PROFSS: A screening tool for early identification of functional somatic symptoms

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ABSTRACT

Objective: To develop and validate a brief screening tool for predicting functional somatic symptoms (FSS) based on clinical and non-clinical information from the general practitioner referral letter, and to assess its inter-rater reliability.

Methods: The derivation sample consisted of 357 consecutive patients referred to an internal outpatient clinic by their general practitioner. Referral letters were scored for candidate predictors for the main outcome measure, which was a final diagnosis of FSS made by the internist. Logistic regression identified the following independent predictors: type of symptoms, somatic and psychiatric comorbidity, absence of abnormal physical findings by the general practitioner, previous specialist consultation, and the use of illness terminology. Temporal validation was performed in a cohort of 94 consecutive patients in whom predictors were scored by two independent raters.

Results: In both the derivation and validation sample, the discriminatory power of the model was good with areas under the receiver operating characteristic curves of 0.84 (95%confidence interval: 0.80–0.88) after bootstrapping and 0.82 (95%confidence interval: 0.73–0.91), respectively. Calibration of the models was excellent in both samples and the interobserver agreement in the validation sample was very good (intraclass coefficient: 0.82 (95%confidence interval: 0.75–0.88)). Based on this model, we constructed the brief screening tool PROFSS (Predicted Risk Of Functional Somatic Symptoms). PROFSS identified patient groups with risks of FSS ranging from 17% (95%CI: 10–26%) to 92% (95%CI:86–96%).

Conclusion: The presence of FSS can be predicted with the brief screening tool PROFSS, based on a limited set of items present in the general practitioner referral letter.

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Introduction

Functional somatic symptoms, i.e. symptoms not conclusively explained by organic pathology, are a common and burdensome problem in medical outpatient's clinics. The prevalence is estimated between 25% and 50% [1] and there is some evidence that this figure is rising [2].

Functional somatic symptoms are hazardous to patients, doctors and the health care system as a whole as they have shown to be associated with extensive but unproductive searches for a biomedical cause [3].

Nowadays specific integrated somatic and psychological treatment facilities are highly recommended for these patients [4,5]. It would be a major step forward if these facilities were offered during the first outpatient clinic contact as timely treatment could prevent symptom fixation, reduce the risk of iatrogenic physical and psychological harm, and reduce the high health care use and costs of this group of patients [6]. However, systematic methods to allocate patients to these specific facilities are lacking.

In the Netherlands, a referral letter from a general practitioner (GP) or medical specialist is required for access to a medical outpatient clinic. We analyzed data extracted from these referral letters for the development and validation of a prediction model to identify patients at the greatest risk of functional somatic symptoms [7]. The model was subsequently transformed into the brief screening tool PROFSS (Predicted Risk Of Functional Somatic Symptoms).

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[1] Designed the study.
[2] Collected the data.
[3] Performed the analyses.
[4] Wrote the first draft.
[5] Critically revised the manuscript.

Study population and methods

Study population

Fig. 1 describes the two samples in which this study was performed. For derivation of the model, we performed a prospective cohort study including all consecutive patients referred to the general internal outpatient clinic of the University Medical Centre Groningen by their GP between 21-12-2005 and 11-05-2006. After excluding 37 no-show patients, 33 patients referred for reasons other than somatic symptoms, 43 patients whose files did not contain a letter to the GP describing the final diagnosis or with an inaccessible medical file, the study population consisted of 357 patients. For temporal validation of the model, we collected data on the first 108 consecutive patients in 2009 who were referred by their GP and visited the same general internal outpatient clinic of the University Medical Centre Groningen between 15-1-2009 and 29-1-2009. The final study population consisted of 94 patients; excluded were 5 patients referred for reasons other than somatic symptoms, and 9 patients whose files did not contain a letter to the GP describing the final diagnosis or with an inaccessible medical file.

Candidate predictors

All candidate predictors were extracted from the referral letters; no other data sources were used. For derivation of the model, the referral letters from the GPs were rated by four higher grade medical students on potential predictors of functional somatic symptoms before the patients were seen at the internal outpatient clinics. No letters were rated by more than one student. As candidate predictors, we started by selecting clinical and non-clinical indicators suggestive of functional somatic symptoms as described in the literature. They included female sex and younger age (less than 50) [1], somatic history defined as number of previous and co-existing somatic symptoms and diseases other than the referral symptoms in the previous 10 years (none, 1 or 2, 3 or more) and psychiatric comorbidity defined as history of a psychiatric diagnosis and / or treatment for psychiatric problems [8]. In addition, we analyzed type of the referral complaint as a potential predictor,

categorized according to clusters found in previous studies [9,10]. We recorded the following symptom groups: (1) gastrointestinal, including general (nausea, diarrhea, feeling bloated etc.) and pathognomic (rectal bleeding, jaundice etc.), (2) musculoskeletal (joint pain, localized weakness, pain in extremities etc.), (3) general (fatigue, dizziness, headache etc.), (4) other tracti (frequent urination, skin blotches, cardiovascular symptoms, lump in throat etc.), (5) multi-system (combination of at least two of the following symptoms: general gastrointestinal, musculoskeletal, and general symptoms), or (6) symptoms already diagnosed by GP. Furthermore, we scored predictors that we hypothesized to be associated with functional somatic symptoms based on our own clinical experience: absence of abnormal physical findings by the GP including laboratory test results, and chronicity of the complaint, defined as duration of at least 6 months. Previous health care consumption for the referral complaint(s) was scored as one or more consultations of the GP or consultation of a medical specialist.

We also included a potential predictor linked to the GP. We hypothesized that a GP would be inclined to use disease (medical discourse) terminology in case he or she suspects biomedical pathology. If the symptoms are suspected to be functional, referral would mainly satisfy the needs of the patient, which is reflected in the use of illness (lay discourse) terminology [11]. For example, we scored high blood pressure and tiredness as illness terms, while hypertension and fibromyalgia were scored as disease terms. In case of doubt we used a standard Dutch dictionary.

In the validation study, referral letters were rated in an identical way by two investigators (JG and KJ) independent of each other. Categorization of variables that were not dichotomously recorded, i.e. age, number of other symptoms and health care consumption, was done prior to the analyses based on their distributional properties.

Diagnostic work-up and outcome assessment

After referral, patients underwent the regular diagnostic work-up by the internist ending with a final diagnosis. The internists involved in the work-up were unaware of the hypotheses and were blind to the predictor ratings.
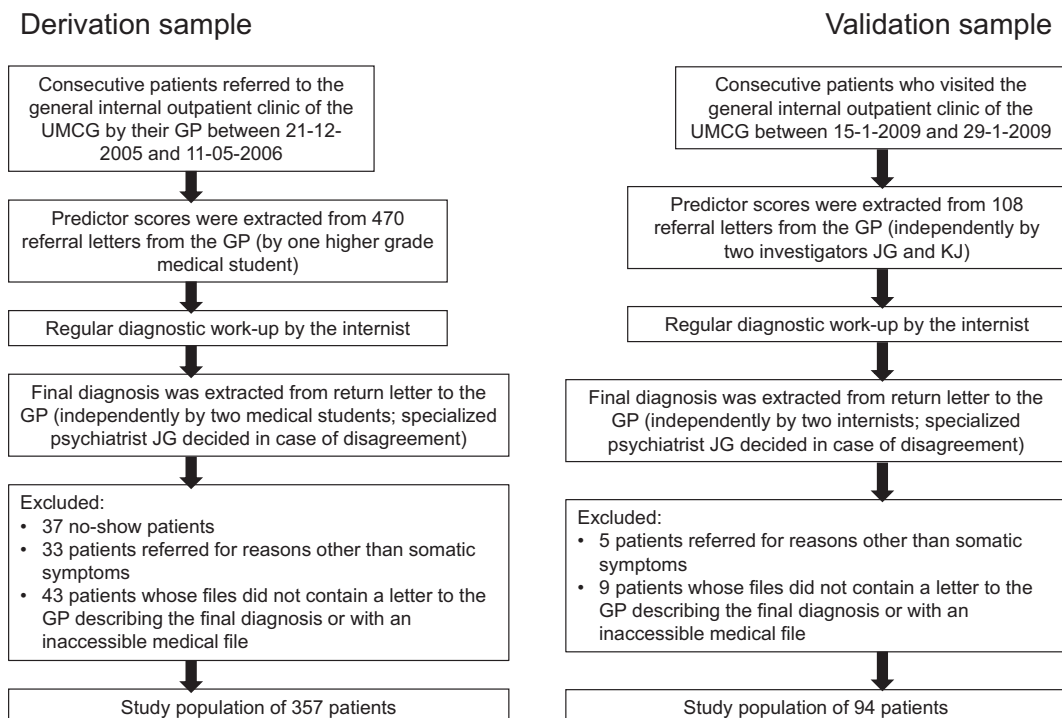

Derivation sample

- Consecutive patients referred to the general internal outpatient clinic of the UMCG by their GP between 21-12-2005 and 11-05-2006
- Predictor scores were extracted from 470 referral letters from the GP (by one higher grade medical student)
- Regular diagnostic work-up by the internist
- Final diagnosis was extracted from return letter to the GP (independently by two medical students; specialized psychiatrist JG decided in case of disagreement)
- Excluded:
  - 37 no-show patients
  - 33 patients referred for reasons other than somatic symptoms
  - 43 patients whose files did not contain a letter to the GP describing the final diagnosis or with an inaccessible medical file
- Study population of 357 patients

Validation sample

- Consecutive patients who visited the general internal outpatient clinic of the UMCG between 15-1-2009 and 29-1-2009
- Predictor scores were extracted from 108 referral letters from the GP (independently by two investigators JG and KJ)
- Regular diagnostic work-up by the internist
- Final diagnosis was extracted from return letter to the GP (independently by two internists; specialized psychiatrist JG decided in case of disagreement)
- Excluded:
  - 5 patients referred for reasons other than somatic symptoms
  - 9 patients whose files did not contain a letter to the GP describing the final diagnosis or with an inaccessible medical file
- Study population of 94 patients

Fig. 1. Study samples.