REVIEW ARTICLE

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Prevalence of Personality Disorder Diagnosed with SCID-II Among Psychiatry Patients in Turkey: Systematic Review and Meta-Analysis

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SUMMARY

Objective: To review and summarize data on the prevalence of overall personality disorder extracted from SCID-II (Structured Clinical Interview for DSM-III Axis II Disorders) studies conducted in Turkey with samples consisting of mental health service consumers, and also to elaborate on the level and sources of heterogeneity.

Method: MEDLINE, WOS, PsycINFO, ScienceDirect databases as well as the Turkish Psychiatric Database have been systematically searched. Relevant studies conducted with samples composed of psychiatric inpatients or outpatients receiving psychiatric treatment were included. The diagnostic rate of any personality disorder was regarded as the valid indicator of the overall personality disorder prevalence; therefore, papers presenting data not conducive to this goal were excluded.

Results: A total of 311 papers were identified, and 55 studies were included in the qualitative synthesis. Following a critical appraisal of the quality of the data involving point prevalence rates ranging from 20% to 100%, we decided to include 35 studies in the quantitative synthesis. A random-effects meta-analysis followed by a subgroup analysis yielded a summary estimate of 52% [46 – 58%] for the prevalence of overall personality disorder. A high level of overall heterogeneity 84.8% [80.0 - 88.4] was found to persist in each diagnostic subgroup with a particular primary diagnosis.

Conclusion: The prevalence estimates derived from the meta-analysis of the SCID-II studies conducted in Turkey support the notion that personality disorder is present in nearly half of the mental health service consumers. That the level of heterogeneity across studies originating from Turkey alone was as high as those observed in previous reviews covering studies originating from various countries suggests that the very source of such heterogeneity might be questionable validity and reliability of SCID-II diagnoses.

Keywords: Personality disorders, prevalence, meta-analysis

INTRODUCTION

The efforts to delineate and evaluate distinct personality disorder (PD) types predominated our field throughout the twentieth century. The traditional clinical approach presuming the existence of roughly ten PD types has the foundations in no empirical data but in the personality classification proposed by Kurt Schneider in the first half of the last century (Crocq 2013, Tyrer et al. 2007). The DSM-II, which was in use during the 1960s and 70s, was arranged as a diagnostic guide that provided not criteria sets but descriptions for the diagnostic categories it contained. The reliability studies conducted in those years reported crude agreement rates between diagnosticians without taking into account the agreement due to chance, hence, led to the illusion that the reliability of the DSM-II diagnoses was adequate. When Spitzer and Fleiss (1974) employed the kappa statistics developed by Cohen (1960) to re-analyze the data published until that time on the test-retest reliability of DSM-II diagnoses, they obtained chance-corrected agreement levels ranging between 0.19 and 0.33 for the overall diagnosis of PD. These values pointed to a questionable level of reliability according to even moderated kappa standards (Kraemer 2014). To remind the reader, the psychometric investigations

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in which participating diagnosticians' decisions are based on joint interviews serve to estimate population inter-rater reliability levels, whereas those in which decisions are based on independent interviews serve to estimate population test-retest reliability levels. In either case, the sample kappas should rather be reported together with their 95% confidence intervals in order to reveal the precision of the population reliability estimates (Kreamer 2014).

As a solution to the unsatisfactory reliability levels observed for the DSM-II diagnoses in general, the later version of the DSM contained a set of criteria for each diagnostic category including the PD types. The DSM-III field trials revealed satisfactory test-retest kappa of 0.54 for any PD diagnosis while omitting to report kappas for specific PD diagnoses (Spitzer et al. 1979). The SCID-II (Structured Clinical Interview for DSM-III Axis II Disorders) was presumably developed to enhance the reliability of each specific PD diagnosis some of which might have been estimated at dissatisfying levels during field trials. A multi-center study conducted in the USA yielded a test-retest kappa of 0.51 in the clinical samples and 0.48 in the normal samples for any PD diagnosis coined through SCID-II interviews (First et al. 1995a, 1995b). Reliability coefficients estimated for each specific PD in the same study, however, ranged between 0.24 and 0.74 in the patient samples and between 0.12 and 0.59 in normal samples, suggesting that the entire set of SCID-II diagnoses might not be reliable enough although the cumulative diagnosis of any PD might be. Likewise, two separate reviews of later studies addressing test-retest reliability of the SCID-II diagnoses adjusted to either DSM-III or DSM-IV concluded that the reported coefficients for PD types varied considerably across studies whereas most trials reported kappas suggesting a sufficient level of reliability for any PD diagnosis (First and Gibbon 2004, Zimmerman 1994). In sum, the available research data pertaining to the diagnostic decisions based on the independent SCID-II interviews does not support the reliability of every specific PD diagnosis on the one hand but does support that of any PD diagnosis on the other.

Arguably, the Turkish translation of SCID-II (Spitzer and Williams 1989) has been the most commonly used tool to evaluate the PD types for clinical or research purposes and has contributed considerably to the growth of research on this subject in Turkey over the last three decades. The instrument includes a 120-item self-report screening form in addition to an interview form to be scored by interviewing clinicians. The SCID-II translation was performed by a team led by Sorias who would later investigate the inter-rater reliability of the Turkish version in the dissertation projects of two psychiatry residents and report the average of the kappas estimated for distinct PD types as 0.80 (Coşkunol et al. 1994). Though this finding implied an excellent level of agreement between the diagnostic judgments of the two residents, it needs to be emphasized that they had practiced enough to gain competence with the SCID-II scoring procedure prior to the actual trial and performed joint, not independent, interviews with 50 voluntary patients during trial, hence the computed kappa coefficients should be regarded as the estimates of inter-rater reliability. To our knowledge, the test-retest reliability of the SCID-II Turkish version has yet to be investigated. Therefore, we are by no means informed on the extent of agreement between the PD diagnoses based on independent SCID-II interviews though we are fairly informed by a single study on the extent of agreement between the diagnoses based on joint interviews.

The dominant PD paradigm of the twentieth century expects clinicians to diagnose differentially ten PD types by means of a series of symptom-based criteria sets instead of evaluating the general PD and its severity. Yet, data from relevant research increasingly suggest that the most important predictor of the course and prognosis of personality pathology is the severity rather than the type of PD (Conway et al. 2016, Hopwood et al. 2011, Wright et al. 2016, Yang et al. 2010). Besides, symptoms and functionality of PD patients fluctuate over the years resulting in changes in their diagnostic status (Hopwood and Bleidorn 2018, Morey and Hopwood 2013, Newton-Howes et al. 2015).

Consequently, during the development of DSM-5, the Personality and Personality Disorder task group proposed to abandon symptom-based diagnostic criteria sets for specific PDs altogether, to refer to the impairment in personality functioning in evaluating the diagnosis and severity of the general PD instead, and to refer to the trait domains and facets inspired by the 5-factor model in assessing the type of PD (Skodol et al. 2011). This radical reform proposal, lacking convincing empirical support for its validity back then, was met with strict opposition of some of the leading authors in the field and the final decision was to include it in DSM-5 Section III reserved for emerging models and instruments instead of Section III along with the other criteria sets for official diagnoses (Zachar et al.2016). Such a decision entailed the retention of the much-criticized DSM-IV diagnostic criteria for PD types as they were in DSM-5 Section II (American Psychiatric Association 2013).

Nonetheless, the painful process of paradigm change gained momentum by means of a novel approach adopted for ICD-11 (World Health Organization 2018), which requires clinicians to assess the level of impairment in personality functioning in order to diagnose the presence and severity of general PD in the first place and to evaluate subsequently the prevailing trait domains and facets in the person (Tyrer

et al. 2019). Evidently, the dominant paradigm of the last century dictating ten distinct symptom-defined PD types as all-or-none diagnoses is being replaced in the 21st century by a new paradigm focusing on the assessment of the severity of general PD on the basis of impairment in personality functioning. During this period of paradigmatic revolution which marks the close of an era, systematic and critical review of the research conducted through the lenses and/or with the measures of the old paradigm gain importance as it would facilitate the selection of findings worthy to be carried on into the future. In the present review of the data from SCID-II studies, we focused particularly on the prevalence of any PD diagnosis (Axis II diagnosis with DSM III and IV terminology) mainly for three reasons. First, what matters most from the perspective of the new paradigm is the evaluation of general PD rather than PD types or specific PDs. Second, available data for the test-retest reliability of any PD diagnosis is more convincing when compared to that of specific PD diagnoses. Third, existing research has provided supporting evidence regarding the validity of any PD diagnosis but not of each specific PD diagnosis. Since we have already elaborated on the former two reasons above, we will briefly dwell on the third below.

Unlike reliability, the focus of a validity analysis is the level of agreement between diagnoses decided through different, not the same, diagnostic instruments, procedures, or criteria (Kraemer 2013). If there is a gold standard for the diagnosis in question, the most direct way to examine the validity of diagnostic judgments reached with a particular instrument is to estimate their agreement with the diagnoses determined by the gold standard. Due to the lack of such a gold standard for most psychiatric diagnoses, Spitzer (1983) suggested that the more modest LEAD diagnoses could serve as the standard during validation studies. The acronym LEAD (Longitudinal, Expert, All Data) is used to describe the diagnostic process involving shared (consensus) decisions of clinical experts based on relevant, longitudinal data of all sorts from various sources. In the first study examining the validity of SCID-II diagnoses against the LEAD standard, only crude agreement rates were estimated and reported (Skodol et al. 1988). As explained above, these estimations failing to take into account the agreement by chance are misleading. In another study conducted a few years later, Skodol et al. (1991) employed the kappa coefficients to estimate the LEAD validity of SCID-II diagnoses, and reported the median value of the chance-corrected validity coefficients as 0.25. The third LEAD validity study which was conducted in Spain reported kappa coefficients for only two SCID-II diagnoses: 0.32 [0.00–0.64] for borderline PD and 0.40 [0.07–0.73] for antisocial PD (Torrens et al.2004). Although the sample kappas for these specific PDs were at acceptable levels, their 95% confidence intervals suggested that the population validity estimates cover a wide range including unacceptable levels (i.e., less than 0.20). Finally, Dereboy et al. (2018) investigated in Turkey the validity of SCID-II diagnoses against the general PD diagnosis by the LEAD panel and reported population validity estimate of any PD diagnosis at satisfactory levels (kappa=0.68 [0.54 - 0.82]). Unpublished data from this study suggested that no specific PD diagnosis could predict accurately the presence or absence of general PD. In addition to these LEAD studies, two separate reviews focusing on the research addressing convergence or divergence between PD diagnoses by individual clinicians employing different instruments concluded that evidence on the validity of specific PD diagnoses was inconsistent, whereas that for any PD diagnosis was consistently supportive (Clark and Harrison 2001, Widiger and Boyd 2009).

The present meta-analytic study aims to estimate the prevalence rate of any PD among individuals with mental disorders through a systematic review of the SCID-II studies conducted in Turkey over the last three decades. The three questions particularly addressed were as follows: (1) What is the prevalence of any PD among the total population of mental health service consumers; among patients with varying diagnoses and those with a certain diagnosis; and are there any differences and/or similarities between the PD prevalence rates across diagnostic subgroups? (2) What are the levels of inconsistency or heterogeneity across the findings of studies included in the meta-analysis, and across the findings within each diagnostic subgroup? (3) How is the level of heterogeneity to be estimated in the present meta-analysis of the SCID-II studies going to differ from the heterogeneity estimations in previous meta-analytic reviews of the studies conducted in various countries with different diagnostic procedures? (Beckwith et al. 2014, Newton-Howes et al. 2008, Winsper et al. 2020)

METHOD

This systematic review study was conducted in accordance with the PRISMA standards (Liberati et al. 2009, Moher et al. 2009).

Eligibility Criteria

We included studies that; (1) were observational or interventional, cross-sectional or longitudinal, (2) provided data on the prevalence of comorbid PD among people diagnosed with a primary psychiatric (DSM-III or DSM-IV, Axis I) disorder (3) sampled adults from the community or clinical populations in Turkey, (4) were published in Turkish or English in a peer-reviewed journal.

Data not conducive to estimating the prevalence of any PD in the psychiatric population of Turkey was not eligible. Hence, we excluded studies (1) conducted with samples consisting of less than 20 participants, or solely male or female subjects, and (2) omitting to report the frequency of the specific PD diagnoses entirely in addition to any PD diagnosis.

Search and Selection Procedure

In preparation for this review, we had already tabulated data from 69 SCID-II studies identified by scanning the bibliographies of relevant publications since 2015. Eventually, we searched MEDLINE, Web of Science (WOS), PsycINFO, ScienceDirect, and Turkish Psychiatry Index in July 2020. Because the Turkish translation of SCID-II was published in 1989, these searches covering 30 years between 1990 and 2020 were restricted with the articles published in Turkish or English in peer-reviewed journals. We performed the international database searches with three search strings included in the title and/or abstract: "Personality Disorder" AND ("SCID II" OR "scid ii") AND ("Turkey" OR "Turkish"). The Turkish Psychiatry Index was searched for terms "Personality Disorder" and "SCID-II". After duplicate records, studies with no report of SCID-II diagnoses, or studies conducted abroad were removed, we proceeded to review full texts of the articles. Four articles the full text of which were difficult to access were obtained by way of correspondence with their authors. The screening of titles and abstracts to pick eligible articles for full-text retrieval, screening of full-text articles to select the ones to be included in the review, and decisions about the articles were made by the first author, and checked by the second. In cases where no consensus could be reached, the opinion of a third researcher was sought. Decisions to exclude certain studies from quantitative synthesis due to apparent inconsistency of the reported data were made unanimously by obtaining independent votes of all authors.

Statistical Analyses

Meta-analysis was carried out on the R platform employing 'meta' and 'metaphor' packages. Given that the samples of the compiled studies had been formed with reference to a variety of primary diagnoses, we assumed that the actual prevalence to be estimated based on the entire studies was not a single common value, but several values that could vary depending on primary diagnoses and other factors to be explored. Therefore, we employed random-effects meta-analysis to estimate the mean of the actual population prevalence values by resorting to the generalized linear mixed model (GLMM), more specifically the random intercept logistic regression model. The Clopper-Pearson method was used to calculate the 95% confidence intervals (CI) for individual studies. We divided the compiled studies into eight diagnostic subgroups according to the clinical sample they used, estimated the prevalence of any PD for the entire studies and subgroups separately, and summarized the results through a forest graph. The 95% predictive interval, which implies how the point prevalence estimates are likely to range in new primary studies was calculated for all the studies included and for the subgroups as well. The heterogeneity of the prevalence data was assessed by τ^2 and I^2 statistics for both entire studies as well as for each subgroup. In all analyses, we employed the ML (maximum likelihood) method to estimate τ^2 (between-study variance). In searching for the sources of heterogeneity, we employed subgroup analysis to investigate the effect of samples representing different diagnostic populations; and meta-regression analyses were used to analyze whether sample size and study's age had any impact on heterogeneity. We entered moderator variables into meta-regression as mean-centered and interpreted the significance and size of the effects through Cochran Q, τ^2, or I^2 where appropriate. We referred to the Baujat plot and leave-one-out analysis in searching for the primary studies which had an overriding influence on the prevalence and heterogeneity estimations (Borenstein et al. 2009, Harrer et al. 2019, Langan et al. 2019, Schwarzer et al. 2019).

RESULTS

Subsequent to the removal of a total of 311 records during the screening phase, we reviewed 186 articles in full text and consequently decided to include 55 studies in the qualitative synthesis and to eliminate the remaining 131 for various reasons (see Figure 1). Table 1 summarizes the name (author and publication year), sample characteristics, and findings of these studies as broken down into the following groups in view of the diagnoses of their respective participants: Overarching, Bipolar Disorder, Depressive Disorders, Anxiety and Related Disorders, Obsessive-Compulsive Disorder (OCD), Attention Deficit Hyperactivity Disorder (ADHD), Alcohol and Substance Use Disorders, Miscellaneous Disorders, and Suicidal. To be clear, studies conducted with participants with a variety of psychiatric diagnoses were assigned into the Overarching group, if there were fewer than three studies addressing PD prevalence among subjects with a particular diagnosis those studies were assigned into the Miscellaneous group, and studies conducted with suicide attempt survivors regardless of their diagnostic status were collected under the title of Suicidal.

Table 1 contains more than one row for some studies due to several reasons. First, prevalence rates estimated from two different samples in a study were displayed on separate lines in the table and were entered into meta-analysis independently

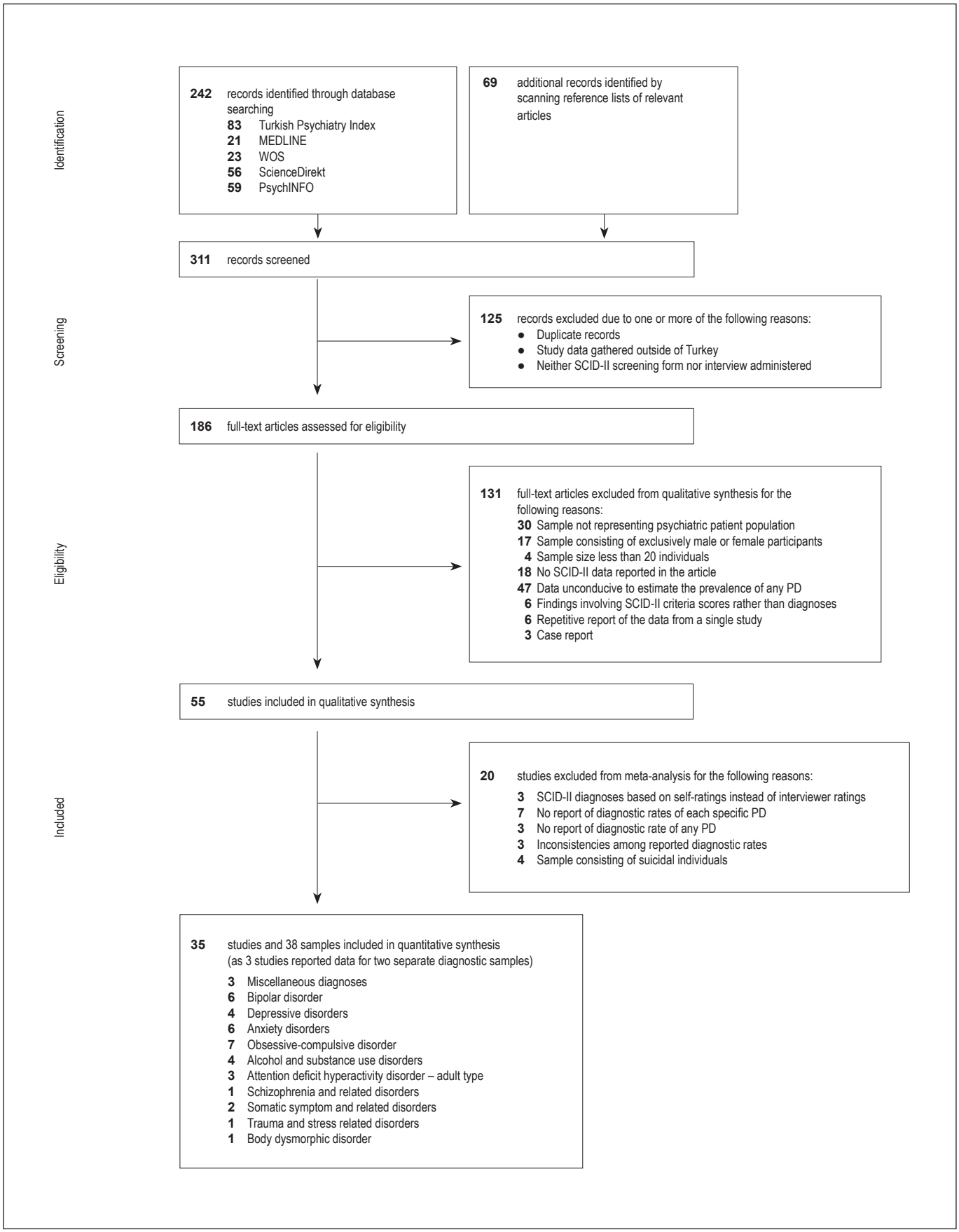

Figure 1. Flow of information through four phases of the systematic review of SCID-II studies addressing diagnostic rate of any PD among psychiatric patients in Turkey

Table 1. Prevalence estimates of PD types and any PD reported by the SCID-II studies conducted in Turkish clinical samples with overarching or particular psychiatric diagnoses

	Study[a]	Sample[b] Diagnosis	Diagnostic Rate of PD Types (%)[c]													Diagnostic Rate of any PD (%)
			N	AVO	DEP	O-C	P-A	S-D	PRN	STY	SCZ	HYT	NRS	BRL	ANS	
1	Arkar 2008	Overarching	544	29.1	7.6	16.0	-	-	19.0	5.0	2.4	3.4	2.0	14.2	1.2	45.0
2	Duran et al. 2014[i]	Overarching	246	13.0	6.1	17.9	5.7	2.0	1.62	0.0	0.0	5.7	7.31	3.3	2.8	43.1
3	Dereboy et al. 2018[d]	Overarching	60	15.0	5.0	6.7	15.0	5.0	28.3	3.3	5.0	41.7	18.3	26.7	3.3	85.0
3	Dereboy et al. 2018[d]	Overarching	60	8.3	1.7	5.0	5.0	5.0	10.0	3.0	0.0	16.7	11.7	13.3	3.3	50.0
4	Gelegen and Tamam 2018[e]	Overarching	406	-	-	-	-	-	-	-	-	-	-	-	-	9.9
5	Üçok et al. 1998	Bipolar Disorder	90	10.0	3.3	16.7	5.6	-	15.6	0.0	0.0	16.7	1.1	10.0	0.0	47.7
6	Tamam et al. 2004	Bipolar Disorder	74	14.9	17.6	41.9	17.6	-	16.2	2.7	18.9	6.8	14.9	8.1	5.4	62.2
7	Altındağ et al. 2006	Bipolar Disorder	70	17	4	21	-	-	17	0	0	10	1	7	1	57.1
8	Ünal et al. 2007	Bipolar Disorder	50	12.0	8.0	14.0	4.0	-	4.0	0.0	2.0	8.0	4.0	18.0	12.0	48.0
9	Sayın et al. 2007	Bipolar Disorder	90	2.2	1.1	2.2	-	1.1	1.1	0.0	0.0	8.9	0.0	4.4	0.0	18.9
10	Tan et al. 2019	Bipolar Disorder	99	3.0	3.0	16.2	-	-	8.1	3.0	2.0	18.2	1.0	16.2	0.0	38.4
11	Yazıcı et al. 1999[e]	Bipolar Disorder	84	-	-	-	-	-	-	-	-	-	-	-	-	36.9
12	Kökcü ve Kesebir 2010[e]	Bipolar Disorder	44	-	-	-	-	-	-	-	-	-	-	22.7	-	34.1
13	Kesebir et al. 2012[e]	Bipolar Disorder	100	-	-	-	-	-	-	-	-	-	-	-	-	45.0
14	Oğuz et al. 2014[f]	Bipolar w/o ADHD[k]	95	10.6	4.3	10.6	8.5	4.3	13.8	0.0	0.0	10.6	2.1	9.6	0.0	-
14	Oğuz et al. 2014[f]	Bipolar w ADHD)[k]	26	23.1	11.5	23.1	15.4	19.2	34.6	7.7	0.0	38.5	15.4	26.9	11.5	-
15	Keskin and Tamam 2018[e]	Bipolar Disorder	57	-	-	-	-	-	0.0	0.0	0.0	-	-	-	-	17.5
16	Keskin et al. 2018[e]	Bipolar Disorder	122	-	-	-	-	-	-	-	-	-	-	-	-	9.8
17	Özen and Yılmaz 2019[e]	Bipolar Disorder	380	-	-	-	-	-	-	-	-	-	-	-	-	34.2
18	Karamustafalıoğlu et al. 1992	Disthymia	80	1.25	5.0	1.25	1.25	-	5.0	-	-	13.8	1.25	20.0	2.5	55.0
19	Üllkeroğlu et al. 1999	Depressive Disorder	86	12.8	15.1	18.6	4.7	3.5	19.8	2.3	0.0	23.3	22.1	25.6	3.5	66.3
20	Taner et al. 2006	Atypical Depression	37	18.9	-	10.8	-	13.5	27.0	-	-	-	-	21.6	-	54.1
21	Aslan and Demir 2008	Major Depression	83	18.1	1.2	10.8	2.4	4.8	19.3	4.8	2.4	4.8	1.2	16.9	1.2	43.4
22	Güleç and Hocaoğlu 2011[g]	Major Depresssion	72	22.2	36.1	45.8	45.8	48.6	65.3	9.7	8.3	75.0	45.8	72.2	16.7	56.9
23	Aydemir et al. 1997	Anx and/or MD[l]	62	8.1	8.1	21.0	1.6	-	0.0	0.0	1.6	24.2	0.0	0.0	0.0	51.6
24	Solmaz et al. 1999	Social Phobia	44	34.1	4.5	6.8	6.8	-	9.1	0.0	0.0	2.3	4.5	0.0	0.0	68.2
25	Gökalp et al. 2001	Social Phobia	87	54.0	13.8	21.8	10.3	1.1	26.4	4.6	6.9	4.6	5.7	2.3	0.0	67.8
26	Karaçam et al. 1998[i]	Panic Disorder	50	6.0	2.0	10.0	2.0	-	12.0	0.0	0.0	0.0	0.0	0.0	0.0	20.0
27	Özkan and Altındağ 2003. 2005[j]	Panic Disorder	112	8.9	7.1	11.6	-	-	0.0	7.1	0.0	15.2	7.1	14.3	0.0	33.9
28	Sarısoy et al. 2008	Panic Disorder	106	16.0	0.0	25.5	1.9	0.0	1.9	0.9	0.0	0.9	0.0	0.9	0.0	40.6
29	Yaluğ et al. 2003[g, i]	Panic Disorder	31	3.2	-	-	-	9.7	3.2	-	-	19.4	0.0	16.2	3.2	100
30	Delice et al. 2015[f]	Panic Disorder	63	36.5	23.8	20.6	4.8	-	14.3	1.6	0.0	22.2	4.8	22.2	0.0	-
26	Karaçam et al. 1998[i]	OCD	50	22.0	8.0	14.0	8.0	-	18.0	0.0	0.0	4.0	2.0	4.0	0.0	36.0
31	Tükel et al. 2001	OCD	25	24.0	8.0	32.0	16.0	-	8.0	4.0	12.0	16.0	8.0	8.0	0.0	64.0

Table 1. continued

	Study[a]	Sample[b] Diagnostic	Diagnostic Rate of PD Types (%)[c]												Diagnostic Rate of any PD (%)
			N	AVO	DEP	O-C	P-A	S-D	PRN	STY	SCZ	HYT	NRS	BRL	ANS	
32	Türksoy et al. 2000. 2002[j]	OCD	50	30.0	8.0	44.0	10.0	-	12.0	28.0	4.0	12.0	8.0	12.0	0.0	68.0
33	Uğuz et al. 2006	OCD	50	28.0	2.0	30.0	12.0	-	8.0	6.0	2.0	4.0	0.0	6.0	0.0	50.0
34	Beşiroğlu et al. 2007[i]	OCD w MD[m]	43	23.3	0.0	27.9	7.0	-	7.0	7.0	0.0	2.3	0.0	9.3	0.0	53.5
34	Beşiroğlu et al. 2007[i]	OCD w/o MD[m]	67	10.4	1.5	16.4	1.5	-	1.5	3.0	1.5	3.0	0.0	4.5	0.0	38.8
35	Çiçek et al. 2013	OCD	40	20.0	10.0	27.5	5.0	-	2.5	0.0	0.0	10.0	0.0	7.5	0.0	45.0
36	Tükel et al. 2013[i]	OCD	49	32.7	8.2	42.9	-	-	14.3	2.0.	10.2	12.2	6.1	10.2	0.0	67.3
37	Kara et al. 1996[h.] 1997[j]	OCD	35	42.9	14.3	48.6	14.3	28.6	51.4	8.6	2.9	54.0	31.4	54.3	2.9	80.0
38	Bayar et al. 1998[h]	OCD	55	29.1	41.8	32.7	12.7	18.2	27.1	7.1	5.1	25.2	18.2	36.4	3.6	60.0
29	Yaluğ et al. 2003[g, i]	OCD	30	3.3	-	-	-	16.6	0.0	-	-	6.7	3.3	36.7	3.3	100
39	Balcı and Sevinçok 2010[g]	OCD	44	31.8	11.4	31.8	-	-	-	13.6	-	-	-	15.9	-	?
40	Türkçapar et al. 1997[n]	Alcohol Depend	60	6.7	0.0	6.7	0.0	-	6.7	0.0	0.0	5.0	0.0	0.0	11.7	36.7
41	Öner et al. 2002	Alcohol Depend	80	12.5	5.0	5.0	2.5	-	12.5	0.0	5.0	2.5	2.5	20.0	37.5	72.5
42	Karaer et al. 2004	Alcohol Use Dsdr	35	8.6	2.9	8.6	5.7	-	5.7	-	2.9	8.6	5.7	11.4	22.9	45.7
43	Kalyoncu et al. 2007	Heroin Depend	108	-	-	-	-	-	3.7	-	-	1.9	1.9	2.8	21.8	26.9
44	Yapıcıoğlu et al. 2011	ADHD	24	8.3	0.0	25.0	25.0	-	4.1	0.0	0.0	12.5	0.0	12.5	0.0	66.7
45	Kavakçı et al. 2012	ADHD	48	14.6	10.4	10.4	4.2	-	6.3	2.10	0.0	2.1	0.0	12.5	6.3	22.9
2	Duran et al. 2014[i]	ADHD	39	15.4	10.3	10.3	5.1	0.0	0.0	0.0	0.0	5.1	5.1	5.1	2.6	43.6
46	Sevinç et al. 2010[f]	ADHD	80	1.3	0.0	6.3	0.0	6.3	0.0	0.0	0.0	3.8	3.8	18.8	11.3	?
47	Karslıoğlu et al. 2012	Schizophrenia	75	30.7	6.7	17.3	5.3	4.0	24.0	4.0	1.3	12.0	6.7	12.0	0.0	70.7
48	Kuloğlu et al. 2003	Conversion Dsdr	198	4.6	4.0	4.6	7.6	-	2.5	1.0	1.0	17.7	1.5	11.1	2.0	57.6
49	Direk et al. 2012	Psychogenic Eps	35	25.7	5.7	22.9	-	-	2.9	0.0	0.0	20.0	20.0	40.0	2.9	74.3
50	Özçetin et al. 2008	PTSD	62	25.8	14.5	16.1	1.6	-	14.5	0.0	0.0	4.8	0.0	6.5	0.0	56.5
36	Tükel et al. 2013[i]	BDD ± OCD[o]	49	59.2	22.4	38.8	-	-	34.7	6.1	4.1	38.8	30.6	26.5	2.0	93.9
51	Atalay 2011[h]	Sleep Dsdr	212	-	-	-	-	-	-	-	-	-	-	-	-	87.7
52	Ateşçi et al. 2002	Suicidal Attempt	60	3.3	0.0	5.0	-	-	0.0	0.0	0.0	16.7	0.0	18.3	5.0	48.3
53	Yaşan et al. 2008	Suicidal Attempt	76	-	-	-	-	-	-	-	-	-	-	8.3	-	19.7
54	Yalvaç et al. 2014[p]	Suicidal Attempt	50	28.0	6.0	56.0	42.0	26.0	42.0	12.0	18.0	4.0	36.0	66.0	16.0	90.0
55	Yılmaz et al. 2018	Suicidal Attempt	100	5.0	4.0	11.0	7.0	-	-	-	-	3.0	0.0	23.0	9.0	58.0

a. Studies excluded from the meta-analysis are indicated with a light red background. Data from two different samples of the same study with different primary diagnoses and or comorbidities are displayed on different lines within their respective groups.
b. D or Dsdr = Disorder; ADHD = Attention deficit hyperactivity disorder; Anx = Anxiety; MD = Major depression; OCD = Obsessive-compulsive disorder; PTSD = Post-traumatic stress disorder; Eps = Episodes; BDD = Body Dysmorphic Disorder.
c. PD = Personality disorder; AVO = Avoidant; DEP = Dependent; O--C = Obsessive-compulsive; P-A = Passive-aggressive; S-D = Self-defeating; PRN = Paranoid; STY = Schizotypal; SCZ = Schizoid; HYT = Histrionic; NRS = Narcissistic; BRL = Borderline; ATS = Antisocial.
d. Data pertaining to the early and late periods of this study are displayed on two separate lines in order to demonstrate the grossly diverse prevalence rates associated with the eventual increase in the validity of the SCID-II evaluations.
e. Studies excluded from meta-analysis due to omission to report the frequency of diagnoses of specific PDs separately.
f. Studies excluded from meta-analysis due to omission to report the frequency of diagnosis of any PD.
g. Studies excluded from meta-analysis due to inconsistencies between the reported frequencies of any PD and specific PDs.
h. Studies excluded from meta-analysis due to SCID-II diagnoses solely based on the self-ratings on the screening form.
i. Studies reporting data pertaining to two separate samples interwoven with different primary diagnoses or comorbidities.
j. Repeated publication of the data from the same study.
k. Data pertaining to Bipolar-I disorder with or without ADHD are displayed on different lines in the table, yet entered into meta-analysis as combined.
l. Generalized anxiety disorder and/or major depression.
m. Data on OCD with or without overriding depression are displayed on different lines, yet entered into meta-analysis as combined.
n. Reported diagnostic rates of each specific PD indicate the frequency of not the entire but only the prevailing diagnoses.
o. Data on body dysmorphic disorder with or without OCD are displayed in the table and entered into meta-analysis as combined since the primary study reported no significant difference between the two groups in terms of PD prevalence rates.
p. The prevalence rate reported for the depressive PD in the primary study is displayed in the column reserved for the self-defeating PD.

as well (Duran et al. 2014, Karaçam et al. 1998, Tükel et al. 2013, Yaluğ et al. 2003). Second, significantly different diagnostic rates of PD in sub-samples of the whole sample were displayed on separate lines in the table for information purposes, yet were entered into meta-analysis as combined (Beşiroğlu et al. 2007, Oğuz et al. 2014). Likewise, data pertaining to earlier and later periods of a validity study (Dereboy et al. 2018) conducted by our team with 120 participants were entered into meta-analysis as combined yet displayed on two separate lines in the table in order to demonstrate the grossly diverse prevalence rates associated with an increased level of the validity of the diagnoses by the same three clinicians (kappa=0.31 [0.00 – 0.63]) for the first half, and 0.80 [0.65 – 0.95] for the second half of the SCID-II evaluations).

Qualitative Synthesis

Close examination of data from 55 studies as summarized in Table 1 reveals that the prevalence of any PD diagnosis in clinical samples ranges from 9.8% to 100.0%. Hypothetically, such a wide range of prevalence estimates might be explained by the differences among the compiled studies in terms of (1) participants' primary diagnoses, (2) data quality, (3) sample size, or (4) publication date. Table 1 presenting the reported prevalence rates as grouped according to the primary psychiatric diagnoses of the participants might be instrumental in evaluating the validity of the first explanation. As the table reveals, the proportion of patients diagnosed with any PD varies between 10 and 85% in the samples composed of patients with overarching diagnoses. The reported rates range between 10-62% in the bipolar disorder group, 43-66% in the depressive disorders group, 20-100% in the anxiety disorders group, 36-100% in the OCD group, 27-73% in the alcohol and substance use disorders group, 23-67% in the ADHD group, and 20-90% in the suicide group. The prevalence data for specific PD diagnoses also show a similar pattern. Because the wide-ranging dispersion of the reported prevalence figures of any PD and specific PDs across the compiled studies persists within each diagnostic group as well, it is unlikely to be explained by the differences between the groups.

Thus, one wonders if it might be explained by the differences in the quality of the prevalence data provided by the compiled studies. A closer examination of these studies in this context suggested the presence of eight problems which are ranked in Table 2 according to their relative potential to impair the quality of the reported data. To our judgment, the extent of the negative impact on the data quality was mild or moderate for the former four problems identified in a larger portion of the studies, whereas the impact was uncertain or severe for the latter four problems identified in a minority of studies. Accordingly, a total of 20 studies presenting the problems of the latter type were excluded from the meta-analysis in order to estimate the population prevalence more accurately and reduce the level of heterogeneity. Table 1 displays the excluded studies with a red background and provides footnotes indicating the problem(s) presented by each. As summarized in the flow diagram (Figure 1), 3 of the 20 studies which were excluded from the quantitative synthesis omitted to report diagnostic rate of any PD (Delice et al. 2015, Oğuz et al. 2014, Sevinç et al. 2010), 7 omitted to report the diagnostic rates of specific PDs (Gelegen and Tamam 2018, Kesebir et al. 2012, Keskin and Tamam 2018, Keskin et al. 2018, Kökçü and Kesebir 2010, Özen and Yılmaz 2019, Yazıcı et al. 1999), and 3 reported the rate of SCID-II diagnoses based on solely self-reported data instead of data from interviews (Atalay 2011, Bayar et al. 1998, Kara et al. 1996). Indeed, the failure of a study to report diagnostic rates for each specific PD may not seem to create a major hindrance to our goal of estimating the population prevalence of any PD rather than specific PDs. However, we were uncertain whether or not specific PDs were entirely diagnosed in all 7 studies in this group, and the fact that the prevalence of any PD was reported as low as 10% in one study suggests that the quality of the data presented in such fashion might be questionable.

Besides, we had to exclude three studies from the quantitative synthesis (Balcı and Sevinçok 2010, Güleç and Hocaoğlu 2011, Yaluğ et al. 2003) due to conspicuous inconsistencies within each study in terms of reported frequencies and/or percentages. Balcı and Sevinçok (2010), for instance, present frequencies of the PD diagnoses among OCD patients

Table 2. Problems impairing data quality in reviewed studies

Common problems inducing mild or moderate impairment (not entailing exclusion of the study from meta-analysis)
Misguiding the reader on the SCID-II version administered in the study (introducing the DSM-III-R adjusted version as if DSM-IV adjusted)
Misguiding the reader on the psychometric properties of the SCID-II (introducing the instrument as if validated in Turkish)
Failing to describe explicitly as to whether SCID-II interview was systematically administered in the study
Failing to depict the professional experience of the clinicians performing SCID-II interviews and ratings in the study
Uncommon problems inducing severe or uncertain impairment (entailing exclusion of the study from meta-analysis)
Failing to report the prevalence estimate of any PD
Failing to report the prevalence estimate of each PD type
Conspicuous inconsistencies between the prevalence estimates of PD types and any PD
Failing to administer SCID-II interviews, hence reporting rates of PD diagnoses based solely on the self-ratings of participants on the SCID-II screening form.

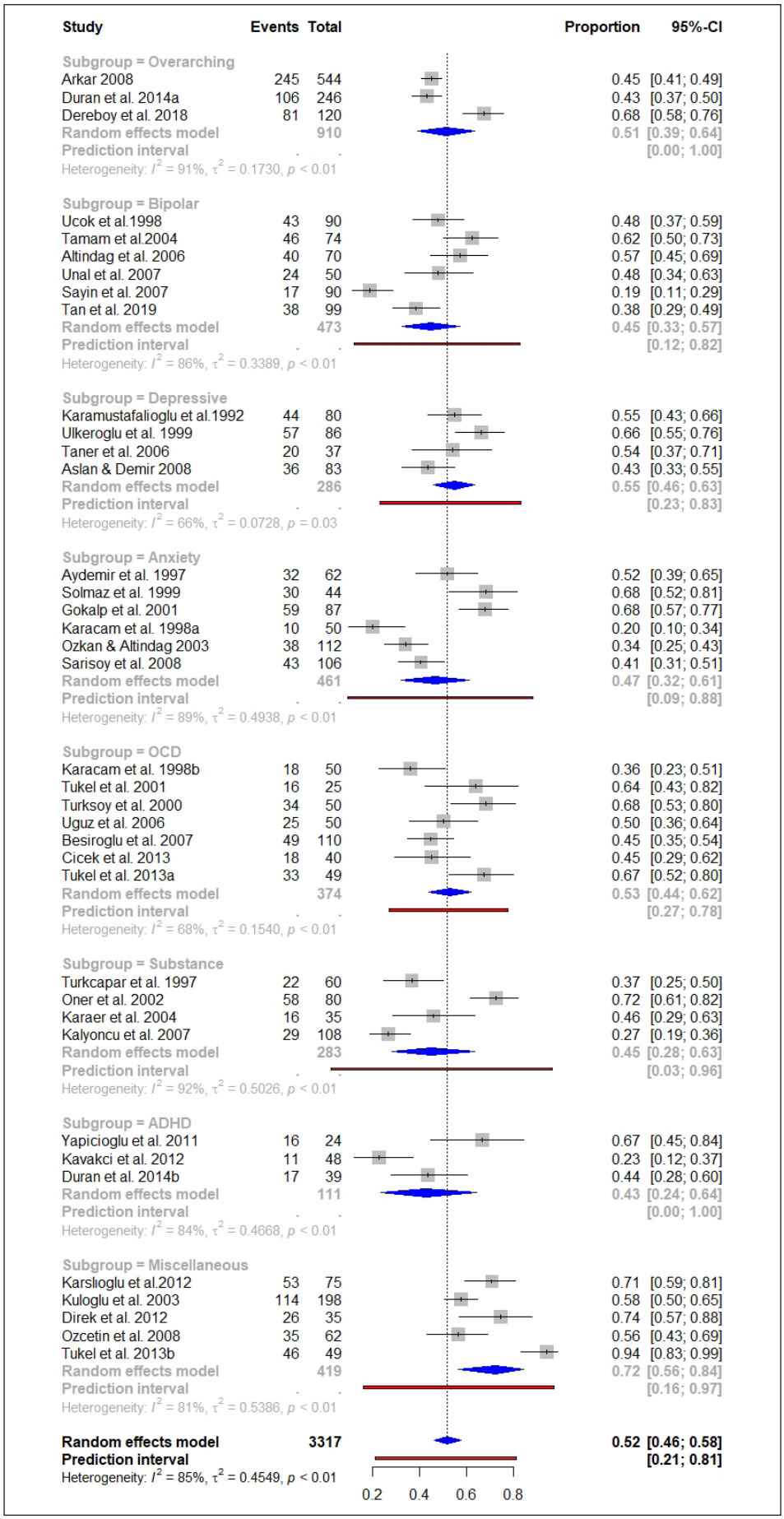

Figure 2. The overall prevalence of PD as diagnosed with the SCID-II among psychiatric patients in Turkey (forest plot)

with or without suicidal ideation, separately. For the group of 21 OCD patients without, the count of those diagnosed with Cluster A, B, and C PDs are given as 2, 2, and 11, respectively; while the count and percentage of those receiving an Axis II (i.e., any PD) diagnosis are given as 19 and 50%. These counts and percentages do not match one another. Furthermore, our attempts to calculate the proportion of those having received an Axis II diagnosis in the entire OCD sample yielded a value of 84% when we referred to the counts, but 63% when we referred to the percentages reported for each group. Therefore, we were confused as to which prevalence value should be entered in Table 1 and into the meta-analysis. As regards the Güleç and Hocaoğlu (2011) study conducted with a sample composed of Major Depressive patients, 75% of the sample seem to have received a diagnosis of histrionic PD, 72% of borderline PD, whereas only 57% of any PD. As for the study of Yaluğ et al. (2003) conducted with separate OCD and Panic Disorder samples, although the prevalence of any PD in each sample is reported as 100%, diagnostic rates of specific PDs do not add up to this figure. Besides, the rate of borderline PD diagnosis in the OCD sample is reported as 27.2% twice, and as 36.7% once in the paper.

Finally, four studies conducted with people who have attempted suicide constituted another group that was excluded from the meta-analysis (see Table 1). The rationale for this decision was that not every participant of these studies had a primary psychiatric diagnosis, therefore, the suicidal samples could hardly be considered representative of the population of psychiatric patients.

Quantitative Synthesis

The meta-analysis of the data involving 3317 subjects and 38 samples of 35 primary studies revealed the prevalence estimate of any PD among psychiatric patients as 0.52. There is a 95% probability that the confidence interval of 0.46 and 0.58 encompasses the mean of true prevalence values of the clinical population. The predictive interval displayed in the forest plot suggests that in 95% of the future SCID-II studies the sample prevalence of any PD will be between 0.21 and 0.81 (Figure 2).

Despite our decision to exclude studies with certain problems entailing impaired or questionable data quality from the meta-analysis, the heterogeneity, that is, the portion of between-study variance that cannot be explained by sampling error is estimated at a high level (I^2= 84.8% [80.0% - 88.4%]). Here, what one is likely to wonder first and foremost is whether heterogeneity is due to the inclusion of data from samples from a wide range of diagnoses. The results of the subgroup analysis, however, revealed no significant difference between the data from the eight diagnostic subgroups (Q=9.51, df=7, p=0.22). The prevalence values calculated for diagnostic groups except for the Miscellaneous group ranged from 0.43 to 0.55, with the largely overlapping 95% confidence intervals (see figure 2). In addition, that I^2 values estimated near or above the 75% limit in each diagnostic subgroup implicated that the heterogeneity remains medium-high even when the primary psychiatric diagnosis is identical. Taken together, findings of the subgroup analysis support the null hypothesis (H_0) that the overall PD prevalence is not significantly affected by the sort of primary diagnosis.

In searching for the sources of heterogeneity, the next question that comes to mind is to what extent the variation of the primary studies' publication date and sample size played a role given that the oldest one was published in 1992 while the most recent one in 2019 (median date = 2006.5), and the smallest sample consisted of 24 volunteers while the largest 520 (median sample size = 62). The meta-regression analyses employed to address this question revealed that neither the study date (Q= 0.18, df= 1, p= 0.67) nor the sample size (Q= 0.69 df=1, p= 0.41) had a significant effect on the prevalence values reported in the primary studies; hence, on the heterogeneity across studies.

The 'miscellaneous' subgroup composed of five studies with samples from divergent diagnoses, resembles other diagnostic groups in terms of heterogeneity with an I^2 value of 81%, yet differs from others in terms of a pooled prevalence with

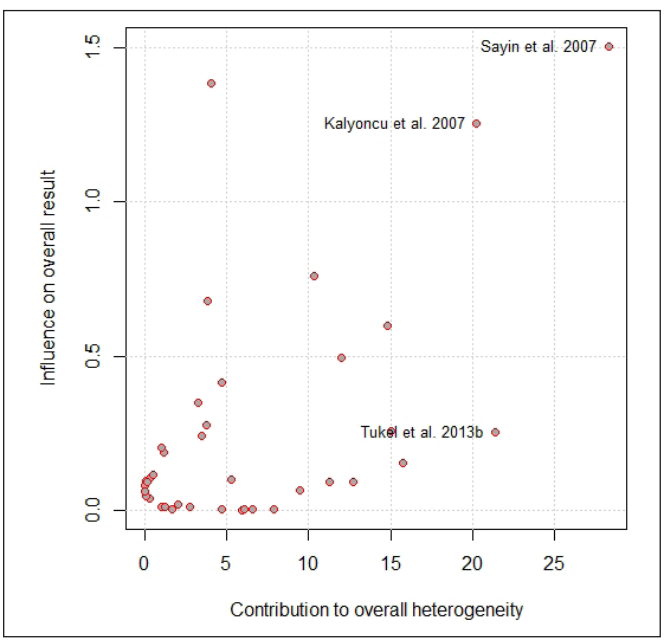

Figure 3. Most influential studies on the pooled prevalence and heterogeneity estimates yielded by the meta-analysis (Boujat plot)

an estimated rate of 0.72. This subgroup includes data from samples of conversion disorder, PTSD, schizophrenia, and body dysmorphic disorder (BDD). The prevalence of any PD reported as high as 0.94 for the BDD sample (Tükel et al. 2013) appears to have strongly influenced the pooled prevalence and heterogeneity estimates of this group. The Boujat plot displayed in Figure 3 suggests that the strong influence of the BDD sample data on the estimations is plausible not only for this particular subgroup but also for all the studies entered into the meta-analysis. The leave-one-out analysis revealed that, with the exclusion of the BDD sample data, the pooled prevalence would decrease by approximately one and a half units to 0.50. As the Baujat plot indicates, however, the study by Sayın et al. (2007) which reported the prevalence of any PD as low as 0.19 exerts the strongest influence on the prevalence and heterogeneity estimations. What comes third in this rank order is the study by Kalyoncu et al. (2007) that reported a prevalence rate of 0.26. Excluding each of these studies leads to a decrease in the overall I2 estimates amounting up to 1.5 percents.

DISCUSSION

Perhaps the most important finding of this systematic review of the SCID-II studies conducted with clinical samples in Turkey was the striking differences between reported prevalence rates of any PD, which was reflected as immense heterogeneity in the meta-analysis. Remarkably, the heterogeneity persisted within the diagnostic groups in the subgroup analysis, and no significant difference was observed between the groups in terms of the pooled prevalence estimates. Also, meta-regression analyses revealed no effect of the publication date and sample size on the prevalence values estimated in the studies. Therefore, the sources of heterogeneity need to be sought elsewhere.

A high level of heterogeneity with no clear sources was observed in reviews focusing on the prevalence of PD on a global scale as well (Beckwith et al. 2014, Newton-Howes et al. 2008, Winsper et al. 2020). The sources of heterogeneity across the findings of the population-based studies included in the meta-analytic synthesis by Winsper et al. (2020) involved none of such potential moderators as the study date, studied country, sampling method, sample size, employed diagnostic criteria and/or procedure. Notably, the high level of heterogeneity across the data of seven population-based SCID-II studies conducted in various countries (Winsper et al. 2020) was replicated in the present meta-analytical study combining data from studies conducted in one single country. This suggests that the source of heterogeneity is unlikely to lie in national or cultural differences.

Rather, we feel that such heterogeneity stems from the low reliability of SCID-II assessments. Contrary to what was written in most articles we have reviewed, Coşkunol et al. (1994) examined neither the test-retest reliability, nor the validity of the SCID-II Turkish form but only the interrater reliability. Accordingly, we do not know to what extent there is an agreement between the decisions of clinicians using this tool independently to diagnose each of the PD types in hundreds of studies conducted across the country. Data from Dereboy et al. (2018) suggest that diagnosis of any PD which is derived from diagnoses of specific PDs can be valid only if the clinicians who conduct the SCID-II interview and scoring have sufficient experience and take into consideration all the specific PDs. We do not know whether the first condition was met in studies we included in the meta-analysis, and we have seen that many studies also failed to meet the second condition (see Table 1). The quality of the data obtained in scientific studies is directly related to the valid and reliable measurement of the variables in question. Given the questionable validity and reliability of the assessment of personality pathology in the compiled SCID-II studies, the high level of heterogeneity within the reported prevalence rates is by no means surprising.

In selecting the studies to be included in the quantitative synthesis, we scrutinized the diagnostic procedure followed in each study to see whether the PD diagnoses of the participants had been decided properly based on the ratings of clinicians performing the structured interview. Although we were able to eliminate those studies deciding the PD diagnoses improperly based on participants' self-ratings on the 120-item screening form, we were unable to eliminate those studies describing vaguely the SCID-II evaluation procedure followed. This might have played a role in the heterogeneity in that some PD criteria can only be assessed by the interviewer. In particular, 5 of the 9 criteria listed for schizotypal PD and 2 of the 7 criteria for schizoid PD are not addressed in the screening form, hence, failure to employ structured interviews in SCID-II studies is expected to inevitably result in misleadingly low diagnostic rates of these specific PDs. On the contrary, there are 18 items in the screening form for 8 borderline PD criteria, thus research teams failing to pay proper attention to the details of the SCID-II diagnostic procedure and to perform structured interviews accordingly might easily be tempted to assume that each item queries a separate criterion might then end up diagnosing any participant endorsing 5 or more items with borderline PD. Hence, overdiagnosis or underdiagnosis of certain PD types might result in misleading prevalence estimates, and in turn, a high level of heterogeneity across the SCID-II studies might be encountered.

Limitations and Strengths of the Study

As stated above, the questionable nature of the validity and reliability of the SCID-II diagnoses and the heterogeneity within the PD prevalence data warrants a careful approach to the pooled prevalence value of 52% found in the present meta-analysis. Nonetheless, in a previous meta-analytical study reviewing data from 17 SCID-II studies addressing the prevalence of general PD among psychiatric patients, the overall rate of those diagnosed with any PD or PD-NOS (not otherwise specified) was calculated as 51% (Verheul and Widiger 2004). Adjoining summary prevalence estimates obtained in previous and present meta-analyses support the notion that approximately half of the population receiving mental health services across the world may have personality pathology at a level that requires a PD diagnosis.

The fact that the quality score was not assigned to the studies compiled and its effect on the heterogeneity was not calculated might be considered as another limitation of this review. Although there is a guideline frequently used in the quality grading of prevalence studies (Boyle 1998) some of its items were inapplicable in our case. An item of the guideline, for instance, requires rating the validity and reliability of the instrument used in each study. Because the same diagnostic instrument was used in all of the compiled studies, we were rather interested in the validity and reliability of the assessments performed with SCID-II, yet psychometric properties had been omitted in all but one of the studies included in the meta-analysis (Dereboy et al. 2018). Another item of the guideline inquires if the study is conducted with a probability sample, yet in our case, convenience samples were used in all but one of the compiled studies (Karaer et al. 2004). Besides 95% CI of the sample prevalence was not reported in most of the studies which have been reviewed. Yet this negligence could hardly be regarded as a deficiency in the context of a meta-analysis that calculates the CIs of point estimates anyway (see Figure 2). Nonetheless, if we could assign a quality score to each study, we would be able to employ statistical methods to test our hypothesis that erratic psychometric properties of the SCID-II diagnoses are likely to lie at the source of the heterogeneity.

To us, the major strength of this meta-analytical review is that the pooled prevalence was estimated using data from 35 studies with a median sample size of 62. A survey of systematic reviews in the mental health field of the Cochran Database revealed that the median number of primary studies included in meta-analyses was only 3, and the median value of the sample size was 63 (Davey et al. 2011). Thus, the number and the size of the samples included in the present meta-analysis are conducive to estimate the population prevalence of PD with satisfactory precision.

Conclusion and Recommendations

Critical appraisal of the studies addressing the frequency of SCID-II PD diagnosis in Turkey over the last three decades reveals the following information which is supported by the data conforming to the psychometric principles: (i) One out of two mental health consumers has underlying PD. (ii) There is no difference between the diagnostic groups in terms of PD prevalence. (iii) The heterogeneity is observed not only across the studies conducted with diagnostically diverging samples but also across the ones conducted with diagnostically converging samples. (iv) In our view, the primary reason for such heterogeneity is that SCID-II assessments have been performed by clinicians with varying levels of experience. (v) It is an exceedingly difficult clinical task to reach accurate diagnostic decisions for almost a dozen PD types through a single structured interview. (vi) The validity of diagnostic evaluations is likely to be seriously impaired, in particular, when this task is performed by clinicians inexperienced in administering SCID-II. The problem appears to lie in the difficulty and perhaps ineffectiveness of the task expected of clinicians, rather than instruments used per se (Tyrer et al. 2007). Therefore, the value of sustaining to administer SCID-II or similar semi-structured interviews to diagnose specific PDs is dubious due to lack of convincing validity evidence despite decades of use and research.

In this context, it is by no means surprising that during the development of DSM-5 and ICD-11 efforts have been focused on the severity assessment and diagnosis of general PD rather than specific PDs. The psychometric properties and clinical utility of instruments for assessing the severity of personality pathology in line with the guidelines such as DSM-5 alternative PD model, ICD-11, and PDM-2 (Lingiardi and Mcwilliams 2017) will possibly be high-priority research topics within our field in the foreseeable future. Hopefully, this novel approach will enhance our ability to predict the course and prognosis of PD and to design effective treatment strategies.

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