Full title: Using the SAPAS to Identify Risk for Personality Disorders among Psychiatric Outpatients in India: A Feasibility Study

Short Title: Screening for Personality Disorder in India

Simeon Innocent (King's College London), Priyanka Podder (Clinical Psychologist, University of Calcutta and Mental Health Foundation, Kolkata), Jai Ranjan Ram (Apollo Gleneagles Hospital, Kolkata), Kirsten Barnicot (Imperial College, London and Piyal Sen (Elysium Healthcare and King's College, London).

Primary contact: Piyal Sen, Chadwick Lodge and Eaglestone View, Milton Keynes. E-mail: piyal.sen@elysumhealthcare.co.uk, piyal.1.sen@kcl.ac.uk. Telephone number 01908 593000. Fax Number 01908 593202

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Abstract:
Personality Disorders (PD) are common among psychiatric outpatients and are associated with increased morbidity and worse treatment outcomes. Epidemiological research conducted among this population in Asian countries is limited, reflecting a significant gap in the current literature. One barrier to this research is the lack of appropriate screening tools. The current research assessed the feasibility of using the SAPAS (Standardised Assessment of Personality–Abbreviated Scale) screening tool to identify individuals at high risk of PD in an Indian psychiatric outpatient population and provides an initial estimate of PD prevalence using a validated diagnostic interview, the ICD-10 International Personality Disorder Examination (IPDE).

The findings suggest that whilst use of the SAPAS was feasible, acceptable to patients and led to clinically useful findings, when using the recommended cut-off score of 4 the SAPAS largely over-diagnoses the risk for PD in psychiatric outpatients in India (Positive Predictive Value = 26.3%). The estimated prevalence of personality

disorder in the sample was 11.1%, based on administering the IPDE diagnostic interview to high-risk patients scoring 4 and above on the SAPAS , which is higher than previous estimates for this population and still likely to be an under-estimate. Future studies should translate the measure into Bengali and evaluate its sensitivity and specificity at different cut-off points in order to optimise its use in Indian populations.

Key Words: Personality Disorder, India, SAPAS, Psychiatric Outpatients

Paper Classification: Research Article

Introduction

Personality disorders are characterized by an enduring pattern of cognitive, affective and emotional traits that deviate significantly from expected cultural and behavioural norms. The resulting thoughts and experiences can be distressing and may cause significant impairment to social and occupational functioning (ICD-10, 1992). At a population level, personality disorder (PD) is associated with reduced life expectancy (Fok et al., 2015), increased morbidity (Keuroghlian et al., 2013) and worse outcomes of psychiatric disease (Newton-Howes et al., 2006). Hence, they have complex care requirements and robust epidemiological data is essential for effective service planning and resource strategies.

Estimates of the prevalence of PD in Western general populations range from 4% (Coid et al., 2006) to 13% (Torgersen et al., 2001). This rises dramatically among populations with known psychiatric comorbidities. Prevalence estimates among psychiatric outpatients in the United States of America, the United Kingdom and the People's Republic of China have been reported as 31.5% (Zimmerman et al., 2005), 40% (Newton-Howes et al., 2010) and 31.9% (Zhang et al., 2012), respectively.

Data on the prevalence of PD among clinical populations in India is scarce with estimates ranging from 0.14% (Celine & Anthony, 2014) to 62.1% (Nath et al., 2008). The existing data is largely derived from highly specialised clinical populations (e.g., those attending addiction services, or who have recently attempted suicide). To our knowledge, only one paper has described PD prevalence among a general psychiatric out-patient population, reporting a prevalence of 1.07% (Gupta & Mattoo, 2010). There is thus a strong need for further research into the rates of PD in this understudied

population.

To this end, it is necessary to have a diagnostic tool that is appropriate within this specific cultural context. Diagnostic interviews, such as the ICD-10 International Personality Disorder Examination (IPDE), which has been validated among this population (Sharan et al., 2002), are time consuming (Dahl & Andreoli, 1997) and require a trained clinician. This reflects a significant operational burden both clinically and for population-based research in a resource-poor setting. Screening tools such as the Standardised Assessment of Personality – Abbreviated Scale (SAPAS) could potentially provide a feasible way of rapidly identifying patients who are likely to meet criteria for personality disorder, allowing clinicians to effectively channel their resources by selecting a group of patients for whom subsequent extended diagnostic assessment, advice on managing personality difficulties and referral to appropriate treatment, may be most effective. The SAPAS is a brief 8 question screening tool (Moran et al. 2003), that was developed from the semi-structured interview Standardised Assessment of Personality (Mann, Jenkins, Cutting, & Cowen, 1981; Moran, Rendu, Jenkins, Tylee, & Mann, 2001). Initial validation in a UK outpatient psychiatric sample found that scores of 3 and above on the interview version of the SAPAS correctly identified the presence of PD in 90% of patients, with a sensitivity and specificity of 0.94 and 0.85 respectively (Moran et al., 2003). Subsequent testing in UK and Dutch community samples has suggested a cut-off score of 4 provides the optimal balance of sensitivity and specificity (Germans et al. 2008, Fok et al. 2015). The SAPAS has since demonstrated validity, reliability and clinical utility in patients with substance abuse (Gonzalez, 2014; Hesse & Moran, 2010; Hesse, Rasmussen, & Pedersen, 2008), patients with depression (Bukh, Bock, Vinberg, Gether,

&Kessing,2010; Gorwoodetal.,2010), and forensic patients (Pluck, Sirdifield, Brooker, & Moran, 2012; Kongerslev, Moran, Bo, & Simonsen, 2012). However, the utility of the SAPAS as a screening measure for personality disorder has primarily been evaluated in the country in which it was developed (the UK), and to our knowledge evaluation of its utility in only two other countries has been published: Denmark (Hesse & Moan 2003, Hesse et al. 2008, Bukh et al. 2010, Kongerslev et al. 2012) and Holland (Germans et al. 2008). The utility of the SAPAS in a non-European and indeed non-Western setting is unknown, and in particular, .the feasibility and acceptability of its use among psychiatric outpatients in India, has not been investigated to date. It is important to establish this in order to determine whether this could be a feasible and acceptable method to rapidly identify patients within this population for whom subsequent extended diagnostic assessment, advice on managing personality difficulties and referral to appropriate treatment, may be most effective. Additionally, it is not known what proportion of patients in an Indian psychiatric outpatient population who score above the recommended cut-off of 4 on the SAPAS meet diagnostic criteria for personality disorder according to established diagnostic interviews. Establishing this could give some indication of the positive predictive value of the measure and of personality disorder prevalence in this population. Finally, it is not known whether use of alternative cut-off scores would be optimal in this population. Whilst establishing the latter would require evaluation of the trade-off between sensitivity and specificity provided by different cut-off scores, which was not possible in the context of this feasibility study in a real-world clinical setting, a useful preliminary indication could nevertheless be provided by contrasting the extent to which use of higher cut-off scores in this population would improve the positive predictive value of the SAPAS or result in high numbers of missed diagnoses, relative

to the recommended cut-off of 4.

The primary aim of this study was therefore to evaluate the feasibility, acceptability and clinical utility of the SAPAS as a screening tool to identify patients at high risk of personality disorder and signpost them for full diagnostic assessment and appropriate treatment where helpful. in an Indian psychiatric out-patient sample. Secondary aims were to establish the proportion of participants scoring 4 or above on the SAPAS who met criteria for a personality disorder based on an established diagnostic interview, and to contrast the increased positive predictive values versus numbers of missed diagnoses provided by higher cut-off scores.

Methods

Study population

Subjects were recruited from a private general psychiatric clinic based at Apollo Hospital in Kolkata, India – a 500-bed private general hospital. Whilst there is some public provision, a large proportion of psychiatric services in India are delivered by private institutions (van Ginneken et al., 2014; Khandelwal et al., 2004), and this sample therefore represents an important subset of the Indian psychiatric population. The hospital has a very active Psychiatry Out Patient Department with about 60-80 patient contacts every day, approximately one quarter of which are new patients. It has a wide catchment area including international patients from Bangladesh, Bhutan and Afghanistan visiting the hospital. However, the patients who came to India for treatment were generally proficient in English or one of the Indian languages like Hindi or Bengali.

Data was collected on Tuesdays, Thursdays and Saturdays across a four-month period, from the out-patient clinic of JR – a consultant psychiatrist at Apollo Hospital. Data collection was done by PP, who was trained in the use of the IPDE by PS, who ran a specialist service for personality disorder in the UK, and is fully trained in the use of the IPDE. As an aim of the study was to demonstrate the feasibility of clinicians using the SAPAS and IPDE to screen for PD in routine clinical practice, it was felt important that a clinician (rather than a full-time researcher) should administer these measures in addition to continuing to carry out their usual clinical duties, and for this reason it was not feasible to sample across all seven days of the week. These days of the week were chosen to encompass both weekdays and weekend days in order to ensure a representative sample of patients, since full-time employed patients would be more likely to attend the clinic on weekends.

The clinic served adult men and women, and all clinic attendees on the days of the study were approached for participation. Ethics approval was obtained prior to the commencement of the study from the Apollo Hospital Ethics Committee.

Measures

Screening measure: The SAPAS is an eight-question screening tool that has been shown to be useful for identifying individuals who are at high risk of having a diagnosable PD (Germans et al. 2008, Moran et al., 2003; Hesse & Moran, 2010). However, it is not diagnostic and cannot discern the specific PD category present. It consists of eight binary questions that refer directly to an aspect of a person's behaviour, emotions, or social relationships. Each answer is scored as either 0 or 1, which are combined to give an overall score from 0 to 8. The psychometric characteristics of the

SAPAS have been summarised in the Introduction to this paper.

Reference standard: The ICD-10 IPDE is a semi-structured interview used to formally diagnose PD. Following a 59-item screening questionnaire, those identified as eligible receive an interview from a clinician trained to administer the interview. This consists of 67 questions in the interview which have their own scoring criteria. It offers an ICD-10 diagnosis for each of the sub-categories of personality disorder, including Paranoid, Schizoid, Dissocial, Impulsive, Borderline, Histrionic, Anankastic, Anxious and Dependent, using a scoring system with cut-off scores to reach diagnostic threshold for each of the sub-categories of personality disorder. Apart from interviewing the subject, there is provision to interview family or carers to collect further information to assist the diagnosis. To collect information, the interview spans over the domains of work, self, interpersonal relationships, affects and reality testing. Diagnosis can be offered under the ICD-10 classificatory system. The measure was developed by Loranger and colleagues for the World Health Organisation (WHO 1997) using field testing in 12 different countries including Bangalore in India. Subsequent testing has shown it to have excellent inter-rater reliability (intraclass correlation coefficient range 0.84 to 0.92, Lenzenweger 1999). The IPDE demonstrates a good level of agreement with diagnoses made using the SCID-II, an alternative semi-structured diagnostic interview for personality disorders, which is indicative of good convergent validity - although agreement was higher for some diagnostic categories than others (Skodol et al. 1991).

The IPDE has shown significant reliability for use among a Northern Indian population, when translated into Hindi, with high inter-rater reliability (definite PD, κ= 0.81; probable PD, κ=0.91: Sharan et al., 2002). It was thus considered to be an appropriate

tool for determining the prevalence of PD among this population. However, the Hindi version of the IPDE was not used in the study as most of the subjects would speak Bengali, another Indian language, and thus would not be proficient in Hindi. English is widely taught as the second language to most Indians and thus the English IPDE was considered to be a more appropriate tool to use, though clarification of terms, if asked, was provided by the researcher in Bengali.

Procedure

All patients attending the psychiatric outpatient clinic on the sampled days were invited by their clinician to take part in the research. They were provided with information about the study and then gave written informed consent to participation. A background information sheet was filled in for all participants, collecting information on age, educational level, marital status, address, etc. All participants who consented to take part initially completed the SAPAS questionnaire. A cut-off point of 4 was used to determine which participants should be further evaluated using the IPDE screening tool. The IPDE was not administered to patients screening below 4 on the SAPAS because prior research had indicated that scores below 4 were likely to have low specificity for detecting personality disorder (Fok et al. 2015, Germans et al. 2008), and because it was not feasible for clinicians to administer the IPDE to all their patients due to the short duration of routine psychiatric outpatient appointments – prompting the need for this study to determine the feasibility of administering the rapid SAPAS screening measure to all outpatients as an alternative. Those who screened positive on the IPDE screening tool then went on to complete the formal IPDE interview with a trained clinician and received a clinical diagnosis.

Data analysis

Establishing feasibility, acceptability and clinical utility

The feasibility of using the SAPAS as a screen to identify patients at high risk of personality disorder was evaluated by determining whether all patients attending the clinic on the sampled days could be approached for screening, and whether all patients screening above the SAPAS threshold of 4 could receive a full diagnostic assessment using the IPDE, using the existing clinical staff resource within the outpatient clinic. The acceptability to patients was evaluated by determining the proportion of patients consenting to complete the SAPAS, and the proportion who answered all 8 questions (with assistance from the clinician to aid comprehension where necessary). Clinical utility was evaluated by determining whether diagnosis of personality disorder based on a positive SAPAS screen followed by an IPDE diagnostic interview led to helpful discussion with patients about their personality difficulties and/or provision of treatment appropriate for personality disorder.

Positive predictive value of the SAPAS

The proportion of participants scoring 4 or above on the SAPAS who met criteria for a personality disorder based on the IPDE diagnostic interview - i.e. the positive predictive value of the measure - was calculated. Additionally, the positive predictive values obtained when using higher cut-offs of 5, 6, or 7 were calculated, and contrasted to the proportion of participants scoring above 4 whose positive IPDE diagnosis would have been missed had a higher cut-off been used.

Assessing Prevalence

An estimate of personality disorder prevalence in this sample was made by calculating the proportion of the total sample who scored above 4 on the SAPAS screen and then subsequently received a positive diagnosis using the IPDE interview. However, it is acknowledged that this is likely to be an underestimate as some participants scoring below 4 on the SAPAS could potentially have received a positive diagnosis had the IPDE been administered.

All statistical analyses were performed using IBM SPSS v22 (for Mac)

Results

Study Population

255 subjects were approached to take part in the present study. 238 subjects gave their consent to participate. 4 cases had to be omitted from the final analysis due to errors in data collection, creating a study population of 234. Their demographic characteristics, determined following the terms provided in the Census of Government of India (India, 2011), are described in Table 1. Their age range was 16-67 (mean age = 37, modal age = 33). 45.3% (N=106) were women and 54.7% (N=132) were men. 32.5% (N=76) of the population lived in a rural setting, while 41.9% (N=98) and 25.6% (N=60) lived in urban and suburban settings, respectively. The majority of the sample were highly educated and in employment.

Feasibility, acceptability and clinical utility of the SAPAS

Using the existing clinical staff resource within the outpatient clinic, all patients attending the clinic on the sampled days were successfully approached for screening,

and 93% of those approached consented to screening. All those who consented completed all 8 SAPAS questions (with assistance from the clinician to aid comprehension where necessary), and all patients screening above the SAPAS threshold of 4 successfully received a full diagnostic assessment using the IPDE. In all cases, the findings from the SAPAS and from the IPDE interview were discussed with the patient and with their family, and where a diagnosis of personality disorder was made, patients were provided with information on how to access treatment for the condition. Such treatment is available both in the private and public sector.

Positive predictive value of the SAPAS and Prevalence of personality disorder

Using a threshold score of 4 for the SAPAS, 41.6% (N=99) of our sample population screened as high risk for PD. By contrast, use of higher cut-off scores classified far fewer patients as high risk, with just 31 patients (13%) identified using a cut-off of 5, 4 patients (2%) using a cut-off of 6 and 1 patient (0.4%) using a cut-off of 7.

Of those who screened as high risk using a SAPAS threshold of 4, 50 were men, while 49 were women. 36 lived in rural communities, while 41 lived in urban communities and 22 lived in suburban communities. Chi-squared tests demonstrated that there was no difference between those scoring above and below the threshold in gender, age, first language, education, occupational status, religion or marital status.

Of the 99 participants with a SAPAS score of 4 or more who completed the IPDE interview, 26 (26.3%) were diagnosed as having a personality disorder. i.e. a positive predictive value (PPV) of 0.26. Of the 234 subjects included in the study, this represents a prevalence of 11.1% - however this is likely to be an underestimate as participants

scoring under 4 on the SAPAS did not receive an IPDE assessment. Of the 26 formal diagnoses of PD, 15 (57.7%) were primarily cluster C; 7 (26.9%) were cluster B; and 4 (15.4%) were cluster A.

The positive predictive value of the SAPAS increased when using higher cut-off scores, at 0.55 when using a SAPAS cut-off of 5 or more, 0.75 when using a SAPAS cut-off or 6 or more, and 1.0 when using a SAPAS cut-off of 7 or more. However, as would be expected based on the small numbers of participants scoring 5 or more, use of these cut-off scores would have failed to detect the majority of those scoring 4 or more who were subsequently diagnosed with a PD using the IPDE, with a cut-off of 5 missing 35% of positive diagnoses identified by a cut-off of 4, a cut-off of 6 missing 88% of positive diagnoses, and a cut-off of 7 missing 96% of positive diagnoses.

Discussion

This was the first study to test the feasibility, acceptability and clinical utility of the SAPAS in a non-Western population. The study demonstrated that in an Indian outpatient psychiatric sample, it was feasible for clinicians and acceptable for patients to use the SAPAS to rapidly identify individuals at high risk of personality disorder. Use of the measure to highlight patients requiring further diagnostic assessment was shown to facilitate further discussion with patients and their families about their personality difficulties, and to enable signposting of patients towards effective treatment. However, it was beyond the scope of the present feasibility study to determine whether this led to improved outcomes for patients. Additionally, the data presented shows that using the recommended cut-off score of 4, the SAPAS did not attain the same high positive predictive value (PPV) as demonstrated within UK and

European outpatient psychiatric samples. Whereas a cut-off score of 4 on the SAPAS yielded a positive predictive value of 0.80 in a Dutch outpatient psychiatric sample (Germans et al. 2008), 0.90 in a UK outpatient psychiatric sample (Moran et al., 2003) and 0.41 in a UK general population sample (Fok et al. 2015), in the present sample using the same cut-off the positive predictive value was just 0.26. Whilst increasing the cut-off score beyond 4 did increase the positive predictive value, a large proportion of positive diagnoses identified by a cut-off of 4 were missed, suggesting that increasing the cut-off score beyond 4 would not be recommended.

The findings may indicate that the construct validity of the tool is weakened when used in different cultures and contexts. Closely tied to this is the fact that neither the SAPAS nor the IPDE are available in Bengali – the primary language of 78.6% of the study population. While the IPDE is available in Hindi, the English language edition of both tools were used in this study, with translations of the individual questions provided by the researcher where required. This may have further confounded the subjects' understanding of the concepts that they were being asked to assess and hence the diagnostic ability of the tool. Alternatively, cultural variance in what is considered to be normative could have meant that whilst almost half of patients had SAPAS scores that would indicate problematic personality traits and behaviour in Western cultures, these traits and behaviours may not always have generated the degree of distress and social impairment required for a diagnosis of personality disorder, perhaps because they were less likely to be perceived as problematic or abnormal by Indian society. Cultural variance in normative personality traits are known to exist - for example the norms for extraversion and openness to experience have been shown to be higher in individuals from European and American cultures than in those from Asian and African cultures,

whereas the norms for agreeableness are higher in Asian and African cultures (Allik & McCrae 2004). The location of the study in a private healthcare facility may also have influenced this as the patients would either have been sufficiently high-functioning to generate the income required for private healthcare, or sufficiently well-supported by affluent family members, which could be an indication that their personality traits had led to less impairment in social relationships and occupational functioning than might otherwise be the case. The high functioning nature of the sample is also suggested by the fact that all participants were educated to secondary level, with over half being university-educated, and 96% were in employment.

This is the first study to report on the prevalence of personality disorder in a psychiatric out-patient sample in India, using a reliable diagnostic tool like the IPDE. As only patients scoring 4 and above on the SAPAS received a full diagnostic interview, if a 100% negative predictive value for scores below 4 on the SAPAS is assumed, the overall prevalence of personality disorder in this sample SAPAS would be 11.1%, which is lower than in outpatient psychiatric samples in the UK (31.5% , Zimmerman et al., 2005), and USA (40% (Newton-Howes et al., 2010) and China (31.9% , Zhang et al., 2012). However, this figure is likely to be an underestimate as previous studies suggest that scores under 4 on the SAPAS have a negative predictive value of 0.82 (Germans et al. 2008), and thus a proportion of those scoring under 4 in this sample are likely to have met criteria for the diagnosis. Nonetheless, the prevalence estimate in this sample is significantly higher than the only other study on an unselected outpatient psychiatric population from India, which recorded a prevalence of 1.07% (Gupta and Mattoo, 2010).

This may reflect the fact that the two prevalence estimates are based on different

assessment methods, which has been shown to lead to variability between studies (Newton-Howes et al., 2008). The use of a validated diagnostic interview in the present study may have yielded a more reliable prevalence estimate, than that found by Gupta and Mattoo (2010), who based their diagnoses on a retrospective review of case notes.

The present data also offers some validation for the suggestion that Asians present with more Cluster C PD compared to Western samples (de Bernier et al, 2014), as the largest diagnosed group belonged to Cluster C.

Our study demonstrates that it is indeed clinically feasible to use a short screening tool such as the SAPAS among psychiatric outpatients in India presenting to clinical services as part of an initial psychiatric assessment. Among English speaking populations, SAPAS has been shown to be a reliable and inexpensive measure for assessing PD risk. Hence, a culturally- and linguistically-appropriate SAPAS could be invaluable as a screening tool for people presenting to psychiatric services. This is important as therapeutic decisions regarding PD are typically made in the initial assessment phase and early treatment is shown to have beneficial outcomes (Moran et al., 2003; Beckwith et al., 2014). Screening for PD during exacerbations of mental illness must be done with caution. This is because Axis I symptomatic states, which are often the cause of first presentation, may result in an artificially inflated sense of personality pathology (Tyrer et al., 2007). However, initial assessments still have strong prognostic validity (Zimmerman et al., 2008).

There were some limitations to this study. The data was collected from the psychiatric

out-patient clinic of a private hospital, where the patients were fee paying. Whilst much psychiatric care in India is delivered by private institutions (van Ginneken et al., 2014; Khandelwal et al., 2004), and the present sample thus represents an important subset of the Indian psychiatric population, the sample were in general high-functioning and the findings are unlikely to be representative of those receiving care from public psychiatric institutions. Within the busy environment of an out-patient clinic, access to collateral information from family and carers was limited, which is extremely useful for a diagnosis of PD. Additionally, although all patients were able to complete the questions with help, translation of the SAPAS and IPDE into Bengali would have improved confidence that all patients fully understood the questions. Finally, whilst a full diagnostic interview was given only to those scoring as high-risk on the SAPAS in order to test the feasibility of incorporating this approach into routine clinical practice where it is not possible to give all patients a full diagnostic interview, this meant that the study could not evaluate the sensitivity or specificity of this measure, nor identify the optimal cut-off score for use in this population.

Despite these limitations, the present study clearly demonstrates that it is feasible to use a tool like the SAPAS to screen for PD in busy psychiatric outpatient clinics in Asian countries like India, where PD is relatively understudied. It also demonstrates, – particularly given that the figure derived from this study is likely to be an underestimate - PD prevalence is much higher within this group than previous studies had suggested, and thus requires greater epidemiological demarcation.

In order to build on the findings of the present study, we make the following recommendations for future research:

1. In future studies, a validated diagnostic interview such as the IPDE should be administered to all participating psychiatric outpatients across the full range of SAPAS scores, in order to determine the specificity, sensitivity and optimum cut-off score for the SAPAS in an Indian population. .

2. The SAPAS and IPDE should be translated into Bengali and validated in this language in order to determine if this improves the positive predictive value of the SAPAS for detection of PD.

3. Future studies should combine samples from both private and public psychiatric institutions in order to generate a more representative estimate of the prevalence of PD across the full spectrum of the Indian psychiatric population.

References

1. Allik, J. & McCrae, R.R. (2004). Towards a geography of personality traits: Patterns of profiles across 36 cultures. *Journal of Cross-Cultural Psychology*, 35(1), 13-28.
2. Beckwith, H., Moran, P. F., & Reilly, J. (2014). Personality disorder prevalence in psychiatric outpatients: a systematic literature review. *Personality and Mental Health*, *8*(2), 91-101. DOI: 10.1002/pmh.1252
3. Celine, T. M., & Antony, J. (2014). A study on mental disorders: 5-year retrospective study. *Journal of Family Medicine and Primary Care*, *3*(1), 12. DOI: 10.4103/2249-4863.130260
4. Clark, L. A., & Harrison, J. A. (2001). Assessment instruments. *Handbook of Personality Disorders: Theory, research, and treatment*, 277-306.
5. Coid, J., Yang, M., Tyrer, P., Roberts, A., & Ullrich, S. (2006). Prevalence and correlates of personality disorder in Great Britain. *The British Journal of Psychiatry*, *188*(5), 423-431. DOI: 10.1192/bjp.188.5.423
6. Dahl, A. A., & Andreoli, A. (1997). Problems in the field of personality disorders. *Assessment and diagnosis of personality disorders. The ICD-10 International Personality Disorder Examination (IPDE)*, 3-9.
7. de Bernier, G.L., Kim, Y.R., Sen, P. A systematic review of the global prevalence of personality disorders in adult Asian populations. *Personality and Mental Health,* 8(4):264-75.
8. Fok, M.L., Seegobin, S., Frissa, S., Hatch, S.L., Hotopf, M., Hayes, R.D., Moran, P. Validation of the standardised assessment of personality – abbreviated scale in a general population sample. *Personality and Mental Health, 9*: 250-257.

9. Gupta, S., & Mattoo, S. K. (2010). Personality disorders: Prevalence and demography at a psychiatric outpatient in North India. *International Journal of Social Psychiatry*, 58, 146–152. DOI: 10.1177/0020764010387548
10. Hesse, M., & Moran, P. (2010). Screening for personality disorder with the Standardised Assessment of Personality: Abbreviated Scale (SAPAS): further evidence of concurrent validity. *BMC Psychiatry*, *10*(1), 10. DOI: 10.1186/1471-244X-10-10
11. India. Office of the Registrar General and Census Commissioner. (2011) *Primary Census Abstract Highlight.* New Delhi, retrieved May 9, 2016 from: http://www.censusindia.gov.in/2011census/PCA/PCA_Highlights/pca_highlights_file/India/Chapter-1.pdf
12. Khandelwal, S. K., Jhingan, H. P., Ramesh, S., Gupta, R. K., & Srivastava, V. K. (2004). India mental health country profile. *International Review of Psychiatry*, 16(1-2), 126-141.
13. Keuroghlian, A. S., Frankenburg, F. R., & Zanarini, M. C. (2013). The relationship of chronic medical illnesses, poor health-related lifestyle choices, and health care utilization to recovery status in borderline patients over a decade of prospective follow-up. *Journal of Psychiatric Research*, *47*(10), 1499-1506. DOI: 10.1016/j.jpsychires.2013.06.012
14. Lenzenweger, M.F. Stability and change in personality disorder features: The longitudinal study of personality disorders. *Archives of General Psychiatry*, 56, 1009-1015.
15. Moran, P., Leese, M., Lee, T., Walters, P., Thornicroft, G., & Mann, A. (2003). Standardised Assessment of Personality–Abbreviated Scale (SAPAS): preliminary validation of a brief screen for personality disorder. *The British*

Journal of Psychiatry, *183*(3), 228-232. DOI: 10.1192/bjp.183.3.228

16. Naidu, H., Thacore, A. S., & Issac, S. (1998). Personality disorders in mood disorders: Coexistence, diagnosis, stability and implication. *Indian J Psychiatry*, *40*, 38. DOI: 10.4103/0019-5545.69241
17. Nath, S., Patra, D. K., Biswas, S., Mallick, A. K., Bandyopadhyay, G. K., & Ghosh, S. (2008). Comparative study of personality disorder associated with deliberate self harm in two different age groups (15-24 years and 45-74 years). *Indian Journal of Psychiatry*, *50*(3), 177. DOI: 10.4103/0019-5545.43630.
18. Newton-Howes, G., Tyrer, P., & Johnson, T. (2006). Personality disorder and the outcome of depression: meta-analysis of published studies. *The British Journal of Psychiatry*, *188*(1), 13-20. DOI: 10.1192/bjp.188.1.13
19. Newton-Howes, G., Tyrer, P., North, B., & Yang, M. (2008). The prevalence of personality disorder in schizophrenia and psychotic disorders: systematic review of rates and explanatory modelling. *Psychological Medicine*, 38(08), 1075-1082.
20. Newton-Howes, G., Tyrer, P., Anagnostakis, K., Cooper, S., Bowden-Jones, O., & Weaver, T. (2010). The prevalence of personality disorder, its comorbidity with mental state disorders, and its clinical significance in community mental health teams. *Social Psychiatry and Psychiatric Epidemiology*, *45*(4), 453-460. DOI: 10.1007/s00127-009-0084-7.
21. Sharan, P., Kulhara, P., Verma, S. K., & Mohanty, M. (2002). Reliability of the ICD-10 International Personality Disorder Examination (IPDE)(Hindi Version): A preliminary study. *Indian Journal of Psychiatry*, *44*(4), 362.
22. Skodol, A. E., Oldham, J. M., Rosnick, L., Kellman, H. D., & Hyler, S. E. (1991). Diagnosis of DSM–III–R personality disorders: A comparison of two

structured interviews. International Journal of Methods in Psychiatric Research, 1, 13–26.

23. Torgersen, S., Kringlen, E., & Cramer, V. (2001). The prevalence of personality disorders in a community sample. *Archives of General Psychiatry*, *58*(6), 590-596. DOI:10.1001/archpsyc.58.6.590.

24. Tyrer, P. (2007). Personality diatheses: a superior explanation than disorder. *Psychological Medicine*, *37*(11), 1521-1525. DOI: http://dx.doi.org/10.1017/S0033291707000153

25. Tyrer, P., Reed, G. M., & Crawford, M. J. (2015). Classification, assessment, prevalence, and effect of personality disorder. *The Lancet*, *385*(9969), 717-726. DOI: http://dx.doi.org/10.1016/S0140-6736(14)61995-4

26. van Ginneken, N., Jain, S., Patel, V., & Berridge, V. (2014). The development of mental health services within primary care in India: learning from oral history. *International journal of mental health systems*, 8(1), 30.

27. World Health Organization. (1992). The ICD-10 classification of mental and behavioural disorders: Clinical descriptions and diagnostic guidelines. Geneva: World Health Organization.

28. World Health Organization (1997). Assessment and diagnosis of personality disorders. The ICD-10 international personality disorder examination (IPDE). Eds. Loranger AW, Janca A, Sartorius N. Cambridge University Press: Cambridge, UK.

29. Zhang, Tianhong, et al. Prevalence of personality disorders using two diagnostic systems in psychiatric outpatients in Shanghai, China: a comparison of uni-axial and multi-axial formulation. *Social Psychiatry and Psychiatric Epidemiology* 47.9 (2012): 1409-1417. DOI: 10.1007/s00127-011-

0445-x

30. Zimmerman, M., Rothschild, L., & Chelminski, I. (2005). The prevalence of DSM-IV personality disorders in psychiatric outpatients. *American Journal of Psychiatry*, *162*(10), 1911-1918. DOI: 10.1176/appi.ajp.162.10.1911
31. Zimmerman, M., Chelminski, I., & Young, D. (2008). The frequency of personality disorders in psychiatric patients. *Psychiatric Clinics of North America*, *31*(3), 405-420. DOI: 10.1016/j.psc.2008.03.015

Age	Range: 16-67 (Mean age = 36.63, Modal age = 33)
Gender	Women - 45.3% (N=106) Men - 54.7% (N=132)
Primary Language	Bengali - 78.2% (N=183) Hindi - 21.8% (N=51)
Highest Educational Level	Secondary Education - 41.5% (N=97) Tertiary Education - 58.5% (N=137)
Religion	Hindu - 83.1% (N=192) Islam - 16.9% (N=39)
Marital Status	Single - 28.3% (N=66) Married - 66.1% (N=154) Separated - 2.6% (N=6) Divorced - 3.0% (N=7)
Family Type	Joined - 33.9% (N=79) Nuclear - 56.7% (N=132) Extended - 9.4% (N=22)
Residence Type	Rural - 32.5% (N=76) Suburban - 25.6% (N=60) Urban - 41.9% (N=98)
Employment	Employed – 96% (N = 225) Unemployed – 4% (N = 9)

Table 1: Key demographics of sample population

Figure 1. Percentage positive IPDE diagnoses at different SAPAS score cut-offs versus percentage missed positive IPDE diagnoses compared to cut-off of 4