areas and to health plan members. Another study investigated the health-care utilization in primary care using only lifetime eating disordered behaviours (Sansone, Wiederman, & Sansone, 1997), and as with the claim data studies, it was not possible to disentangle health care provided for the ED and for comorbid health problems.

The present study was embedded in a nationwide study on primary care. It was intended to add information on the actual use of care provided by the general practitioner (GP) by patients diagnosed with an ED and to investigate if these patients showed different care consumption patterns compared with other (mental) disorders. Because utilization of care was linked to a diagnosis made by the GP, it was possible to disentangle if the care was provided for the ED or for other problems. The research questions were as follows: (i) What GP care is utilized by patients with an ED, for which problems and how often? (ii) Are there differences in the utilization of GP care between patients with an ED and patients with and without other mental disorders and between the ED subgroups (AN versus BN)?

## METHODS

This study was an observational case-control study with an ED group and two matched control groups (a group with anxiety/depression (A/D) and a non-mental disorder group), matched on practice, age and gender. The study was embedded in the second Dutch National Survey of General Practice (DNSGP-2). Data were derived from electronic medical records of all patients listed in a selected sample of 96 general practices over one calendar year (2001). In total, the practices served a total of  $n = 375\,899$  patients and comprised a representative sample of the Dutch population on age and gender, socio-economic status and ethnic origin. Data about every contact with a patient were recorded in the practice computer. With the use of the International Classification of Primary Care (ICPC-1) (Lamberts & Wood, 1987), the GP interpreted the complaint/reason for contact and provided a diagnostic code for all contacts, prescriptions and referrals. The medication prescribed was coded according to the Anatomical Therapeutic Chemical classification. The privacy regulation of the study was approved by the Dutch Data Protection Authority.

### Diagnostic procedure

The ICPC-1 code for ED is T06, with a further division into AN (T06.1) and BN (T06.2). GPs were found to be accurate in distinguishing between AN and BN presentations of patients (Allen, Fursland, Watson, & Byrne, 2011). We sent a questionnaire to those GPs who had not recorded the extension code and received 84 questionnaires of the 104 (81%) that were sent off. Of the former, 72 were useful for further refinement of the diagnosis.

In addition, we systematically screened all cases with a T06 code for diagnostic criteria of ED in the free text fields of the medical record in which the GP makes

notes about the patient's complaint and/or the diagnosis. So, in addition to the GP's initial diagnostic code, two sources of data were available for confirmation and further refinement of the ED diagnosis by the research team.

A patient was diagnosed with an eating disorder 'not otherwise specified' (EDNOS) if the patient had ED symptoms but did not meet the criteria for AN or BN, or if the classification code for an ED was given, but no additional information was available to further differentiate the diagnosis. In total, 167 cases were classified as AN ( $n = 90$ ), BN ( $n = 44$ ) and EDNOS ( $n = 33$ ).

### **Matching procedure**

The group of patients with an ED will be referred to as the 'ED group'. To increase statistical power, we matched each patient of the ED group with two patients who had at least one of the following ICPC-1 contact codes in their medical record: P76, 'Depression'; P03, 'Depressive feeling'; P74, 'Anxiety disorder'; P01, 'Anxious, nervous feeling' to ensure enough statistical power to detect differences. This group will be referred to as the A/D control group, it should be kept in mind that this group includes a broad spectrum of symptoms on the one hand and disorders on the other end. A second control group consisted of individuals who had no diagnosis in the ICPC-1 chapters P, 'mental problems', or Z, 'social problems': the non-mental control group. We matched one patient of the non-mental group with each ED patient. Both control groups were matched on being listed in the same practice, age group and gender.

We checked the matching by comparing the age and gender of the main groups and found no statistically significant differences. The mean age of the ED group was  $27.7 \pm 11$  years.

### **Statistical analysis**

This study made use of three primary outcome variables (frequency of contacts, referrals and drug prescriptions). For each variable, we studied the differences between the main groups (ED, A/D, and non-mental) and the differences within the ED group (AN and BN). All primary outcome variables were studied with one-way analyses of variance with post hoc Tukey's honestly significant difference (HSD) tests to determine which means differed (between the main groups) and *t*-tests (between the ED subgroups). With Pearson Chi-square tests, we searched for differences in the ICPC diagnoses recorded with contacts, referrals and prescriptions between AN and BN.

## **RESULTS**

### **Contacts**

Over the course of the study year, the GPs had contact with every patient from the ED and A/D control group and 75% of the non-mental control group. Overall, the main types of contact were face-to-face consultations during office hours (68%), telephone calls during office hours (17%), repeated drug prescriptions (6%) and home visits during office hours (1%). Overall, the groups with mental disorders (ED and A/D) did not differ in the mean number of annual contacts (ED group =  $9.6 \pm 7.6$ ; A/D control group =  $10.0 \pm 7.0$ ; non-mental control group =  $3.6 \pm 3.7$ ), and both

mental disorder groups had a higher number of contacts compared with the non-mental group  $F(2,611) = 56.17; p < .001$ . The groups with mental disorders had higher contact rates not only for the psychological but also for the somatic ICPC chapters ( $F(2,611) = 18.47; p < .001$ ).

The total number of contacts of the groups with mental disorders was higher because of a higher rate of face-to-face contacts ( $F(2,611) = 17.33; p < .001$ ) and telephone calls ( $F(2,611) = 6.40; p = .02$ ), both during office hours. The mean number of face-to-face contacts of the BN group was highest of all groups (BN =  $3.39 \pm 3.6$ ; AN =  $2.29 \pm 2.9$ ; A/D control group =  $2.72 \pm 3.6$ ; non-mental control group =  $0.99 \pm 1.7$ ). Compared with the AN group, the difference reached a trend significance ( $t = -1.91$ ; degrees of freedom ( $df$ ) = 132;  $p = .058$ ).

In the AN group, 50% of all face-to-face contacts were related to mental problems (either the ED itself or comorbid psychological problems, mainly depression). This is in contrast to BN and the A/D control group for which, respectively, 22% and 29% of the face-to-face contacts were directly related to the mental disorder.

Anorexia nervosa patients had significantly more diagnosis specific contacts, thus contacts specifically related to the ED, compared with BN patients (mean number of diagnosis-specific contacts AN =  $2.4 \pm 2.3$  versus BN =  $1.7 \pm 1.3$ ;  $t = 2.5$ ;  $df = 129$ ;  $p < .05$ ). Compared with the A/D control group, the number of diagnosis-specific contacts of the BN group was also lower (mean number of diagnosis-specific contacts A/D group =  $2.3 \pm 2.6$  versus BN =  $1.7 \pm 1.3$ ;  $t = -2.37$ ;  $df = 112$ ;  $p = .02$ ). For the BN group, the second reason for face-to-face contact with the GP (after the ED) is problems with the respiratory system. Although these problems are also an important contact reason for the two control groups, the number of visits for respiratory problems is notably higher in the BN group compared with all other groups (mean number of face-to-face contacts for respiratory problems per patient per year: AN =  $0.08 \pm 0.3$ ; BN =  $0.55 \pm 1.4$ ; A/D control group =  $0.21 \pm 0.7$ ; non-mental control group =  $0.11 \pm 0.5$ ;  $F(3,577) = 5.87$ ;  $p = .001$ ).

## Referrals

The mean number of referrals of the mental disorder groups did not differ ( $F(2,412) = 1.38$ ;  $p = .253$ ) and was higher compared with the non-mental control group (mean number of referrals: AN =  $1.1 \pm 1.7$ ; BN =  $0.75 \pm 0.97$ ; A/D control group =  $0.83 \pm 1.09$ ; non-mental control group =  $0.35 \pm 0.73$ ;  $F(2, 611) = 56.17$ ;  $p < .001$ ). For their ED, the ED group was mainly referred to mental health care (54%), this includes psychiatric facilities and psychologists, and secondly to dieticians (21%).

## Prescriptions

The mean number of drug prescriptions between the mental disorder groups did not differ and was higher compared with the non-mental control group (mean number of prescriptions: ED group =  $9.6 \pm 11.3$ ; A/D control group =  $10.3 \pm 8.8$ ; non-mental control group =  $3.4 \pm 4.4$ ;  $F(2,611) = 35.32$ ;  $p < .001$ ).

The medication most frequently prescribed for the groups with mental disorders were antidepressants. In a comparison between the prescription pattern of AN and BN patients, we found the following differences ( $X^2 = 67.35$ ;  $df = 5$ ;  $p < .001$ ): patients with AN tended to have more drugs prescribed for the digestive system (mainly for

gastric problems, nausea and hampered bowel movement). Patients with BN were more often prescribed with drugs for the respiratory system (cough, sinusitis, asthma and allergic rhinitis) and also for 'family planning and pregnancy' (predominantly oral contraceptives).

## DISCUSSION

This observational case-control study on care utilization of patients with ED used data from a Dutch nationwide study in primary care (DNSGP-2). Patients with an ED were compared with two matched control groups (A/D and a group without mental disorders). Although patients with ED suffer from a range of somatic problems because of their ED, the GP care utilization did not exceed that of the other psychiatric patients, and both groups with mental disorders had higher rates compared with patients without mental health problems. Postdiagnostic patients with BN had the highest face-to-face contact rates of all investigated groups, and at the same time, this group had the lowest rate of contacts specifically for their ED. This seems to point at an unmet need of care of postdiagnostic patients with BN.

In the present study, the contact rate of patients with BN was higher compared with patients with AN; these results concur with a US claim data study, which found higher overall costs for BN and EDNOS groups compared with the AN group (Mitchell et al., 2009). The present study extended this knowledge with the finding that patients with BN more often seek help for somatic problems and less often for mental health issues, and have less contacts directly related to the ED compared with patients with AN, even after the diagnosis of the ED is made by the GP.

That patients with BN tended to visit the GP more often for somatic complaints is an interesting finding because patients with AN are thought to be more prone to somatic complications because of their malnourished state. It is unknown to what extent the ED problems of BN patients remain undiscussed during a GP consult, but apparently, the presentation of the complaint was more often somatic and seemingly unrelated to the ED. This finding is of importance because BN is a serious disorder with a prolonged time to recover (Keski-Rahkonen et al., 2009). Possibly, the shame (Hepworth & Paxton, 2007) or discomfort (Mond, Owen, Rodgers, & Hay, 2007) patients with BN experience about their eating problems might inhibit them to discuss the problems with the GP, even after the diagnosis of an ED is already known to the GP. Another possibility is that the patients themselves do not make the connection that the somatic problems might be related to the ED. For the GP, it might be difficult to initiate discussing the eating problems because there are no clear visible physical starting points such as underweight. Furthermore, the GP might have feelings of inadequacy about his/her knowledge about ED (Reid, Williams, & Burr, 2010), which might result in a reluctance to ask about problems related to ED. At the same time, in a study on essential features of high quality service, the professional and personal qualities of health-care workers were rated as the two most important features according to those with ED (Nishizono-Maher et al., 2011). Patients with BN might need more encouragement from the GP to discuss their eating problems, and a GP should always be aware that the somatic problem can be related to the ED. Notably, patients with BN had the highest number of face-to-face consults specifically for respiratory problems compared with all other groups. This was also reflected in a higher number of prescribed drugs for the respiratory system. To what

extent the purging behaviours (frequent vomiting) or possible other behaviours (i.e. smoking) are related to the respiratory problems is unknown and should be investigated further.

Patients with AN were more often prescribed with drugs for the digestive system compared with patients diagnosed with BN who received more prescriptions for oral contraceptives and medication for the respiratory system. The less frequent use of oral contraceptives of AN patients may be explained by the diminished sexual interest patients with AN display (Wiederman, Pryor, & Morgan, 1996; Bulik et al., 2010).

#### **STRENGTHS AND LIMITATIONS OF THE STUDY**

Although this study made use of a representative sample of the Dutch population, the number of patients with an ED should be considered as a minimum. During a year, not all patients visit their GP, and a percentage of patients will not be diagnosed with an ED by the GP (Keski-Rahkonen et al., 2007; Mond et al., 2007; Keski-Rahkonen et al., 2009; Hart, Granillo, Jorm, & Paxton, 2011). We were able to check diagnoses made by the GPs; however, the study design did not allow screening for possible missed cases. To ensure validity and to refine the ED diagnoses, we used two additional resources of information. We sent questionnaires to the GPs and systematically screened for diagnostic criteria of ED in the free text fields of the electronic medical records. This procedure has increased the validity of the diagnoses of patients with ED.

The GPs assigned the ICPC-1 codes to every contact, referral and prescription on the basis of the complaint of the patient, the anamnesis and all further information available. Therefore, the ICPC-1 codes represent the clinical view of the GP, which may not necessarily be the same as the patients' view. By recruiting the control groups from the same practice as the patient group, we avoided inter GP bias because the same GP assigned the ICPC-1 codes for all three groups.

Strength of the study was that it was a nationwide study with a representative sample of Dutch patients in GP practices. We were also able to control the data with two matched groups (with and without mental disorders). Furthermore, comparisons between the different ED subtypes (AN and BN) were possible. A final strength of the study was that every contact, referral and prescription had been assigned an ICPC code. Therefore, we could disentangle for what problem which action was taken.

To conclude, although patients with BN had the highest number of face-to-face contacts, this group had the lowest number of contacts specifically for the ED compared with other all other patients with mental disorders. Possibly, the GP needs to encourage these patients more actively to discuss their eating problems. The notable higher contact and prescription rate for respiratory problems of patients with BN need to be investigated further. Overall, patients with mental disorders (ED and A/D) have higher rates of contact, referral and drug prescriptions compared with control patients without mental disorders.

#### **ACKNOWLEDGEMENTS**

The authors wish to acknowledge the efforts of all of the GPs who participated in the DNSGP-2 study. Also, Jan Gravestijn is acknowledged for his work on extracting and preparing the data for this study from the DNSGP-2 database.

## REFERENCES

- Allen, K. L., Fursland, A., Watson, H., & Byrne, S. M. (2011). Eating disorder diagnoses in general practice settings: Comparison with structured clinical interview and self-report questionnaires. *Journal of Mental Health*, 20, 270–280.
- Bulik, C. M., Hoffman, E. R., Von Holle, A., Torgersen, L., Stoltenberg, C., & Reichborn-Kjennerud, T. (2010). Unplanned pregnancy in women with anorexia nervosa. *Obstetrics and Gynecology*, 116, 1136–1140.
- Hart, L. M., Granillo, M. T., Jorm, A. F., & Paxton, S. J. (2011). Unmet need for treatment in the eating disorders: A systematic review of eating disorder specific treatment seeking among community cases. *Clinical Psychology Review*, 31, 727–735.
- Hepworth, N., & Paxton, S. (2007). Pathways to help-seeking in bulimia nervosa and binge eating problems: A concept mapping approach. *International Journal of Eating Disorders*, 40, 493–504.
- Keski-Rahkonen, A., Hoek, H. W., Linna, M. S., Raevuori, A., Sihvola, E., Bulik, C. M. et al. (2009). Incidence and outcomes of bulimia nervosa: A nationwide population-based study. *Psychological Medicine*, 39, 823–831.
- Keski-Rahkonen, A., Hoek, H. W., Susser, E. S., Linna, M. S., Sihvola, E., Raevuori, A. et al. (2007). Epidemiology and course of anorexia nervosa in the community. *The American Journal of Psychiatry*, 164, 1259–1265.
- Lamberts, H., & Wood, M. (1987). *International classification of primary care*. Oxford: Oxford University Press.
- Mitchell, J. E., & Crow, S. (2006). Medical complications of anorexia nervosa and bulimia nervosa. *Current Opinion in Psychiatry*, 19, 438–443.
- Mitchell, J. E., Myers, T., Crosby, R., O'Neill, G., Carlisle, J., & Gerlach, S. (2009). Health care utilization in patients with eating disorders. *International Journal of Eating Disorders*, 42, 571–574.
- Mond, J. M., Owen, C., Rodgers, B., & Hay, P. J. (2007). Health service utilization for eating disorders: Findings from a community-based study. *International Journal of Eating Disorders*, 40, 399–408.
- Nishizono-Maher, A., Escobar-Koch, T., Ringwood, S., Banker, J., van Furth, E., & Schmidt, U. (2011). What are the top five essential features of a high quality eating disorder service? A comparison of the views of US and UK eating disorder sufferers, carers and health professionals. *European Eating Disorders Review*, 19, 411–416.
- Ogg, E. C., Millar, H. R., Pusztai, E. E., & Thom, A. S. (1997). General practice consultation patterns preceding diagnosis of eating disorders. *International Journal of Eating Disorders*, 22, 89–93.
- Reid, M., Williams, S., & Burr, J. (2010). Perspectives on eating disorders and service provision: A qualitative study of healthcare professionals. *European Eating Disorders Review*, 18, 390–398.
- Sansone, R. A., Wiederman, M. W., & Sansone, L. A. (1997). Healthcare utilization among women with eating disordered behavior. *The American Journal of Managed Care*, 3, 1721–1723.
- Sharp, C. W., & Freeman, C. P. L. (1993). The medical complications of anorexia nervosa. *The British Journal of Psychiatry*, 162, 452–462.
- Simon, J., Schmidt, U., & Pilling, S. (2005). The health service use and cost of eating disorders. *Psychological Medicine*, 35, 1543–1551.
- Striegel-Moore, R. H., Debar, L., Wilson, G. T., Dickerson, J., Rosselli, F., Perrin, N. et al. (2008). Health services use in eating disorders. *Psychological Medicine*, 38, 1465–1474.
- Wiederman, M. W., Pryor, T., & Morgan, C. D. (1996). The sexual experience of women diagnosed with anorexia nervosa or bulimia nervosa. *International Journal of Eating Disorders*, 19, 109–118.

Son, G.E. van, Hoek, H.W., Hoeken, D. van, Schellevis, F.G., Furth, E.F. van. Eating disorders in the general practice: a case-control study on the utilization of primary care. *European Eating Disorders Review*: 2012, 20(5), 410-413



Wolfe, B. E., Metzger, E. D., Levine, J. M., & Jimerson, D. C. (2001). Laboratory screening for electrolyte abnormalities and anemia in bulimia nervosa: A controlled study. *International Journal of Eating Disorders*, 30, 288-293.