European Geriatric Medicine (2020) 11:289–295
https://doi.org/10.1007/s41999-019-00277-y

RESEARCH PAPER

Screening for personality disorders in geriatric medicine outpatients

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Received: 6 May 2019 / Accepted: 30 October 2019 / Published online: 18 December 2019

Key summary points

Aim Optimize screening of personality disorders (PDs) in geriatric medicine outpatients.
Findings The Gerontological Personality disorder Scale (GPS) proves to be a reliable and valid tool to screen for PDs in Dutch geriatric medicine outpatients.
Message Screening for PDs is of importance in geriatric medicine to enhance compliance and optimize medical treatment.

Abstract

Purpose Personality disorder (PD) assessment in older adults is challenging. In geriatric medicine, older adults with multimorbidity are treated for their somatic, psychogeriatric, functional and social complaints and the presence of a PD can be a complicating factor in this treatment. Therefore, this study evaluates the diagnostic accuracy of a PD screening instrument, the Gerontological Personality disorder Scale (GPS) in a Dutch geriatric medicine population.
Methods Using an informant-based personality questionnaire (HAP) as a reference criterion, the psychometric properties of the GPS-informant version were assessed in a sample of $N = 160$ (62 male) outpatients (mean age = 81.7).
Results The internal consistency of the GPS (total score), Cronbach's alpha, was $\alpha = 0.69$. And the average inter-item correlation (total score) was 0.14. The test–retest reliability was $r_s = 0.68$. The sensitivity and specificity for the GPS were 0.91 and 0.67, respectively. The GPS items showed predictive validity for PD status with 87.4% of predictions being accurate based on a logistic regression analysis.
Conclusions This is the first psychometric study to use the GPS as an age-specific screening instrument for PDs in Dutch geriatric medicine outpatients. The GPS is an adequate screening tool for PDs in geriatric medicine, given the high sensitivity. The diagnostic accuracy of the GPS-informant version is fair to excellent.

Keywords Personality disorder · Older adults · Geriatric medicine · Screening · Gerontological Personality Disorders Scale (GPS)

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s41999-019-00277-y) contains supplementary material, which is available to authorized users.

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Introduction

In geriatric medicine, older adults with multi-morbidity are treated for a variety of somatic, psychogeriatric, functional and social complaints. Research has shown that the presence of a personality disorder (PD) is a highly frequent complicating factor in both psychiatric and somatic health care [1]. The life style of patients with PDs, their lack of compliance, limited support system and conflicts with caregivers/professionals can complicate the treatment of somatic disorders in geriatric medicine. Persons diagnosed with PDs also tend to be less motivated for treatment, their compliance for treatment is often diminished or medical treatment is even refused. Moreover, they often have excessive medication consumption. A recent study in Scandinavia [2] showed that people diagnosed with a PD are three times more likely to be admitted to a hospital for several physical conditions as people without a PD. The presence of a PD, therefore, makes an already frail population even more complex or can even create more interpersonal problems like overburden of caregivers and relational problems.

To describe and clarify the capacities and specific care needs of the patient, geriatric medicine aims to trace as many as possible problems of older patients through multidisciplinary research with the primary goal to contain or improve overall functional capacities and capability to fulfil life goals. However, standardized assessment methods in geriatric medicine, such as the comprehensive geriatric assessment [3], contain no items about the presence or absence of PDs [3, 4]. The acknowledgement of the possible presence of a PD is of substantial clinical importance in geriatric medicine and can provide even more personalized care. Learning about the presence of a PD leads to more adequate personalized treatment and/or improves advising the patient's support system. Handing physicians and nurse practitioners a screening tool, which is reliable and quickly assesses the possible presence of a PD in this frail population, would therefore be appropriate and essential for personalized care for these patients.

Since the presence of a PD in the field of geriatric medicine can make care of an already frail population even more complex and lead to several difficulties in the geriatric treatment, a reliable assessment of PDs is important to provide personalized care. Therefore, in this current research we investigated whether the Gerontological Personality Disorders Scale (GPS) [4], a screening instrument to detect PDs in older adults, is a reliable and valid screening instrument for PDs in geriatric medicine outpatients.

Methods

Participants

From December 2015 to June 2017, all patients, irrespective of age or gender, referred to the Department of Geriatric Medicine at Zuyderland in Sittard-Geleen (Netherlands) were asked to participate in the current research when they reported at the registration desk. After informed consent, participants were handed an envelope which contained the written information and the questionnaires. In the treatment room, further information was provided to the participants by the physician or physician assistant. Sample size needed (89.637) was estimated on the basis of low marginal errors (0.03) and a sensitivity of 0.70, and given prevalence rate was not known beforehand on the greatest sample size needed in case of low prevalence (0.01) [5]. Thus, 90 or more participants should be collected. In total $N = 160$ informants filled in both questionnaires (HAP and GPS) and thus were included in this research. The only exclusion criterion was the lack of an informant, such as spouse, sibling or child because our assessment focused on informant information. The patient group consisted of 69 males (43.1%) and 89 females (55.6%). Two patients did not list their gender (1.3%). The mean age was 81.7 years (SD = x, range 67.1–95.2). The majority of informants were children (55%), followed by spouses (25.6%) (Table 1).

Measures

Gerontological Personality Disorders Scale

In this research, only the informant section of the Gerontological Personality Disorders Scale [4] was used, because a high prevalence of cognitive disorders is likely in a geriatric population which makes a self-report questionnaire not reliable. The informant section consists of two different scales: habitual behaviour (HAB) (seven items) and biographical

Table 1 Frequencies of informant relationships

Relationship of informant	Percentage
Spouse	25.6
Brother/sister	1.9
Child	55
Brother/sister-in-law	0.6
Friend	0.6
Son/daughter-in-law	5.6
Life partner	3.1
Otherwise	6.3
Missing	1.3

information (BIO) (nine items): both with two response categories (yes/no). These scales are added together to calculate the total score. Administration takes 2–3 min. In this research, informants were explicitly asked to fill in the questionnaire retrospectively, before current illness or disease, as for instance Mild Cognitive Impairment or dementia. The psychometric properties of the GPS have been shown to be fair in a sample of outpatients of a department of geriatric psychiatry [4]. The internal consistency values, calculated through item-total correlations, of the HAB were moderate (seven out of 16 HAB items had an item-total correlation greater than 0.10); of the BIO, the values were good (the nine BIO items had an item correlation greater than 0.10). The test–retest reliability of the total GPS score was moderate ($r_s = 0.68$), also moderate for the HAB items ($r_s = 0.72$), and excellent for the BIO items ($r_s = 0.89$). The sensitivity of the informant version of the GPS was good (78%) and the specificity was low (45%). The informant version of the GPS had a predictive value of 63.8% for predicting the presence of a PD [4]. A recent study in a Dutch general practice population [6] showed that internal consistency of the GPS informant version was $\alpha = 0.57$ (HAB), $\alpha = 0.58$ (BIO) and $\alpha = 0.68$ (total) and test–retest reliability was $r_s = 0.52$ (HAB), $r_s = 0.65$ (BIO) and $r_s = 0.68$ (total). The latter study showed that a cutoff score in the informant version, to discriminate between the presence and absence of a PD, of ≥ 3 maximizes the sensitivity (78%) and specificity (65%).

Hetero Anamnestic Personality Questionnaire

The HAP is an informant instrument for detecting maladaptive personality traits [7]. The instrument is exclusively based on informant information [8] and, therefore, can be used in patients with (severe) cognitive disorders who otherwise would not be able to fill in a questionnaire themselves. Nature of relationship between the informant and the patient is checked. The content of the HAP items is based on premorbid personality traits by retrospectively examining maladaptive and dysfunctional symptoms. The HAP is used as the criterion instrument for PD assessment or in other words external criterion in this study. The HAP consists of 62 items retrospectively assessing behaviour and personality traits which are subdivided into 12 scales: positive response tendency, negative response tendency, socially avoidant behaviour, uncertain behaviour, vulnerability in interpersonal relationships, somatizing behaviour, disorderly behaviour, rigid behaviour, perfectionistic behaviour, antagonistic behaviour, self-satisfied behaviour and unpredictable and impulsive behaviour. Response categories are: 'yes', 'more or less', and 'no'. Administration takes 15–20 min. Either three or more '(very) high' subscale scores (positive and negative response tendency not included) indicate the presence of a PD or two '(very) high' scores and six scales with an 'above average' score. Psychometric properties of the HAP are good [8]. The internal consistency of the 12 scales is good (inter-item correlations values vary from 0.23 to 0.53); the inter-rater and test–retest reliabilities are good to excellent (intraclass correlations between $r = 0.60$ and 0.98); the construct equivalence across important subgroups was demonstrated by comparing the underlying factor structure validity, as operationalized through factor analyses. This demonstrated factorial invariance in both nursing homes residents and older psychiatric patient populations, with congruency coefficients of corresponding factors all being high (congruency coefficients of corresponding PCA components, respectively, $r = 0.99$, $r = 0.96$ and $r = 0.98$ for factors 1, 2, and 3 [8]. Age neutrality has been investigated by a Delphi study and it was found that all 62 items of the HAP are age neutral. In addition, the HAP represents sufficient criteria for nine out of the ten PDs by the DSM IV-TR [9].

Procedure

Ethics approval was granted from the Medical Ethical Review Commission of Zuyderland Medical Concern (approval number 15-N-98).

At first, entrance patients and their informants were handed an envelope which contained research information, informed consents and the questionnaires. During the following first consultation, physicians and nurse practitioners of the department of geriatric medicine approached the patients and their informants to participate in the current research. The patients and informants were given information (verbal and written) of the current research. When agreed to participate and after signing informed consents, informants filled in the GPS and HAP, which were preferably filled in and returned at that moment. Otherwise informants were handed an envelope to return the questionnaires by mail.

Fifty informants, randomly chosen, were asked to fill in the questionnaires a second time over a period of 3–4 weeks to examine test–retest reliability.

Statistical analyses

All analyses were preformed using the SPSS 21 package.

Reliability

Internal consistency of the GPS was examined using both Cronbach's alpha and average inter-item correlation (AIC). The AIC was used because it is considered to be superior to Cronbach's alpha in case of shorter scales since it measures internal consistency independently of the number of scale items. An AIC above 0.15 and a Cronbach's alpha

above 0.70 are considered to be fair [10]. The test–retest reliability was measured through Spearman correlations (r_s). The strength of the relationship was determined as follows: $r_s = 0.10–0.29$ small effect, $r_s = 0.30–0.49$ medium effect and $r_s = 0.50–1.0$ large effect [11].

Diagnostic accuracy

To determine whether the GPS scales are fair predictors of the possible presence or absence of PDs, sensitivity and specificity were calculated using receiver operating characteristic curves (ROC) analysis. The HAP was used as criterion instrument. The AUC represents the probability that the test will reliably discriminate between a participant having a PD or not having a PD. An AUC value greater than 0.70 is considered fair to excellent [12].

To determine the predictive validity of the GPS, a binary logistic regression analysis was performed with the PD status as the dependent variable and the 16 GPS items as the predictor variables.

Results

Reliability

The internal consistency, as estimated by Cronbach's alpha, was 0.45 (HAB), 0.73 (BIO) and 0.69 (total). Only the BIO scale proved to be above the minimal required level of 0.70 [17]. The internal consistency based on AIC values was 0.09 (HAB), 0.25 (BIO) and 0.14 (total); which again shows that only the BIO scale was above the minimal required level of 0.15 [10].

Test–retest reliability

The GPS test–retest reliability, assessed with Spearman's correlations ($n = 59$), was $r_s = 0.61$ (HAB), $r_s = 0.58$ (BIO) and $r_s = 0.68$ (total) and, therefore, all showed a large effect. All correlations were significant ($p \leq 0.001$).

Diagnostic accuracy

The AUC curves are plotted in Fig. 1.

For the GPS HAB scale, the AUC was 0.763, confidence interval CI [0.673–0.853] and significant at $p \leq 0.001$. The sensitivity was good at cutoff 4, which provides a sensitivity of 0.714 [95% BI = 0.33–0.714) and a specificity of 0.46 [95% BI = 0.65–0.89].

For the GPS BIO scale, the AUC was 0.825, CI [0.737–0.913] and significant at $p \leq 0.001$. The sensitivity and specificity were good at cutoff 2 which in turn provides a sensitivity of 0.714 [95% BI = 0.619–0.714] and a specificity of 0.745 [95% BI = 0.745–0.869].

For the total GPS, the AUC was 0.873, CI [0.807–0.939] and significant at $p \leq 0.001$. The sensitivity for the total scale was excellent at cutoff 5 which provides a sensitivity of 0.905 [95% BI = 0.762–0.905] and a specificity of 0.671 [95% BI = 0.671–0.818].

In sum, the AUC for the subscales and the total GPS showed a fair diagnostic accuracy, with sensitivity always being good.

The binary logistic regression analysis performed demonstrated the predictive validity of the GPS items on the likelihood that the patient had a PD. The full model was significantly reliable (Chi square = 44.545, $df = 16$, $p > 0.001$). The model as a whole explained between 25.5 and 46.1% of the variance in PD status. Overall, 87.4% of predictions were accurate. However, not having a PD (96.2%) was more accurately predicted than the presence of a PD (33.3%). As shown in Table 2, one item, BIO 1 made a unique statistically significant contribution to the model. If the informant responded positively to this item, they were 4.87 times more likely to have a PD (Table 2).

Discussion

The past decades interest in research of PDs is growing both in adulthood and adolescence samples. However, psychometric research on PDs concerning older adults is still limited [1].

In our study, the diagnostic accuracy of the total GPS is fair to excellent, with an excellent sensitivity of the total GPS of 90.1% and a fair specificity of 67.1%. The test–retest reliability is good. The GPS informant version, therefore, can be considered as a valid and reliable tool to assess possible PD presence in geriatric medicine outpatients. Besides the fair diagnostic accuracy, it is fast and easy in use; administration only takes 2–3 min. In a short time, it is possible to assess whether the presence of a PD is likely and should be taken into account in further (somatic) treatment. Because the GPS relies on informant information, there is no bias due to cognitive dysfunctions of the patient. Thus, for the field of geriatric medicine, the current findings indicate that the GPS is a fast and reliable tool to detect the possible presence of a PD.

Previous psychometric research of the GPS by Penders et al. [6] determined the applicability of the GPS as an age-specific screening instrument for PDs. They found that "based on the diagnostic accuracy statistics, the GPS informant version is preferable to the GPS patient version; sensitivity and specificity were 78% and 65%, respectively, for the GPS-informant version and 83% and 27%, respectively, for the GP patient-version". This research used a sample of

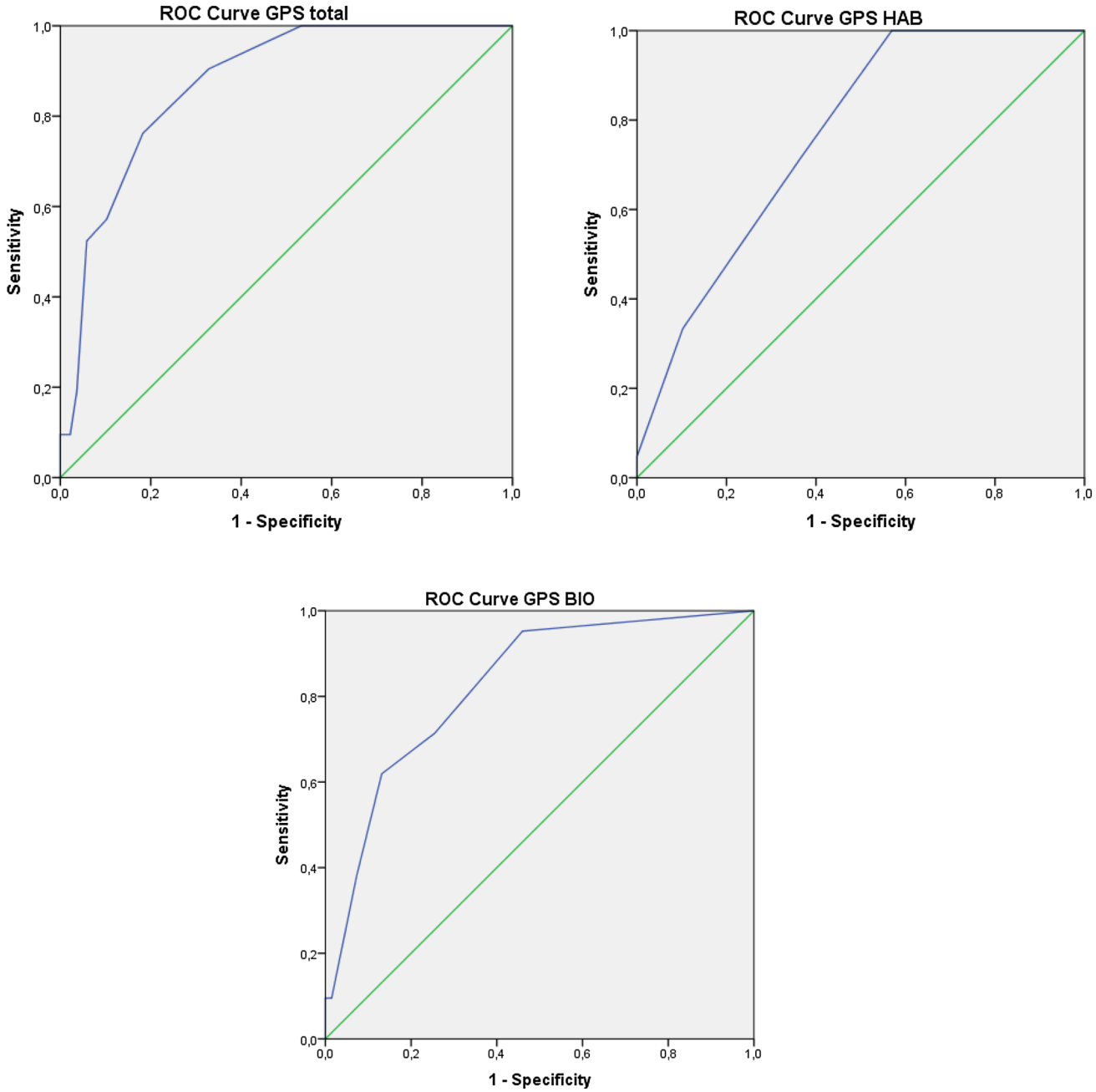

Fig. 1 ROC curves of GPS total, GPS HAB and GPS BIO

patients from Dutch General Practice (GP), a more or less community dwelling population. Since our sample differs from the GP population in terms of for instance somatic illnesses/multi-morbidity, medication consumption/polypharmacy and frailty, the results of the study of Penders et al. [6] are not automatically transferable to a geriatric medicine population.

The aim of personalized medicine is to personalize treatment on patient-specific factors to create the best possible treatment for the individual patient. The presence of a PD is a risk factor in medical treatment because it can lead to diminished therapy motivation or medicine compliance. Patients with PD can be reluctant to follow up advice of the clinical physician or nurse practitioner. For instance, they might not follow up advice on, e.g. nutrition or exercise or they might not take their medicine at advised times or even refuse taking them all together. This implies that, in order to optimize somatic treatment, it is necessary to spend more time on advising the PD patient, enhancing compliance and checking up whether advice is being followed. Nurse

Table 2 Logistic regression analyses predicting the likelihood of having a PD based on the GPS items

	B	SE	Wald	*P*	95% CI
HAB 1	1.248	0.775	2.590	0.108	[0.76, 15.92]
HAB 2	0.588	0.910	0.417	0.518	[0.30, 10.72]
HAB 3	0.532	0.815	0.425	0.514	[0.34, 8.41]
HAB 4	0.585	0.798	0.537	0.464	[0.38, 8.56]
HAB 5	0.590	0.734	0.646	0.422	[0.43, 7.60]
HAB 6	− 0.246	1.696	0.021	0.885	[0.03, 21.74]
HAB 7	0.628	0.711	0.781	0.377	[0.46, 7.55]
BIO 1	1.583	0.774	4.179	0.041	[1.07, 22.20]
BIO 2	1.464	0.904	2.621	0.105	[0.73, 25.42]
BIO 3	2.364	1.723	1.883	0.170	[0.36, 311.13]
BIO 4	0.0861	0.696	1.531	0.216	[0.60, 9.26]
BIO 5	− 0.604	1.531	0.156	0.693	[0.03, 10.98]
BIO 6	− 3.230	2.378	1.845	0.174	[0.0, 4.184]
BIO 7	1.433	0.931	2.369	0.124	[0.68, 26.02]
BIO 8	0.875	0.726	1.454	0.228	[0.58, 0.95]
BIO 9	− 0.683	1.002	0.465	0.495	[0.07, 3.60]
Constant	− 5.538	1.225	20.424	0.000	

practitioners can play an important role in this. On seeing the PD patient on a more regular basis, they can repeat advice and search for a way that the importance of the advice is eminent for the patient. One way of doing so could be by involving the patient's caregiving system (spouse, children or even other professional caregivers) in the treatment or in enhancing therapy motivation. Reliable and fast detection of the presence of a PD, by means of the GPS, can thus aid to better geriatric medical care for the frail older patient.

As far as we know this is the first psychometric study in the field of PDs in geriatric medicine. Moreover, the GPS is the only validated instrument for detecting PDs in older adults. However, this study has several limitations. First, using the HAP as criterion instrument is seen as a limitation, because in assessing the presence of a PD, a LEAD procedure (Longitudinal Expert evaluation that uses all Data) is preferred above the HAP. The purpose of a LEAD procedure is to achieve a consensus diagnosis by an expert [13]. This expert has studied the patient over an excessive period of time and includes a broad spectrum of information. This includes information of several different sources, for instance, information from other care facilities where the patient underwent previous treatment, information of other mental health clinicians who either diagnosed or treated the patient previously and information gather through extended informant information from family and friends about important life events of the patient, personality assessment, etc. This procedure is preferred above the use of a self-assessment or informant-assessment tool, because such tools come with an increased likelihood of positive distortion. In general, the LEAD procedure is very difficult to achieve, even in the field of psychiatric mental health care, because it is expensive in time and expertise. In geriatric medicine, this LEAD procedure is not achievable, due to the absence of an expert and the amount of time this procedure consumes. An existing DSM-diagnosis would be the second-best option [14]. However, this diagnosis is often not present. Considering the above, the use of the HAP is, therefore, the best and most practical option in geriatric medicine.

A second drawback of this study was that the inclusion of patients took place in a single geriatric department even though the total number of participants included was more than the estimated sample size for sensitivity of 0.70. At this moment, we are not sure if current results are representative for the target population of geriatric medicine patients. Therefore, we advise to conduct further studies in geriatric medicine patients.

Third, the GPS is used as a screening tool for the presence or absence of a PD; it, however, does not discriminate between the type of PD which is present. Therefore, additional tools will need to be administered if the GPS indicates the possible presence of a PD. In previous research, Barendse et al. [8] found three HAP profiles. The first is an externalizing/antagonistic profile with dominant, hostile, impulsive, egocentric, and susceptible to negative judgement behavioural characteristics. The second is an internalizing/neurotic profile with behavioural characteristics like anxious, uncertain, avoidant, reserved, rigid, and susceptible to negative judgement. And the third is a compulsive profile with behavioural characteristics: excessive controlling and perfectionist. It is conceivable that a combined use of GPS and HAP could provide information not only of the severity of the PD, but also of the specific personality (externalizing, internalizing, compulsive) profile of the patient. Combining both the GPS and HAP could, therefore, give more guidance and information for the modifications necessary in approach and treatment, which in turn could optimize the effect of the patient's overall treatment. More specialized and personalized information regarding the patient's personality only will improve his somatic treatment. In geriatric medicine, choosing the best somatic treatment option is based on the patient's medical condition; adding a more specific patient personality profile should probably enhance and improve treatment outcomes.

Fourth, a PD is a complex construct consisting of stable and specific deviations in behaviour, emotions, cognitions, interpersonal relations and impulse control [14] over a long period of time. The GPS on the other hand measures more global aspects of a PD. Therefore, one could argue that the GPS with his global aspects is not the most suitable tool for screening of the presence of a PD. However, since the GPS is only a tool for screening and cannot be used to differentiate between different kinds of PDs, using global aspects is

more than sufficient as a first step. Sequential measurements are always needed to determine the kind of PD.

There are several interesting research questions left. First, for future research it would be interesting to see whether current results are replicable and can generalize over different and larger geriatric medical populations. Second, it would be of interest to see whether changes in approach, based on the presence or absence of a PD, will lead to better somatic treatment. Third, it would be interesting to see whether combining the use of GPS and HAP, leading to differentiation in one of the three profiles and thus in specific guidelines for approach, leads to better somatic treatment or compliance from the patient. One could for instance compare results from a group delivering standard medical care and a group which personalizes their treatment and approach of the patient based on the specific GPS-HAP-profiles.

In a time where the amount of chronical illnesses increases, the prevalence of older adults increases and, therefore, the prevalence of chronically ill older persons increases, medical care becomes more and more complex, which implies that disease management is of great importance. Individual treatment in geriatric medicine is getting increasingly complex, and from the point of cost effectiveness and safety issues it is important to know whether a patient is compliant. For instance, in the treatment of osteoporosis, one can choose for a treatment with bisphosphonate once a week or denosumab once in 6 months. For a patient with a positive score on the GPS, this score could be an extra reason to choose denosumab as treatment. It is, therefore, highly important to learn about the person/personality behind the medical illness, to enhance compliance and optimize medical treatment.

Compliance with ethical standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional research committee (Medical Ethical Review Commission of Zuyderland Medical Concern, approval number 15-N-98) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent Informed consent for publication was obtained from each patient participated in the study.

References

1. Van Alphen SPJ, van Dijk SDM, Videler AC, Dierckx E, Bouckaert F, Rossi G, Oude Voshaar RC (2015) Personality disorders in older adults: emerging research issues. Curr Psychiatry Rep 17:538–545
2. Fok MLY, Chang CK, Broadbent M, Stewart R, Moran P (2019) General hospital admission in people diagnosed with personality disorder. Acta Psychiatr Scand 3:248–255. https://doi.org/10.1111/acps.13004
3. AGS Public Policy Committee (1989) Comprehensive geriatric assessment. JAGS 37(5):473–474
4. Van Alphen SPJ, Engelen GJJA, Kuin Y, Hoijtink HJA, Derksen JJL (2006) A preliminary study of the diagnostic accuracy of the Gerontological Personality Disorders Scale (GPS). Int J Geriatr Psychiatry. 21:862–868
5. Haijan-Tilaki K (2014) Sample size estimation in diagnostic test studies of biomedical informatics. J Biomed Inform 48:193–204. https://doi.org/10.1016/j.jbi.2014.02.013
6. Penders KAP, Rossi G, Metsemakers JFM, Duimel-Peeters IGP, van Alphen SJP (2015) Diagnostic accuracy of the Gerontological Personality Disorder Scale (GPS) in Dutch general practice. Aging Ment Health. https://doi.org/10.1080/13607863.2015.1008989
7. Barendse HPJ, Thissen AJC (2006) Handleiding van de Hetero-Anamnestische Persoonlijkheidsvragenlijst HAP. Barendse & Thissen, Schijndel
8. Barendse HPJ, Thissen AJT, Rossi G, Oei TI, van Alphen SPJ (2013) Psychometric properties of an informant personality questionnaire (the HAP) in a sample of older adult in the Netherlands and Belgium. Aging Ment Health 17(5):623–629
9. Barendse HPJ, Rossi G, van Alphen SPJ (2014) Personality disorders in older adults: expert opinion as a first step toward evaluating the criterion validity of an informant questionnaire (HAP). Int Psychogeriatr 26(1):173–174
10. Clark LA, Watson D (1995) Constructing validity. Basic issues in objective scale development. Psychol Assess 7(3):309–319
11. Cohen J (1998) Differences between proportions. In: Cohen J (ed) Statistical power analysis for the behavioural science. Lawrence Erlbaum Associates, Hillsdale, pp 179–213
12. Bewick V, Cheek L, Ball J (2004) Statistic review 13: receiver operating characteristic curves. Crit Care. https://doi.org/10.1186/cc3000
13. Spitzer RL (1983) Psychiatric diagnosis: are clinicians still necessary? Compr Psychiatry 24:399–411
14. Association American Psychiatric (ed) (2013) Diagnostic and statistical manual of mental disorders: DSM V. American Psychiatric Pub, Washington