

A Scale to Assess Factors Influencing Treatment Initiation in Patients With Anorexia Nervosa. Development and Evaluation of the FABIANA-Checklist.

Laurence Reuter (✉ l.reuter@uke.de)

University Medical Center Hamburg-Eppendorf: Universitätsklinikum Hamburg-Eppendorf <https://orcid.org/0000-0002-0869-2457>

Denise Kästner

UKE: Universitätsklinikum Hamburg-Eppendorf

Justine Schmidt

UKE: Universitätsklinikum Hamburg-Eppendorf

Angelika Weigel

UKE: Universitätsklinikum Hamburg-Eppendorf

Ulrich Vorderholzer

LMU München: Ludwig-Maximilians-Universität München

Marion Seidel

Schon Klinik Bad Arolsen

Bianca Schwennen

MediCLin Seepark Klinik

Helge Fehrs

Asklepios Westklinikum Hamburg

Bernd Löwe

UKE: Universitätsklinikum Hamburg-Eppendorf

Antje Gumz

UKE: Universitätsklinikum Hamburg-Eppendorf

Research article

Keywords: Factors Influencing, Anorexia Nervosa, Psychometrics, dimensionality

Posted Date: May 6th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-467666/v1>

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Abstract

Background

A long duration of untreated illness (DUI) is an unfavorable prognostic factor in anorexia nervosa and often associated with chronic illness progression. The FABIANA-checklist, developed using a qualitative multi-informant approach, includes factors influencing treatment initiation which are potentially modifiable and are mentioned as being relevant by patients with AN. The study focusses on the development and evaluation of the FABIANA-Checklist and aims at providing descriptive data on DUI in a German sample.

Methods

After cognitive pretest and revision, dimensionality of the 18-item version of the FABIANA-checklist was tested by Principal Component Analysis (PCA). For item validation we assessed support from social environment (FSozU), support in the health care system (PACIC-5A), illness perception and coping (BIPQ).

Results

We included a sample of female patients (N=75), aged >14 years (M = 21.4 years) with AN. Average BMI was 15.5 kg/m², age of onset was 19.2 years and average DUI was 2.25 years. PCA yielded six components explaining 62.64% of the total variance. Overall internal consistency was acceptable (Cronbach's $\alpha = .76$) and construct validity was satisfactory for 14 items. Two consistent components emerged: primary care perceived as supportive and competent (23.33%) and emotional and practical support from relatives (9.98%). With regard to the other components, the heterogeneity of the items led to unsatisfactory internal consistency, single item loading and partly ambiguous interpretability. Analysis on item level indicated that practical and emotional support from the social environment seems to be particularly important for treatment initiation.

Conclusions

The FABIANA-checklist is a valid instrument to assess factors involved in the process of treatment initiation of patients with AN. Psychometrics and dimensionality testing suggests that experienced emotional and practical support from the primary health care system and close relatives are strongly involved factors. Nevertheless, the results point out that a differentiated consideration on item level is useful. To quantify the relative importance of the factors assessed and to derive recommendations on early-intervention approaches, the predictive effect of the FABIANA-items on the DUI will be determined in a subsequent study which will further include the perspective of relatives and primary caregivers in addition to the patient perspective.

Trial registration

Clinical Trials.gov Identifier: NCT03713541: <https://clinicaltrials.gov/ct2/show/NCT03713541>

Plain English Summary

Early treatment contributes to a more favorable illness course and a better prognosis in patients with anorexia nervosa (AN). The FABIANA checklist was developed on the basis of interviews with patients, carers and primary care practitioners and aims at assessing factors that have an influence on the duration of untreated illness (DUI). In this study, the 18-item checklist was tested and validated for the first time in a large German sample of 75 female patients with AN. The results of our study suggest that the FABIANA-checklist is a valid instrument to assess factors involved in the process of treatment initiation. Particularly involved factors are experienced emotional and practical support from the primary health care system and from close relatives. A follow-up study will investigate the relation between the FABIANA Items and the DUI in order to know where preventive measures could be taken, in order to facilitate the path into specialized treatments for patients with AN.

Background

Anorexia nervosa (AN) is a severe mental disorder, often characterized by low help-seeking rates [1,2,3]. In those patients with AN who seek help, the average duration of untreated illness (DUI), that is, the interval between the onset of the disorder and the initiation of an evidenced-based treatment, ranges from two to three years [4,5,6,7]. Patients with AN have a better prognosis if evidence-based treatment [8] is provided timely and at early stages of illness [9,10], in other words, if patients have a short DUI. The vital importance of a short DUI is further supported by a growing number of studies showing that the maladaptive behaviors in eating disorders become increasingly automated over time and, thus, more resistant to change [11,12,13]. Furthermore, a delayed access to an effective eating disorder treatment has been associated with higher levels of psychological distress and social and occupational impairment [14,15]. In view of these findings, it is crucial concern to reduce the DUI to prevent chronic AN illness courses. Thus, a key question is how the DUI in individuals with AN can be reduced. To be able to answer this questions a better understanding of factors significantly influencing AN-treatment initiation is necessary. Knowledge of those factors would help to develop targeted secondary preventive interventions.

Patient-related factors, such as fear of stigmatization, shame, denial of illness or low illness insight and practical barriers, such as insurance or treatment costs, are considered hindering factors in the process of AN treatment initiation [16]. Health-related concerns and other mental health problems are most prominent among facilitative influences [17,18]. Evaluations of pathways to care point to the important role of close others and primary health care providers in AN treatment initiation, and shows that the pathway to specialized care is paved through primary health care providers. Only a minority of patients are internally motivated to seek specialized care right away [4,19].

Preventive interventions aiming at an early detection of AN and facilitating help-seeking behavior lead to divergent outcomes [16,20,21,22]. Patients participating in FREED (First Episode Rapid Intervention for Eating Disorders) [21], a highly coordinated person-centered care for patients with a recent onset of

eating disorders, showed shorter DUIs, faced shorter waiting times and had higher rates of treatment uptake in comparison to regular care. The effectiveness of such programs in routine health care remains, however, questionable, as the effects were mainly found in a subgroup with optimal conditions. In addition, a substantial proportion of potential patients were not reached by the program, underscoring that prevention programs that primarily target the service-related part of DUI and neglect personal factors such as treatment ambivalence may fall short.

A shared shortcoming of previous studies on factors involved in AN treatment initiation is their inclusion of individuals with various eating disorders and their lack of focus on AN-specific factors [18]. Further, previous studies almost exclusively include adult patients, even though the onset of eating disorders is often in early to mid-adolescence [17]. This is of particular importance given that Neubauer et al. [4] observed a higher DUI in patients with an early onset (< 14 years) in comparison to patients with an onset in adulthood whereas McClelland et al. [23,24] reported higher DUI in young adults (18-25 years) compared to adolescents (<18). These findings suggest the presence of sub-groups particularly at risk for delayed help-seeking behavior which might at least partially be related to the age of onset.

Moreover, there might be differences in the pathways to care in these sub-groups, with the early onset group being more often externally motivated and more frequently informed about treatment options by social networks than the group with an intermediate or late onset [4]. Against the background of these results, it becomes clear that a more differentiated analysis of factors involved in treatment initiation is indispensable.

Overall, there are few studies on treatment initiation in AN so far. Beside a missing specific AN focus in the studies that have analyzed potential predictors of treatment initiation in eating disorders, existing studies do neglect the period before the first contact with the health care system or do not consider the perspective of relatives and primary caregivers. Moreover, little attention has been paid to factors that can be influenced by preventive measures.

Another issue that arises when attempting to assess those factors is the lack of valid and reliable instruments that would allow quantification of their impact and, in the long term, help primary care practitioners to identify AN patients at risk for an unfavorable illness course [17,25]. Validated questionnaires exist for particular barriers as e.g. the Universal Stigma Scale [26] or the Perceived Barriers to Psychological Treatment Scale [27,28] Based on a systematic review, Ali et al. [29] developed a scale for assessing hindering factors of treatment initiation. However, psychometric parameters for this scale are not yet available [17]. To our knowledge, there is currently no validated instrument that combines the assessment of potential predictors of treatment initiation and focusses on patients with AN. Against this background, the primary aim of the present study was to develop an instrument for the assessment of factors involved in AN treatment initiation.

The present study is part of the FABIANA-study, funded by the German Research Foundation (DFG) and is divided into three sub-studies [30]). In sub-study 1, we qualitatively identified the factors using a multi-informant approach (patients, relatives, primary care physicians). We focused at factors that can be potentially influenced in order to guide the conception of effective secondary prevention approaches. The present article relates to sub-study 2 and has a threefold objective: 1) It reports on the development and evaluation of the FABIANA checklist in a large sample, 2) allows to quantify factors involved in AN treatment initiation as experienced by patients in the period from onset of illness to start of treatment and 3) describes DUI and age of onset (AOO) for a nationwide German sample.

Methods

Development of the FABIANA-Checklist

The study has been registered (NCT03713541) and ethical approval was obtained prior to recruitment (PV5108). Instrument and item generation were based on a recommended procedure for mixed-methods studies [31]. Key facilitators and barriers of treatment initiation were identified based on 22 qualitative interviews with AN- patients, their relatives and referring health care professionals (sub-study 1 [32]). From this pool, items for the FABIANA-Checklist were derived based on prototypical illustrating quotes from the interviews. Items were considered when they had been 1) mentioned in at least ten interviews, 2) rated as being significant factors for treatment initiation by the patients and 3) were considered as potentially modifiable by preventive interventions. The latter rating was provided by four researchers, consisting of a professor of psychosomatic and psychotherapy, two post-doctoral clinical psychologists and one clinical psychologist.

For the cognitive pretests, a preliminary sample of 30 items was presented to nine female AN-patients (mean age= 22.8 years, SD= 5.6). Items were rated on a 5-point Likert rating scale, ranging from 1 =does not apply to 5 = does fully apply, according to the patient's experiences during the period between the onset of the AN to the start of the first psychotherapy.

We used a comprehension probing and information retrieval probing [33] to evaluate the items comprehensibility and recallability. After the cognitive pretests, five items were excluded and another seven items were excluded after statistical item and reliability analysis. Exclusion was based both on statistical parameters, such as low item-total corrected correlation, low variance, skewness or kurtosis of the item, redundancy and parameters of relevance and modifiability. A total of 18 items were included in the further analyses.

Dimensionality

On one hand, in creating the checklist, we aimed to capture factors influencing treatment initiation as differentiated and as specific as possible using a multi-informant bottom-up approach. On the other hand, the use of a differentiated checklist in further statistical analysis is associated with the risk of α -error accumulation. For the latter reason (e.g. the planned analysis of the predictive effect of FABIANA-Checklist items on the DUI), a reduction of dimensionality is desirable. For this reason, we decided to subject the checklist to an exploratory factor analysis before proceeding to investigate potential predictors of the DUI (sub-study 3).

Hypotheses on validity

We expected correlations of the FABIANA-Checklist items with perceived support from health care providers, the social environment and general societal factors. Assumptions for construct validation were made for each item separately. For items related to experienced support for treatment initiation by the health care system (items 8-16), we hypothesized correlations with subjectively perceived collaborative care. Correlations with perceived social support were expected for items which include concern or concrete help from relatives or the social environment (items 1-2 and 4-7). For the FABIANA-Checklist items relating to societal factors (items 3, 17-18), as the influence of printed or social media or stigmatization, we assumed relations to factors of illness perception, mainly illness representations and the perceived control. Correlations were assumed to be positive, for items that were negatively poled, polarity was reversed. A single negative correlation was expected in relation to item 18 and the mention of media influence as a cause of illness.

The instruments used to operationalize the constructs are listed under measures.

Data collection

Data were collected between July 2018 and June 2019 in 11 cooperating in- and outpatient centers who provide specialized psychotherapeutic treatment for eating disorders. Inclusion criteria were an age at or above 14 years, female gender and typical or atypical anorexia nervosa diagnosis. We included patients who were either currently in their first AN treatment or who sought their first psychotherapeutic AN treatment within the last 12 months. Psychotherapeutic treatments were defined by a minimum duration of seven days in inpatient care or five consecutive sessions in an outpatient setting.

After obtaining written informed consent from the patients or their legal guardians, eligible patients received the assessment battery with the indication to refer to their first psychotherapeutic AN treatment. Concerning memory effects (e.g. recall biases) especially in self-reported utilization of health care services, literature provides no sufficient evidence on the optimal recall period [34]. However, it is recommended to use periods of three or six months periods when frequently used services are surveyed while salient visits and rarely used medical care services seem to be accurately reported over a longer period [34]. We assume the commencement of a psychotherapeutic treatment to be a salient and rarely event, justifying the use of a 12-months-period for our study purposes.

Measures

We assessed sociodemographic and clinical data as AN subtypes, comorbid diagnosis and Body Mass Index (BMI, kg/m²), date and age of onset and treatment data as setting, date of treatment initiation. The date and age of onset were assessed in a semi-structured clinical interview (SCID-5-CV [35]). The aim was to explore when the criteria for AN according to DSM-V were fully met for the first time. With the help of anchor examples and a timeline the patients were supported in giving as precise information as possible about their weight history and the other symptoms of AN.

We operationalized our hypothesis on construct validity of the FABIANA-Checklist by using the following measures.

The *Patient Assessment of Chronic Illness Care questionnaire* (PACIC-5A [36]) is a brief self-administrated instrument to assess whether the patients were provided with patient-centered collaborative care prior to their psychotherapy. The PACIC-5A relates to the chronic care model [37] and measures the extent to which professionals tried to induce behavioral changes in patients [36]. The 5A approach is evidence-based, has achieved widespread acceptance and is considered the most appropriate and psychometrically robust instrument assessing patient experience with chronic disease care [38]. The global score includes the assessment of present behavior (Assess), patient counselling (Advise), collaborative agreement with the patient about realistic goals (Agree), assisting the patient during her lifestyle changes (Assist), and frequent follow-ups (Arrange).

The short version of the *Social Support Questionnaire* [39] measures patients perceived and anticipated social support. It assesses the social support that patients experienced in the period between diagnosis and the start of the AN-treatment on a scale from 0 = did not apply to 4 = did fully apply. The unidimensional short version with 14 items shows good psychometric properties and a good internal consistency (Cronbach's $\alpha = .94$).

The *Brief Illness Perception Questionnaire* (BIPQ [40]) assesses the patients' illness representations, including cognitive dimensions such as the degree of understanding of the illness, the perceived personal control and treatment control, the experience of symptoms as well as emotional aspects such as e.g. concerns about and emotional affection by the illness. Items of the short Version of the IPQ can assume values from 0-10. For item validation, we considered personal control, treatment control, illness comprehensibility and subjective illness causes. In addition, we included the open-ended B-IPQ item which records the three major causes of illness (in our case for AN) perceived by the patient. Since we are particularly interested in the influence of media, we included whether respective answers were given in the open-ended item of the B-IPQ (Yes/No).

Data analysis

To analyze the dimensionality of the FABIANA-Checklist we performed Principal Component Analysis (PCA). Polarity of negatively poled items (1,11, 16,17,18) was reversed. Data suitability test included the Kaiser-Meyer-Olkin (KMO) criterion and Bartlett' test for sphericity. We considered components with eigenvalues ≥ 1 [41] and tested for varimax, quartimax and equamax rotation on data. We considered and reported factor loadings of $>.30$. In the case of cross-loadings on multiple components, we considered the loading that showed the best interpretability.

For item analysis, we considered descriptive data, graphical distributions of the raw values, difficulty, and discriminatory power analysis, skewness, kurtosis and reliability analysis. Internal consistency was evaluated by Cronbach's α and values >0.70 were considered satisfactory. For Item-total correlation we used Pearson's product-moment correlation coefficient (r^{it}), i.e. the correlation between each item and the respective principal component. The internal consistency of the remaining items (α) indicates the value if the selected items are deleted from the total score.

Construct validity was tested with bivariate correlations. Polarity of negatively poled items (1,11, 16,17,18) was reversed. Correlation coefficients were interpreted based on Cohen's d with $d < .30$ as a small, $d = .30-50$ medium and $d > .50$ as large [42]. Given that correlations coefficients represent effect sizes, we focused on the magnitude of the correlations in the validity analyses. We additionally report p values (one-tailed testing, $\alpha < .05$). DUI is calculated as the difference between the date of illness onset and the date of first treatment initiation. DUI and Age of Onset (AOO) are reported in years. Comparisons between adults and adolescents regarding DUI and AOO are calculated using simple t -tests with F -value and p -value, given. All calculations were performed with SPSS 27.

Results

Sample characteristics, DUI and AOO

We recruited 75 female patients with AN. Of those 54 were adult and 21 adolescent patients. Mean age was 21.4 ($SD=7.35$) ranging from 14 to 61 years. Most patients (89%) were diagnosed with a typical AN and 77% presented the restrictive AN-subtype. The mean BMI was 15.5 kg/m^2 (range=10.6 - 23.0 kg/m^2 ; $SD=1.96$). Most patients (77%) had at least one comorbid mental disorder, diagnosed by SCID-5-CV interview [35]. **Table 1** shows the sample characteristics. Data collection resulted in only a few individual missing values. For the FABIANA checklist FSozU and B-IPQ, $n=72-75$ data sets could be evaluated. A slightly higher number of missing values was registered for the PACIC-5A, with $n=62$ records included.

Duration of untreated illness and Age of Onset

In our sample we observed an average DUI of 2.25 years ($SD=4.33$, $Mdn=.54$). DUI in adolescent patients ($M=.49$ years, $SD=.59$, $Mdn=.28$) was significantly shorter compared to adults ($M=2.93$ years, $SD=4.94$, $Mdn=2.69$) with $p=.027$. In one patient, the diagnostic criteria were not met before treatment, resulting in a negative DUI. A treatment initiation within the first year after illness onset could be observed in 64% of patients, predominantly in the first three quartiles (Q1: 17.3%, Q2: 25.3%, Q3: 17.3%, and Q4: 4%). A DUI between one and three years was found in 17.4% of the patients, 13.3% had a DUI between 3 and 7 years and 5.3% had a DUI between 18 and 20 years. **Figure 1** shows the distribution of DUIs. The average age of onset (AOO) was 19.15 years ($SD=5.18$, $Mdn=18.73$). Adolescents had significantly lower AOO than adults (with $M=15.03$; $SD=1.07$ and $M=20.75$, $SD =5.26$; $p=.000$).

Dimensionality

We performed PCA on the 18 items of the FABIANA-Checklist. Sample size was adequate ($KMO=0.72$) and Bartlett's test of sphericity indicated that data structure was appropriate for running PCA ($\chi^2=307.26$; $p<.001$). A scree-plot yielded empirical justification for retaining six factors with eigenvalues > 1 , which accounted for 62.46% of the total variance. Among the tested rotations, the varimax-rotated solution was the most interpretable. The internal consistency of the FABIANA-Checklist was acceptable (Cronbach's $\alpha = .76$). **Table 2** indicates item characteristics and results of the PCA. At the component level, the internal consistency for the first two factors was in an acceptable range (Cronbach's $\alpha = .67-.79$). The first component explained 23.33% of the variance. The eight items included aspects of the health care system that patients experienced as supportive and helpful (e.g., trust in the treating physician, the treating physician's competence in the area of eating disorders or good cooperation between different physicians). The second component, explained 9.98% of the variance and included three items related to emotional and practical support from relatives. On the third component, inconsistencies in terms of factor loadings manifested in negative internal consistency. On the one hand, this component reflected the disorientation of the patients and their relatives, not knowing whom to consult for help, and on the other hand it included the patient's attempt to gather information about helpful treatment processes from books or social media. The fourth component (7.71%) included items showing that AN was not trivialized by the patients or their social environment (e.g. AN was not addressed too late or at least one person of the environment understood the need for professional help). Internal consistency of this factor was however insufficient (Cronbach's $\alpha = .42$). Component four and five showed single-item loadings, relating on relatives who informed themselves (6.76%) and the absence of negative media influence (5.82%).

Validity

An overview on all assumptions on validity and corresponding correlations is given in **table 2**. As hypothesized, patients who reported supportive experiences relating to the health care system perceived more patient-centered, collaborative care prior to treatment initiation, which was reflected by significant correlations with the PACIC-5A overall score with 8 out of 9 items of the FABIANA-checklist (with r varying from .24 to .59). The strongest correlations were found for the feeling of trust in the practitioner (item 13, $r=.59$, $p<.001$), perceived competence of the practitioner and regular contact after diagnosis (items 12 and 14, both $r=.42$, $p<.001$). Moderate correlations were found for the items describing early recognition of AN by the practitioner (item 9, $r=.32$, $p<.005$) and directly addressing the AN (item 10, $r=.34$, $p<.005$). Dealing well with patient's difficulties (not trivializing complaints) was, as expected related to perceived care (item 11, $r=.35$, $p<.005$). The FABIANA-Checklist item 16, indicating difficulties to find out whom to consider for appropriate help, did not correlate as expected with the PACIC-5A score.

Half of expected relations between items of the FABIANA-Checklist that have proximity to the concept of social support and the total score of the F-SozU could be confirmed. The strongest correlation was found for the concerns expressed by the social environment (item 4, $r=.43$, $p<.001$). Early recognition of the need for treatment by significant others (item 2, $r=.22$; $p<.01$) and encouragement of the patient to seek help ($r=.21$, $p<.01$) were significant at a lower level. The items regarding whether the relatives directly addressed AN (item 1), informed themselves about the AN in the media (item 7) or provided concrete practical support (item 5), e.g. arranged doctor's appointments or accompanied to doctor's appointments, were not significantly related to experienced social support.

The expected correlation between consuming media about successful treatments (item 3) and treatment control (BIPQ), i.e. the belief that treatment might be helpful could be confirmed ($r=.23$, $p<.05$). However, the consumption of media about successful treatments was not associated with more personal control ($r=-.26$, $p<.05$) or illness comprehensibility. Patients who did not perceive undergoing a psychotherapy as a weakness (item 17) had, as expected, a

significantly better understanding of their illness ($r=.20$, $p<.05$, BIPQ), but we found no positive relation to personal control or treatment control. Patients who reported a lower influence of their weight perception by media (item 18) had, as expected, a better understanding of illness ($r=.20$, $p<.05$) and named less often media influence as one of the causes of their illness ($r=-.31$, $p<.01$).

Items of the FABIANA-Checklist – characteristics and frequencies

For each item, the total range between the minimum and maximum value was used. For five items (items 2,3-6, and 25), the distribution was left-skewed, i.e., with a stronger tendency to agree, and for two items (items 9 and 15), the distribution was right-skewed. The items with the highest scores all focused on practical and emotional support from the social environment, e.g. if relatives expressed concern about AN ($M=4.2$, $SD=1.02$), perceived the need for help ($M=3.6$, $SD=1.52$), informed themselves about AN ($M=3.5$, $SD=1.38$) encouraged the patient to seek treatment ($M=4.5$, $SD=0.98$), arranged medical appointments or accompanied the patients to medical consultations ($M=4.1$, $SD=1.41$). The average scores indicate that the primary care provider was more likely to not recognize AN at an early stage ($M=2.3$, $SD=1.40$), and cooperation with other providers was more likely to not be as well organized ($M=2.5$, $SD=1.45$). Influenced by the media, patients tended to assume that low weight was "normal" ($M=3.8$, $SD=1.28$) or that they did not feel the need for help. They were more likely to agree that, prior to treatment initiation they felt, that that seeking therapy was a sign of weakness ($M=3.4$, $SD=1.43$). **Figure 2** provides an overview on the mean values of all included items.

Discussion

In the present study, we presented the FABIANA-checklist, a questionnaire designed to assess factors that are involved in the process of treatment initiation in individuals with AN. The checklist was tested for the first time in a large sample ($n=75$) of patients with AN. Overall, the checklist was well accepted by the patients, as evidenced by few missing values.

Dimensionality

PCA yielded six factors explaining 62.64% of the total variance. Overall internal consistency was acceptable (Cronbach's $\alpha = .76$). The primary care perceived as supportive and competent (23.33%) and emotional and practical support from relatives (2, 9.98%) were internally sufficiently consistent factors. The other components did not reach enough internal consistency or had only one item loading. Results pointed out the heterogeneity of the items and suggested that a differentiated consideration of factors, as initially intended by using a bottom up approach, is useful.

Validity

Hypotheses on construct validity were confirmed for 14 items. The checklist showed expected proximity with measures of social support, health care system support, the understanding of the illness, personal and treatment control and subjective illness causes. At an item level, most of the assumed relationships to the constructs of perceived support from the health care system, social support and illness perception could be confirmed. While the aspects of the FABIANA-checklist that depict emotional support from the environment could be validated with the global score of the FSozU, the expected correlations with the total score of the FSozU could not be confirmed for three items. This may be explained by the fact that these items refer to very disease-specific aspects of help, i.e. practical help with treatment admission (item 5) or an explicit addressing of AN. Item 7 of the FABIANA-Checklist, on the other hand, is referring more to the support that relatives seek for themselves in literature or counselling in order to be able to support patients in turn. Looking at the correlations of these three FABIANA items (1,5 and 7) with individual items of the FSozU, we find significant correlations with one item each. Thus, there is e.g. a positive correlation between the feeling that the environment addressed AN (item 1) and the FSozU item assessing the presence of people with whom the patient could share joys and sorrows. This indicates that the global social support construct may have been too nonspecific for validating these items. The PACIC-5A was well suited to validate the items related to experienced assistance on the path to treatment admission. The only non-validated item (item 16) measures the difficulty of relatives in order to find out whom they could consult best for help. This item possibly depicts more of a general lack of orientation in the process of help seeking.

Items of the FABIANA-Checklist

Taken together, the first results obtained with the FABIANA-Checklist showed, that on average, some factors were experienced more often than others or occurred more frequently in the period before treatment initiation. Patients frequently described emotional and practical support from their relatives or their social environment as "expressed concern from relatives" or "encouragement to seek treatment". Patients reported practical support, including relatives making appointments or accompanying patients to medical appointments. Adolescents in particular, reported that their relatives informed themselves about AN, either from books or in counseling centers. Information about successful treatments was sought by some patients and not by others. Both adults and adolescents confirmed that media had an impact on the fact that they considered their low weight as normal and that they did not feel in need to seek treatment.

The item on early detection of AN by relatives was on average more likely to be approved by the patients than the item referring to early detection of AN in primary care. Patients were more likely to report that they had a physician they could trust but were less likely to agree with items related to their doctor's competence in dealing with eating disorders, organizing cooperation with other treatment providers, or addressing their AN directly. The question of how reliably AN is diagnosed and addressed in primary care needs to be further explored. A recent study [43] indicates that only 61.3% of patients with AN were diagnosed by primary physicians and only 40% were referred to specialized treatment. The authors hypothesized that primary care physicians may be adopting a "watchful waiting" approach here, which is frequent when discussing about diagnosing mental illness in primary care [44]. However, this approach may fall short in patients with AN who require more active support from a multidisciplinary team [45]. Problems across care pathways and the relevance of physicians in early detection of AN has been highlighted in literature [46,47] and preventive measures have been proposed [45]. Other potential correlates of

DUI to investigate include physician expertise, empathy, or gender [43], or variables that address the physician-patient interaction (e.g., quality of alliance, compliance).

These initial findings are first indications for predictors of DUI and treatment initiation. To quantify the relative importance of the factors assessed by the FABIANA-Checklist and to be able to derive recommendations on early-intervention approaches, the effect of those factors on the DUI should be determined. This will be the aim of a subsequent study on the basis of a new sample of AN-patients, which will further include the perspective of relatives and primary caregivers in addition to the patient perspective.

Duration of untreated illness and age of onset

Our sample can be considered representative of female patients with AN undergoing specialized inpatient treatment for eating disorders. With an average BMI of 15.5 and a comorbidity of 77.4%, the analyzed population is comparable to other studies [48,49]. We found a mean DUI of 2.25 years (or 27 months) for female patients with AN. The DUI is slightly below the mean DUI for patients with AN of seven countries described by Austin et al. [49] in their recent systematic review (29.2 months or 2.42 years), and similar to another German sample from Hamburg metropolitan area [4]. In the subgroup of adolescent patients, DUI was a little less than 6 months and thus significantly shorter than in adults. Mean age of onset was around 19 years, with 15.5 years for adolescent patients and 20.7 years for adults. The shorter DUI (and younger AOO) found in adolescent patients has been demonstrated in other studies [44,49,50,51] and can be attributed to significantly lower dispersion in the subsample of adolescents. A closer look at the distribution shows that in both groups the earliest AOO is around 12-13 years. In the adult group, the latest AOO was 41 years.

The finding that slightly more than one-third entered treatment more than one year after the onset of AN is concerning, as a longer DUI is associated with unfavorable outcomes, lower remission rates and higher mortality [9,10,52]. Particular attention should be paid to subgroups for whom the path to treatment is protracted. Our data reveal a small subgroup (5%) with patients seeking treatment for the first time around the age of 40, or after a DUI of approximately 20 years. Ackard et al. [53], found similar rates for patients aged >40 in inpatient treatment. This subgroup differed from younger adults by a later AOO and a longer duration of illness. Duration of untreated illness (DUI) for this subgroup is often not reported, so that it remains unclear, if patients were particularly ambivalent or reluctant to seek treatment or if previous treatments failed.

Strengths and Limitations

The strengths of the checklist developed within the FABIANA study are the explicit reference to patients with AN, the inclusion of adolescent patients, the continuous consideration of the modifiability of the single items and the item construction. In contrast to a classic questionnaire construction based on theoretical concepts, the FABIANA -Checklist was created using a mixed-method and multi-informant approach, and is thus summarizing aspects that were considered relevant to the patients, their relatives and practitioners. Although this approach can achieve a higher clinical relevance through proximity to the patients' experience, it could be the reason why, we could not find a completely consistent factorial structure.

One strength of such a bottom-up approach is, that it directly refers to the experience of the people concerned and thus and is associated with greater clinical and practical significance. Statistically, however, this type of approach has the disadvantage that the analysis of a large number of factors is associated with the risk of α -error accumulation. As we plan to quantify the influence of facilitating and hindering factors on the DUI in sub-study III, it will be necessary to control this error statistically.

As the FABIANA-Checklist explicitly refers to the time that preceded the first psychotherapeutic treatment, it will not allow conclusions on correlates of treatment-seeking in general. The FABIANA-Checklist is based on a large sample compared to qualitative studies [32], which should guarantee that many significant factors were included. It is, however, conceivable that less frequently mentioned aspects might have a particularly large impact on the DUI. In addition, emphasis was placed on including items that could be modified. While this has the great advantage that concrete measures can be derived from the use of the checklist, the exclusion of non-modifiable factors might lead to lower variance explanation when trying to explain the DUI. An advantage over other questionnaires that have been used to assess facilitators and barriers in AN [26,27,28,29] is that, to the best of our knowledge, it is the only list of items explicitly designed for patients with AN that has been psychometrically validated.

Conclusions

Overall, sub-study II of the FABIANA project not only described the psychometric properties of the checklist on factors related to treatment admission of patients with AN, but also provided first data on the expression of these factors in the population of patients who were currently or recently undergoing their first specialized AN treatment. Although it is very encouraging that two-thirds of the patients in our sample had a DUI of less than one year, we also know that the chances for a positive treatment outcome decrease with increasing DUI. Thus it is of great importance to further quantify the effect of the FABIANA-factors on the DUI, especially in those patients with a DUI >1 year. In addition to the patients' perspective we plan to include the perspective of primary care physicians and relatives in sub-study III. An additional focus of the subsequent study will be to derive intervention measures to support primary care physicians and relatives in addressing AN at an early stage and supporting the patient to undergo specialized treatment.

Declarations

Ethics approval and consent to participate: Ethical approval for the FABIANA-study was obtained from the Ethic Committee of the Medical Association Hamburg (PV5108). All participants provided written informed consent prior to study inclusion. In case of minor participants, an additional consent from legal guardians was provided.

Consent for publication: Not applicable.

Availability of supporting data: Psychometric data can be made available by the authors upon legitimate request.

Competing interests: The authors declare that they have no competing interests.

Funding: This study is funded by the German Research Foundation (DFG). Principal investigators are Prof. Bernd Löwe (LO 766/16-1, sub-study I) and Prof. Antje Gumz (GU 1564/3-1, sub-study II & III). The funding body is not involved in the study design, data collection, analysis and interpretation.

Authors' contributions: The study's principal investigators, BL and AG, designed the study assisted by DK and AW. Funding was obtained by BL (FABIANA-sub-study 1) and AG (FABIANA-sub-study 2 and 3). UV, MS, BS, HF were involved in the recruitment of patients. DK, JS and LR conducted data collection. JS, LR, AW and AG analyzed the data. LR and JS wrote the first draft of the manuscript. All other authors provided substantial input to the first draft. All authors read and approved the final manuscript.

Acknowledgements: We would like to thank all our interview partners and our cooperating partners who were involved in the recruitment of study participants. Alphabetically ordered, these are: Asklepios Clinic Nord-Ochsenzoll (Hamburg), Asklepios Clinic West Hamburg (Hamburg), Clinic Lüneburger Heide (Bad Bevensen), Dipl. Psych. Kaufmann, A.L. (Flensburg), MediClin Seepark Clinic (Bad Bodenteich), Schön Clinic Bad Arolsen (Bad Arolsen), Schön Clinic Bad Bramstedt (Bad Bramstedt), Schön Clinic Hamburg Eilbek (Hamburg), Schön Clinic Roseneck (Prien am Chiemsee), Training Center for Behavior Therapy Falkenried (VTFW, Hamburg), University Hospital Hamburg-Eppendorf (Hamburg), University Hospital Heidelberg (Heidelberg), University Clinic Regensburg (Regensburg).

References

1. Forrest LN, Smith AR, Swanson SA: Characteristics of seeking treatment among U.S. adolescents with eating disorders. *Int J Eat Disord* 2017, 50(Suppl 7):826-833, doi.10.1002/eat.22702.
2. Hart LM, Granillo MT, Jorm AF, Paxton SJ: Unmet need for treatment in the eating disorders: A systematic review of eating disorder specific treatment seeking among community cases. *Clin Psychol Rev* 2011, 31(Suppl 5):727-735, doi.10.1016/j.cpr.2011.03.004.
3. Solmi F, Hotopf M, Hatch SL, Treasure J, Micali N: Eating disorders in a multi-ethnic inner-city UK sample: prevalence, comorbidity and service use. *Soc Psychiatry Psychiatr Epidemiol* 2016, 51:369-381, doi.10.1007/s00127-015-1146-7.
4. Neubauer K, Weigel A, Daubmann A, Wendt H, Rossi M, Löwe B, Gumz A: Paths to first treatment and duration of untreated illness in anorexia nervosa: Are there differences according to age of onset? *Eur Eat Disord Rev* 2014, 22(Suppl 4):292-298, doi.10.1002/erv.2300.
5. Schlegl S, Hupe K, Hessler JB, Diedrich A, Huber T, Rauh E, Aita S, Gärtner T, Voderholzer U: Wege in die Versorgung und Behandlungslatenzen bei stationären Patienten mit Anorexia und Bulimia nervosa. *Psychiatr Prax* 2019, 46(Suppl 6):342-348, doi.10.1055/a-0922-5651.
6. Weigel A, Rossi M, Wendt H, Neubauer K, von Rad K, Daubmann A, Romer G, Löwe B, Gumz A: Duration of untreated illness and predictors of late treatment initiation in anorexia nervosa. *J public health (Germany)* 2014, 24:427-436, doi.10.1007/s10389-014-0642-7.
7. Schoemaker C: Does early intervention improve the prognosis in anorexia nervosa? A systematic review of the treatment-outcome literature. *Int J Eat Disord* 1997, 21(Suppl 1):1-15, doi.10.1002/(SICI)1098-108X(199701)21:1<1::AID-EAT1>3.0.CO;2-R.
8. Zipfel S, Wild B, Grob G, Friederich HC, Teufel M, Schellberg D, Giel KE, de Zwaan M, Dinkel A, Herpertz S, Burgmer M, Löwe B, Tagay S, von Wietersheim J, Zeeck A, Schade-Brittinger C, Schauenburg H, Herzog W: Focal psychodynamic therapy, cognitive behaviour therapy, and optimised treatment as usual in outpatients with anorexia nervosa (ANTOP study): Randomised controlled trial. *Lancet* 2014, 383(Suppl 9912):127-137, doi.10.1016/S0140-6736(13)61746-8.
9. Allen KL, Mountford V, Brown A, Richards K, Grant N, Austin A, Glennon D, Schmidt U: First episode rapid early intervention for eating disorders (FREED): From research to routine clinical practice. *Early Intervention in Psychiatry* 2020, 14(Suppl 5):625-630, doi.10.1111/eip.12941.
10. Zipfel S, Giel KE, Bulik CM, Hay P, Schmidt U: Anorexia nervosa: Aetiology, assessment, and treatment. *Lancet Psychiatry* 2015, 2(Suppl 12):1099-1111, doi.10.1016/S2215-0366(15)00356-9.
11. Werthmann J, Simic M, Konstantellou A, Mansfield P, Mercado D, van Ens W, Schmidt U: Same, same but different: Attention bias for food cues in adults and adolescents with anorexia nervosa. *Int J Eat Disord* 2019, 52(Suppl 6):681-690, doi.10.1002/eat.23064.
12. Shott ME, Filoteo JV, Bhatnagar KAC, Peak NJ, Hagman JO, Rockwell R, Kaye WH, Frank GK: Cognitive Set-Shifting in Anorexia Nervosa. *Eur Eat Disord Rev* 2012, 20(Suppl 5):343-349, doi.10.1002/erv.2172.
13. Steinglass JE, Walsh BT: Neurobiological model of the persistence of anorexia nervosa. *J Eat Disord* 2016, 4, doi.10.1186/s40337-016-0106-2.
14. Davidsen AH, Hoyt WT, Poulsen S, Waadegaard M, Lau M: Eating disorder severity and functional impairment: moderating effects of illness duration in a clinical sample. *Eat Weight Disord* 2017, 22(Suppl 3):499-507, doi.10.1007/s40519-016-0319-z.
15. De Vos JA, Radstaak M, Bohlmeijer ET, Westerhof GJ: Having an eating disorder and still being able to flourish? Examination of pathological symptoms and well-being as two continua of mental health in a clinical sample. *Frontiers in psychology* 2018, 9:2145, doi.10.3389/fpsyg.2018.02145.
16. Weigel A, Gumz A, Kästner D, Romer G, Wegschneider K, Löwe B: Prävention und Versorgung von Essstörungen: Das Gesundheitsnetz Magersucht und Bulimie. *Psychiatr Prax* 2015, 42(Suppl 1):30-34, doi.10.1055/s-0034-1387651.
17. Ali K, Farrer L, Fassnacht DB, Gulliver A, Bauer S, Griffiths KM: Perceived barriers and facilitators towards help-seeking for eating disorders: A systematic review. *Int J Eat Disord* 2017, 50(Suppl 1):9-21, doi.10.1002/eat.22598.
18. Regan P, Cachelin FM, Minnick AM: Initial treatment seeking from professional health care providers for eating disorders: A review and synthesis of potential barriers to and facilitators of "first contact". *Int J Eat Disord* 2017, 50(Suppl 3):190-209, doi.10.1002/eat.22683.

19. Volpe U, Monteleone AM, Ricca V, Corsi E, Favaro A, Santonastaso P, de Giorgi S, Renna C, Abbate Daga G, Amianto F, Balestrieri M, Luxardi GL, Clerici M, Alamia A, Segura-Garcia C, Rania M, Monteleone P, Maj M: Pathways to specialist care for eating disorders: An Italian multicentre study. *Eur Eat Disord Rev* 2019, 27(Suppl 3):274-282, doi.10.1002/erv.2669.
20. Gumz A, Weigel A, Wegscheider K, Romer G, Löwe B: The psychenet public health intervention for anorexia nervosa: A pre–post-evaluation study in a female patient sample. *Prim Health Care Res Dev* 2018, 19(Suppl 1):42-52, doi.10.1017/S1463423617000524.
21. Flynn M, Austin A, Lang K, Allen K, Bassi R, Brady G, Brown A, Connan F, Franklin-Smith M, Glennon D, Grant N, Jones WR, Kali K, Koskina A, Mahony K, Mountford V, Nunes N, Schelhase M, Serpell L, Schmidt U: Assessing the impact of First Episode Rapid Early Intervention for Eating Disorders on duration of untreated eating disorder: A multi-centre quasi-experimental study. *Eur Eat Disord Rev* 2020, doi.10.1002/erv.2797.
22. Schmidt U, Adan R, Böhm I, Campbell IC, Dingemans A, Ehrlich S, Elzackers I, Favaro A, Giel K, Harrison A, Himmerich H, Hoek HW, Herpertz-Dahlmann B, Kas MJ, Seitz J, Smeets P, Sternheim L, Tenconi E, van Elburg A, van Furth E, Zipfel S: Eating disorders: the big issue. *Lancet Psychiatry* 2016, 3(Suppl 4):313-315, doi.10.1016/S2215-0366(16)00081-X.
23. McClelland J, Hodson J, Brown A, Lang K, Boysen E, Flynn M, Mountford VA, Glennon D, Schmidt U: A pilot evaluation of a novel First Episode and Rapid Early Intervention service for Eating Disorders (FREED). *Eur Eat Disord Rev* 2018, 26(Suppl 2):129-140, doi.10.1002/erv.2579.
24. McClelland J, Robinson L, Potterton R, Mountford V, Schmidt U: Symptom trajectories into eating disorders: A systematic review of longitudinal, nonclinical studies in children/adolescents. *Eur Psychiatry* 2020, 63(Suppl 1):E60, doi.10.1192/j.eurpsy.2020.55.
25. Innes NT, Clough BA, Casey LM: Assessing treatment barriers in eating disorders: A systematic review. *Eat Disord* 2017, 25(Suppl 1):1-21, doi.10.1080/10640266.2016.1207455.
26. Ebner DS, Latner JD: Stigmatizing attitudes differ across mental health disorders: A comparison of stigma across eating disorders, obesity, and major depressive disorder. *J Nerv Ment Dis* 2013, 201(Suppl 4):281-285, doi.10.1097/NMD.0b013e318288e23f.
27. Mohr DC, Ho J, Duffecy J, Baron KG, Lehman KA, Jin L, Reifler D: Perceived barriers to psychological treatments and their relationship to depression. *J Clin Psychol* 2010, 66(Suppl 4):394-409, doi.10.1002/jclp.20659.
28. Innes NT, Clough BA, Day JJ, Casey LM: Can the Perceived Barriers to Psychological Treatment Scale be used to investigate treatment barriers among females with disordered and non-disordered eating behaviours? *Psychiatry Res* 2018, 259:68-76, doi.10.1016/j.psychres.2017.09.070.
29. Ali K, Fassnacht DB, Farrer L, Rieger E, Feldhege J, Moessner M, Griffiths KM, Bauer S: What prevents young adults from seeking help? Barriers toward help-seeking for eating disorder symptomatology. *Int J Eat Disord* 2020, 53(Suppl 6):894-906, doi.10.1002/eat.23266.
30. Kästner D, Löwe B, Gumz A: The role of self-esteem in the treatment of patients with anorexia nervosa – A systematic review and meta-analysis. *Int J Eat Disord* 2019, 52(Suppl 2):101-116, doi.10.1002/eat.22975.
31. Pentzek M, Wollny A, Herber OR, Porst R, Icks A, Abholz H-H, Wilm S: Itemkonstruktion in sequenziellen Mixed-methods-Studien: Methodenbeschreibung anhand eines Beispielprojekts. *ZFA* 2012, 88(Suppl 12):520-527, doi.10.3238/zfa.2012.0520-0527.
32. Kästner D, Weigel A, Buchholz I, Voderholzer U, Löwe B, Gumz A: Facilitators and barriers in anorexia nervosa treatment initiation: a qualitative study on the perspectives of patients, carers and professionals. *J Eat Disord* 2021, doi.10.1186/s40337-021-00381-0.
33. Lenzner T, Neuert C, Otto W: Cognitive Pretesting. *GESIS Survey Guidelines*. Mannheim, Germany: GESIS – Leibniz Institute for the Social Sciences; 2016, doi.10.15465/gesis-sg_en_010.
34. Bhandari, A., & Wagner, T. (2006). Self-reported utilization of health care services: improving measurement and accuracy. *Med Care Res Rev*, 63(2), 217-235. doi:10.1177/1077558705285298
35. Beesdo-Baum K, Zaudig M, Wittchen HU (Eds): SCID-5-CV Strukturiertes Klinisches Interview für DSM-5-Störungen–Klinische Version: Deutsche Bearbeitung des Structured Clinical Interview for DSM-5 Disorders–Clinician Version von Michael B. First, Janet BW Williams, Rhonda S. Karg, Robert L. Spitzer. Göttingen: Hogrefe; 2019.
36. Rosemann T, Laux G, Drossemeyer S, Gensichen J, Szecsenyi J: Evaluation of a culturally adapted German version of the Patient Assessment of Chronic Illness Care (PACIC 5A) questionnaire in a sample of osteoarthritis patients. *J Eval Clin Pract* 2007, 13(Suppl 5):806-813, doi.10.1111/j.1365-2753.2007.00786.x.
37. Wagner EH, Austin BT, Davis C, Hindmarsh M, Schaefer J, Bonomi A: Improving chronic illness care: Translating evidence into action. *Health Affairs* 2001, 20(Suppl 6):64-78, doi.10.1377/hlthaff.20.6.64.
38. Vrijhoef HJ, Berbee R, Wagner EH, Steuten LM: Quality of integrated chronic care measured by patient survey: Identification, selection and application of most appropriate instruments. *Health Expect* 2009, 12(Suppl 4):417–429, doi.10.1111/j.1369-7625.2009.00557.x.
39. Fydrich T, Sommer G, Brähler E: F-SozU: Fragebogen zur Sozialen Unterstützung. [F-SozU: Questionnaire on social support.]. Göttingen: Hogrefe; 2007.
40. Broadbent E, Petrie KJ, Main J, Weinman J: The Brief Illness Perception Questionnaire. *J Psychosom Res* 2006, 60(Suppl 6):631-637, doi.10.1016/j.jpsychores.2005.10.020.
41. Guttman L: Some necessary conditions for common-factor analysis. *Psychometrika* 1954, 19 (2): 149-161, doi.10.1007/BF02289162.
42. Cohen J: *Statistical Power Analysis for the Behavioral Sciences*. New York, NY: Routledge Academic; 1988.
43. Higgins A, Cahn S: Detection of anorexia nervosa in primary care. *Eat Disord* 2018, 26(Suppl 3):213-228, doi.10.1080/10640266.2017.1397419.
44. Currin L, Waller G, Schmidt U: Primary care physicians' knowledge of and attitudes toward the eating disorders: Do they affect clinical actions? *Int J Eat Disord* 2009, 42(Suppl 5):453–458, doi:10.1002/eat.20636.
45. Linville D, Benton A, O'Neil M, Sturm K: Medical Providers' screening, training and intervention practices for eating disorders. *Eat Disord* 2010, 18(Suppl 2):110-131, doi.10.1080/10640260903585532.

46. House J, Schmidt U, Landau S, Simic M, Nicholls D, Hugo P, Berelowitz M, Eisler I: Comparison of specialist and nonspecialist care pathways for adolescents with anorexia nervosa and related eating disorders. *Int J Eat Disord* 2012, 45(Suppl 8):949-956, doi.10.1002/eat.22065.
47. Waller G, Schmidt U, Treasure J, Murray K, Aleya J, Emanuelli F, Crockett J, Yeomans M: Problems across care pathways in specialist adult eating disorder services. *Psychiatr Bull* 2009, 33(Suppl 1):26-29, doi.10.1192/pb.bp.10018325.
48. Salbach-Andrae H, Lenz K, Simmendinger N, Klinkowski N, Lehmkuhl U, Pfeiffer E: Psychiatric comorbidities among female adolescents with anorexia nervosa. *Child psychiatry Hum Dev* 2008, 39(Suppl 3):261-272, doi.10.1007/s10578-007-0086-1.
49. Austin A, Flynn M, Richards K, Hodsoll J, Duarte TA, Robinson P, Kelly J, Schmidt U: Duration of untreated eating disorder and relationship to outcomes: A systematic review of the literature. *Eur Eat Disord Rev* 2020, doi.10.1002/erv.2745.
50. Blinder BJ, Cumella EJ, Sanathara VA: Psychiatric comorbidities of female inpatients with eating disorders. *Psychosom Med* 2006, 68(Suppl 3):454-462, doi.10.1097/01.psy.0000221254.77675.f5.
51. Bühren K, Schwarte R, Fluck F, Timmesfeld N, Krei M, Egberts K, Pfeiffer E, Fleischhaker C, Wewetzer C, Herpertz-Dahlmann B: Comorbid psychiatric disorders in female adolescents with first-onset anorexia nervosa. *Eur Eat Disord Rev* 2014, 22(Suppl 11):39-44, doi.10.1002/erv.2254.
52. Steinhausen HC: The outcome of anorexia nervosa in the 20th century. *American Journal of Psychiatry* 2002, 159(Suppl 8):1284-1293, doi.10.1176/appi.ajp.159.8.1284.
53. Ackard DM, Richter S, Frisch MJ, Mangham D, Cronemeyer CL: Eating disorder treatment among women forty and older: increases in prevalence over time and comparisons to young adult patients. *J Psychosom Res.* 2013, 74:175-178, doi.10.1016/j.jpsychores.2012.10.014.

Tables

Table 1: Sample characteristics

	<i>n</i> =75	Adults (<i>n</i> =54)	Adolescents (<i>n</i> =21)	<i>F,p</i>
age; <i>M in years (R /SD)</i>	21.4 (14-61 / 7.35)	23.69 (18-61 / 4.47)	15.52 (14-17 / 1.17)	
setting; <i>n (%)</i>				
inpatient	70 (93.3)	51 (94.4)	19 (90.5)	
outpatient	5 (6.7)	3 (5.6)	2 (9.5)	
diagnosis – DSM V; <i>n (%)</i>				
typical anorexia nervosa (F50.0)	67 (89.3)	47 (87.0)	20 (95.2)	
atypical anorexia nervosa (F50.1)	8 (10.7)	7 (13.0)	1 (4.8)	
AN subtype; <i>n (%)</i>				
restrictive	58 (77.3)	40 (74.1)	18 (85.7)	
binge-purging	17 (22.7)	14 (25.9)	3 (14.3)	
DUI; <i>M in years (R / SD)</i>	2.25 (.15 – 19.6 / 4.33)	2.93 (.15 – 19.6 / 4.94)	.49 (-.17 – 2.29/ .59)	5.083 **
AOO; <i>M in years (R /SD)</i>	19.15 (12-41 / 5.18)	20.75 (12-41 / 5.26)	15.03 (13-17 / 1.07)	24.182***
BMI; <i>M (R /SD)</i>	15.5 (10.6-23.0 / 1.96)	15.5 (10.6-21.1 / 1.91)	15.0 (13.0-23.3 / 2.12)	
comorbid SCID Axis I disorder; <i>n (%)</i>				
none	17 (22.6)	10 (18.5)	7 (33.3)	
one	42 (56.0)	23 (63.0)	8 (38.1)	
two or more	16 (21.4)	10 (18.5)	6 (28.6)	
comorbid SCID AXIS II; <i>n (%)</i>				
none	70 (93.3)	49 (90.7)	21 (100)	
one	5 (6.7)	5 (9.3)	0 (0)	

DUI = Duration of untreated illness; AOO= Age of onset; F-Tests were performed for DUI and AOO; ***p*>.00; ****p*<.001 (two-sided)

Table 2: Item characteristics, principal component analysis and construct validation

Components (Eigenvalue)	Items (Nr.)	Item characteristics					Adults		Adolescents		Principal Components Analysis ¹								
		N	M	SD	SK	KT	M	SD	M	SD	1	2	3	4	5	6			
1 Primary care perceived as supportive and competent (4.20)	I had a doctor ² I trusted (13)	75	3.4	1.48	-.38	-1.25	3.3	1.43	3.4	1.63	.84								
	I had a doctor ² with a great competence in the field of eating disorders (14)	75	2.7	1.38	.18	-1.24	2.6	1.37	2.9	1.41	.78								
	I had a doctor who cooperated well with my other practitioners (15)	74	2.5	1.45	.55	-1.05	2.5	1.42	2.4	1.57	.61					-.24	.31	.2	
	After my anorexia was recognized, I had regular appointments with a doctor ² (12)	74	3.3	1.43	-.31	-1.21	3.2	1.40	3.8	1.45	.51							.38	
	I had a doctor ² who arranged that I received appropriate treatment (8)	75	3.2	1.46	-.09	-1.37	3.2	1.44	3.2	1.55	.49		.35					.26	
	I had a doctor ² who recognized my anorexia at an early stage of illness (9)	75	2.3	1.40	.71	-.80	2.2	1.42	2.4	1.36	.46		.27	.58					
	I had a doctor who dealt badly with my difficulties concerning food, shape or weight, e.g. trivialized my complaints (11) ¹	75	2.7	1.59	.38	-1.42	2.7	1.56	2.5	1.69	.45								-.47
	I had a doctor ² who told me unambiguously that I had anorexia (10)	75	3.1	1.63	-.12	-1.57	3.1	1.61	3.0	1.72	.43			.35					.3
2 Emotional and practical support from relatives (1.80)	My environment has encouraged me to seek treatment (6)	74	4.5	0.98	-2.03	3.71	4.5	.93	4.5	1.15								.82	
	My environment often expressed concern about my anorexia (4)	75	4.2	1.02	-.98	.09	4.1	1.01	4.3	1.06	.25	.72							
	At least one person from my environment supported me practically in treatment initiation, e.g. arranged doctor's appointments,	75	4.1	1.41	-1.3	.09	4.1	1.41	4.1	1.46				.71					-.21

explained (%)				
Cronbach's alpha	.79	.67	-.38	.42

¹ The polarity of the items nr. 1, 11, 16, 17 and 18 was reversed for PCA and construct validity tests; ²e.g. general practitioner, gynecologist, psychiatrist; r^{it} = item-total correlation, α = Cronbach's alpha if the item is deleted, SK= skewness, KT= kurtosis, (+) positive correlation; (-) negative correlation; ³IPQ item 3 with 0=absolutely no personal control and 10= extreme personal control; ⁴IPQ item 4 with 0=perception that treatment is not helpful at all and 10= perception of treatment as extremely helpful; ⁵IPQ item 7 with 0= no illness perception and 10= very clear illness perception; ⁶IPQ Item 9 – open item asking for the three major subjective causes for the illness. We considered all illness causes related to influences of media; (-) negative correlation expected; * $p < .01$, ** $p > .001$; *** $p < .001$ (one-sided)

Figures

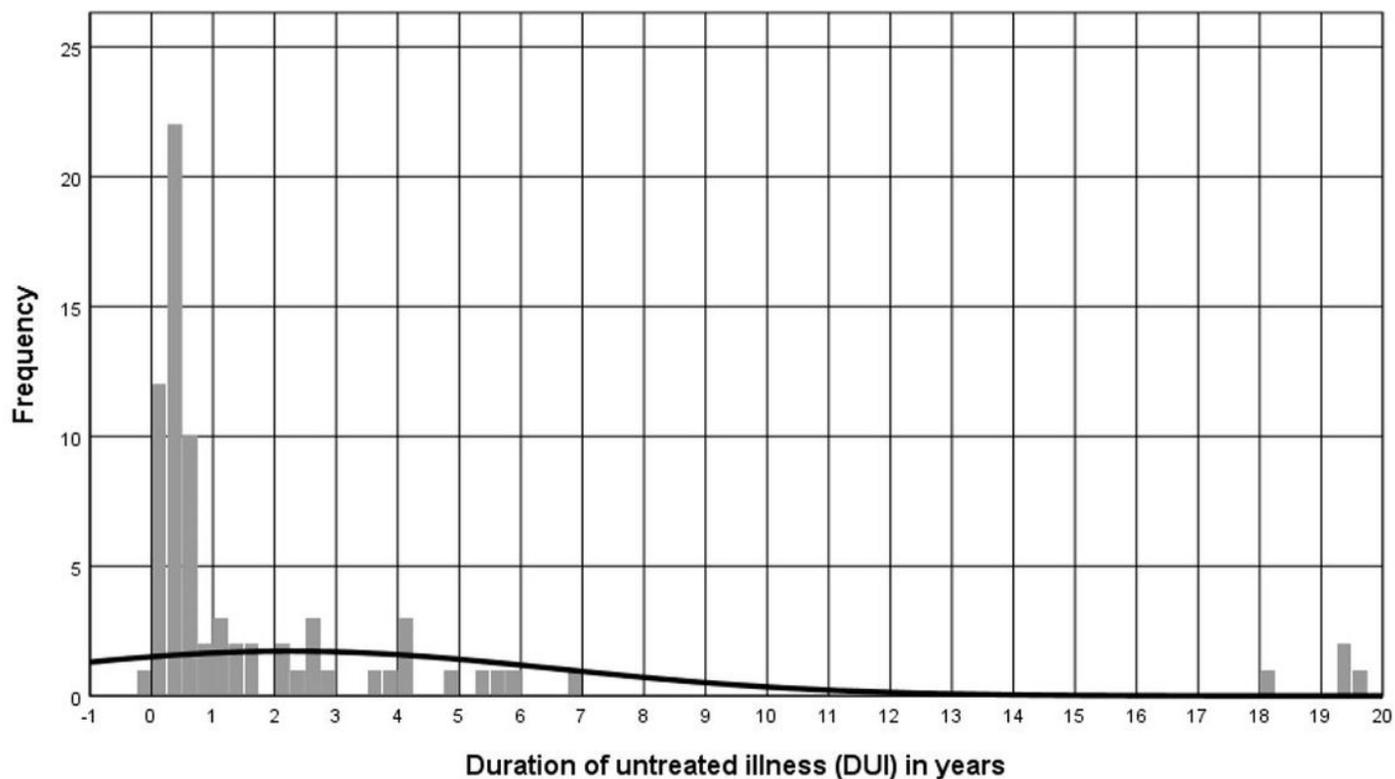


Figure 1

Duration of untreated illness (DUI). Each bar corresponds to the frequency per three months (annual quarter) Duration of untreated illness (DUI). Each bar corresponds to the frequency per three months (annual quarter). Negative values mean that the diagnostic criteria for AN (according to DSM-V) were met after the start of treatment.

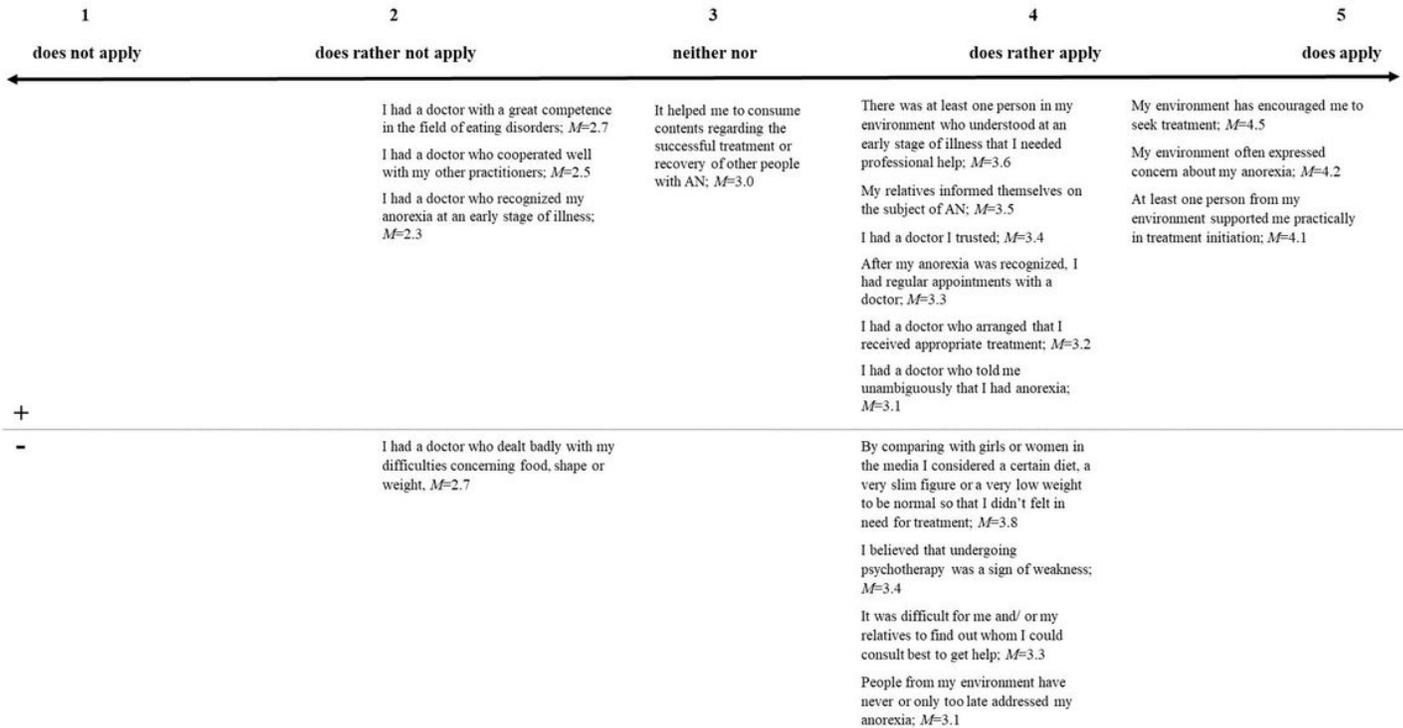


Figure 2

Mean values of the 18 items of the FABIANA-checklist. Items were rated on a scale of 1= did not apply to 5=did apply. Items were rated on a scale of 1 to 5 positively poled items are displayed in the upper part, negatively poled items in the lower part of the figure.