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**Cross-national variations in reported discrimination
among people treated for major depression worldwide:
the ASPEN/INDIGO international study**

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ABSTRACT

Background. No study has so far explored differences in discrimination reported by people with Major Depressive Disorder (MDD) across countries and cultures.

Aims. In people with MDD: to (1) compare reported discrimination across different countries; (2) explore the relative weight of individual and contextual factors in explaining levels of reported discrimination.

Method. Cross-sectional multisite international survey (34 countries worldwide) on 1082 people with MDD. Experienced and anticipated discrimination were assessed by the Discrimination and Stigma Scale (DISC). Countries were classified according to their level of Human Development Index (HDI). Multilevel negative binomial and Poisson models were used.

Results. People living in 'very high HDI' countries reported higher discrimination than those in 'medium/low HDI' countries. Variation in reported discrimination across countries was only partially explained by individual-level variables. The contribution of country-level variables was significant for anticipated discrimination only.

Conclusions. Contextual factors play an important role in anticipated discrimination. Country-specific interventions should be implemented to prevent discrimination towards people with MDD.

Declaration of interest. None

INTRODUCTION

Major depression is the second leading cause of global disability in the world and the eleventh leading cause of global burden¹. Although a number of effective treatments are currently available, fewer than half of people with depression worldwide receive adequate care². Among barriers to treatment, stigma and discrimination related to mental disorders play a crucial role³.

Mental ill-health discrimination is universally experienced and influences many aspects of people's lives: it represents a barrier to social integration, it limits life opportunities and negatively impacts help-seeking behaviour; it produces changes in feelings and attitudes for both patients (lower self-esteem, poorer self-care, and social withdrawal) and their family members (feelings of guilt, shame, despair)⁴.

Although the literature shows that participants in studies across the world express largely similar types of expectations and experiences of mental ill-health discrimination, some cultural specificities do exist^{5,6}. Empirical evidence demonstrates differences in symptom expression and understanding of illness, and cultural influences have been noted in care seeking and public acceptance of the illness^{7,8}.

However, findings from studies in different cultural contexts are difficult to compare, since research in this field has been conducted by using inconsistent and/or heterogeneous methodologies. Moreover, a considerable amount of information comes from research conducted among ethnic minorities living in western countries, such as the USA⁹⁻¹¹ or the UK¹², rather than on populations living in their own countries. In addition, cross-cultural research has mainly addressed stigma related to schizophrenia^{13,14} or mental disorders in general^{15,16}, rather than depression specifically. Still, a few studies have shown that this latter condition has better public acceptance than schizophrenia^{6,17,18}; it could therefore be

expected that some specificities in depression-related stigma may exist. Further, cross-cultural research in this field has generally focused on attitudes of the general population towards mental disorders or people suffering from mental disorders^{10,16,19,20}, rather than on the ways in which behavioral consequences of stigma (discrimination) are experienced by people with depression²¹. Finally, the few existing cross-national comparative studies on stigma and discrimination related to depression have been carried out in western countries only²²⁻²⁴.

To fill these knowledge gaps, the present explanatory study was undertaken which aims, for people with Major Depressive Disorder (MDD), to: (1) compare reported discrimination across different countries in the world; and (2) explore the relative weight of individual and contextual factors in explaining levels of reported discrimination.

METHOD

Design

Data were collected within the frame of the EU-funded ASPEN (Anti Stigma Programme European Network) study, which was nested within the larger INDIGO-Depression (International Study of Discrimination and Stigma for Depression) research network. Full details on the ASPEN/INDIGO-depression study are given elsewhere²⁵. Overall, 40 sites in 34 countries worldwide were included [Africa: Egypt, Morocco, Nigeria (4 sites), Tunisia; America: Brazil, Canada, Venezuela. Asia: India, Japan, Malaysia, Pakistan, Sri Lanka, Taiwan. Europe: Belgium, Bulgaria, Croatia, Czech Republic, Finland, France, Germany, Greece, Hungary, Italy (2 sites), Lithuania, Netherlands, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Turkey, United Kingdom (2 sites); Oceania: Australia].

Participants

This was intentionally a pragmatic study²⁵ in which many low- and middle-income countries were included who participated using only locally available resources as no external grant provision was available. Within centres, site directors were asked to identify a minimum of 25 participants who were, in their judgment, reasonably representative (as a group) of all people with a diagnosis of MDD attending specialist mental health services (either outpatient or day-care in both the public and private sectors in the local area). The minimum number of 25 for each site was defined for feasibility issues, particularly for non European sites with no grant support. This method, used in our previous schizophrenia study²⁶, was intended to allow local staff to take into account the specific local service configuration and to draw participants from the whole range of appropriate local services. Staff in each site ensured that the sample had a spread across adult age range [young people (18-25), working years (25-65), older adults (≥ 65)] and clear representation of female participants as MDD is twice as prevalent in women as men. Inclusion criteria were: (i) clinical diagnosis of MDD (single episode or recurrent) according to DSM-IV-TR criteria during the previous 12 months (diagnosis had been made by patients' treating clinicians at the time of treatment contact and was not reassessed at the time of study recruitment); (ii) written informed consent to participate; (iii) ability to understand and speak the main local language; and (iv) aged 18 or older. Exclusion criteria were: (i) being a psychiatric in-patient at time of recruitment; (ii) having a co-morbid diagnosis of schizophrenia (other co-morbidities were accepted). The ASPEN/INDIGO-depression study was approved by the appropriate ethical review board in each study site.

Measures

Participants were assessed face-to-face by independent researchers not involved in the care process using the discrimination and stigma scale (version 12; DISC-12) - a structured mixed-method interview for recording the discrimination experienced by an individual with a mental disorder. Full details of the psychometric properties of this scale are reported elsewhere²⁷. DISC-12 contains 32 questions about aspects of everyday life including work, marriage, parenting, housing, leisure and religious activities. Items 1–21 are to ascertain experienced discrimination (e.g., “Have you been treated unfairly in making or keeping friends?”); 22–25, anticipated discrimination (e.g., “Have you stopped yourself from applying for work?”); 26 and 27, positive treatment (e.g., “Have you been treated more positively by your family?”); and 28–32, coping strategies to overcome discrimination (e.g., “Have you been able to use your personal skills or abilities in coping with stigma and discrimination?”). Participants’ responses were rated with a 4-point Likert scale (0=no difference, 1=a little different, 2=moderately different, and 3=a lot different). The DISC-12 items were divided into four subscales - experienced discrimination (0–21), anticipated discrimination (0–4), overcome discrimination, and positive treatment. Only the first two subscales will be addressed here. For each subscale a total score is generated by counting the number of items in which participants score 1, 2, or 3. DISC-12 also allows qualitative information to be gathered to add detail to the experiences rated, providing a strong validation for the occurrence, direction, and severity of the discrimination rated quantitatively, which is not discussed in this report but will be reported upon elsewhere. Socio-demographic and clinical information (years since first contact with mental health services, type of mental health care, lifetime number of depressive episodes, admission to psychiatric hospital, advantage of having received a diagnosis of MDD as an explanation for one’s own mental health problems) are also recorded.

Stratification of ASPEN/INDIGO study sites

The ASPEN/INDIGO-depression countries were grouped according to their Human Development Index (HDI), a summary measure of human development produced by the United Nations (for this study we used 2010 data; UNDP, 2010)²⁸. The HDI measures the average achievements of a country in three basic dimensions of human development: a) a long and healthy life; b) access to knowledge; c) a decent standard of living. The three dimensions are measured by: a) life expectancy at birth (data source: UNDESA United Nations Department of Economic and Social Affairs 2009); b) mean years of schooling (data sources: population censuses and household survey data compiled by UNESCO, EUROSTAT and others) and expected years of schooling (data source: UNESCO Institute for Statistics 2010); c) gross national income (GNI) per capita (data source: World Bank 2010 and IMF 2010). Countries are ranked by their HDI value. HDI classification is based on quartiles and denoted as 'very high', 'high', 'medium' and 'low' HDI. ASPEN/INDIGO-depression participating countries were grouped as follows: 'very high HDI' (Australia, Netherlands, Canada, Germany, Japan, France, Finland, Belgium, Spain, Greece, Italy, UK, Czech Republic, Slovenia, Slovakia, Hungary, Portugal), 'high HDI' (Lithuania, Romania, Croatia, Malaysia, Bulgaria, Serbia, Brazil, Venezuela, Tunisia, Turkey), and 'medium/low HDI' (Sri Lanka, Egypt, Morocco, India, Nigeria, Pakistan, Taiwan). The categories 'medium' and 'low' were put together as Nigeria was the only 'low HDI' country.

Statistical analysis

Analyses were performed by Stata 13.0 for Windows. All p-values were two-tailed with an accepted significance level of 0.05. Categorical variables were presented as percentages, and continuous variables were presented as mean values with standard deviations. Comparisons

among independent groups were performed by Chi-square and Kruskal-Wallis test, respectively.

Due to the data dependencies induced by the nesting of patients (level 1) within countries (level 2), multilevel models were used, which allowed the simultaneous examination of the effects of individual level and country level variables on individual level outcomes. More specifically, given the distribution of data, negative binomial ('menbreg' command) was suitable for 'experienced discrimination' sub-score and poisson ('mepoisson' command) for 'anticipated discrimination' sub-score.

The steps in the construction of the models were: (1) study differences in reported discrimination among countries (M0: a multilevel model with the country effects modelled as random or intercept only model); (2) include individual variables (M1: experienced or anticipated discrimination sub-score, age, gender, marital status, working condition, education, advantage to have a MDD diagnosis as an explanation for one's own mental health problems, lifetime number of depressive episodes, outpatient mental health care, admission to psychiatric hospital) as fixed effects ('years since first contact with mental health services' was not included because it was significantly associated with 'lifetime number of episodes of major depression'); and (3) include human development classification for country level (M2: M1+HDI). Cross-level interactions terms were added where appropriate.

The multivariate models M1 and M2 were estimated introducing as patients' characteristics only those variables which were found significantly associated ($p < 0.05$) with the dependent variable in the univariate multilevel models. The proportional change in variance estimates of the different models was calculated. This indicates the part that patients' characteristics

and countries' HDI classification, respectively, explain concerning the total inter-country variation.

RESULTS

Overall, 1082 people with MDD worldwide participated in the study. Participants' characteristics stratified by the three HDI country groupings are shown in Table 1.

(Table 1 about here)

Country groups differed for all the socio-demographics considered (with exception of gender composition), with participants from the 'medium/low HDI' group showing lower mean age, lower educational level, higher unpaid work rate and lower retired rate. Moreover, country groups differed for almost all the clinical characteristics considered (with exception of outpatient MH care and advantage to have a MDD diagnosis), with participants from the 'medium/low HDI' group showing lower contact duration with mental health services, lower number of depressive episodes and lower hospitalization rates.

Average scores for experienced discrimination by HDI group were 3.97 (sd 3.50) for the 'very high', 3.38 (sd 3.34) for the 'high' and 3.30 (sd 3.74) for the 'medium/low' (see Figure 1a).

(Insert Figure 1 about here)

Average scores for anticipated discrimination by HDI group were 1.68 (sd 1.12) for the 'very high', 1.56 (sd 1.13) for the 'high' and 1.24 (sd 1.08) for the 'medium/low' (see Figure 1b).

The comparison of average scores among the three country groupings revealed significant between-group variation for both experienced (Kruskal-Wallis, $p < 0.001$) and anticipated (Kruskal-Wallis, $p < 0.001$) discrimination.

The upper part of Table 2 shows the comparison of percentage of participants endorsing experience of discrimination in the various DISC-12 items among the three country groupings, whereas the lower part of Table 2 shows the comparison of percentage of people anticipating discrimination.

(Insert Table 2 about here)

Experiences of discrimination were more frequent in participants living in 'very high HDI' countries than 'medium/low HDI' countries; this difference reached statistical significance in most life domains, such as making or keeping friends, family, finding a job, welfare benefits, physical health, mental health staff and parental role (Chi-square, $p < 0.05$). It should also be noted that the percentage of people reporting to have been shunned or avoided by others is 1.6-fold higher in 'very high HDI' countries than 'medium/low HDI' countries, which is highly significant difference (Chi-square, $p < 0.001$). Only religious practices showed a reverse pattern, with a higher percentage of discrimination reported in the 'medium/low HDI' group. Participants of 'very high HDI' countries also reported more anticipated discrimination than those living in the other two country groups for all the DISC-12 domains (Chi-square, $p < 0.05$).

Table 3 shows fixed and random parameters estimated from multilevel negative binomial models for experienced discrimination. A significant variation across countries was found (model M0, country-level variability not explained by other variables=0.13, LR test $p<0.001$). When individual-level variables were included (model M1), anticipated discrimination, socio-demographics (age; widowed/separated/divorced marital status; unpaid work, unemployment or student) and clinical characteristics (previous admissions for psychiatric treatment; number of episodes of depression) were statistically significant and random variation between countries decreased by 30.8% (thus indicating that nearly one third of country-level variation came from differences in the population composition in each country). Stratification of countries according to HDI (model M2) was not statistically significant and consequently the between-countries variation did not change.

(Insert Table 3 about here)

Table 4 shows fixed and random parameters estimated from multilevel Poisson models for anticipated discrimination. A significant variation across countries was found (model M0, LR test $p<0.001$). When individual-level variables were included (model M1), experienced discrimination, age and single/non-cohabiting partner marital status were statistically significant and random variation between countries decreased by 37.5%. When country stratification according to the HDI was added (model M2), the between-countries variation decreased to 62.5% (thus indicating that 25% of the country-level variation came from differences in human development). No significant cross-level interaction was found between the significant individual-level experienced discrimination sub-score and the country-level human development index classification.

(Insert Table 4 about here)

DISCUSSION

Reported discrimination among people with MDD is more severe in high-income countries. Multilevel regression models showed that this association was not significant for experienced discrimination, but significant for *anticipated* discrimination. This finding seems robust since the variation between countries decreased by 62.5% after adjusting for individual- and country-level variables and the 25% of this decrease was explained by the HDI.

The finding that *anticipated* discrimination differs across countries in parallel to their level of human development (with higher discrimination in the more developed countries) deserves an in-depth conceptual analysis. In the DISC-12 *anticipated* discrimination occurs when a person limits their own involvement in important aspects of everyday life due to the expectation of being discriminated against (eg, when an individual does not apply for a job because he/she fully expects to fail in any such application). Therefore, respondents scoring high on the anticipated discrimination items not only anticipate discrimination, they also decided to give up and not pursue their goals – this is referred to as the ‘why-try’ effect²⁹. Thus our findings indicate that *anticipated* discrimination has concrete consequences and real impact on people’s lives with more severe effect for those living in high-income countries.

Interpretation of findings

It therefore seems that the context (as a reflection of social norms and values that are typical of a given socio-cultural group) matters in facilitating or hindering people with MDD to involve themselves in a number of important life activities. Other reasons for more anticipated discrimination in high-income countries may include the nature of employment, the broader socio-economic context, and the explanatory models of mental disorders and self-attribution. In this study almost twice as many patients living in high-income countries anticipated discrimination in the job domain, compared to those living in the least developed countries. The process of seeking entry (or reentry) into the job market for anyone with a substantial disruption in work record in highly industrialized societies is typically frustrating and disheartening, and can be traumatic for recovering patients^{30,31}. In contrast, in traditional societies when patients recover from their symptoms, they are far more likely to find work and often find it much easier to reassume the work roles they had before³². Further, in industrialized societies, the work environment is typically impersonal and can be intensely competitive. Thus, even when a person recovering from a severe episode of major depression finds a job, the profound sense of marginality and insecurity lingers on. Work relationships in industrialized countries are under more bureaucratic regimentation; this is less likely to be the case for patients returning to traditional communal settings, since their work roles are more integrated with other aspects of their lives and are less likely to be taken away simply because of questions about their performance.

Another possible reason for lower levels of anticipated discrimination in low income countries is the nature of community support. Most developing societies are based on collectivistic values³³, with primary emphasis on social relations and a range of conventions, rules, and roles that tend to sustain long-term relationships and make isolation unusual even

for the most disabled people. In contrast, in industrialized countries (where the social structure is generally individualistic) relationships are more likely to be bilaterally defined, contractual in nature, and subject to constant reevaluation and revocation³⁴. It is thus plausible that the intense individualism characteristic of some Western societies might be not conducive to the recovery of mental ill health conditions. Along with their emphasis on independence, self-reliance, and personal freedom, individualistic value orientations also tend to foster fierce competition, frequent life changes, and alienation, and they do not usually provide the kind of structured, stable, and predictable environments that allow people with mental health conditions to recuperate at their own pace and to be reintegrated into society. There is initial empirical evidence that social context may make the difference for people with depression to perceive the 'others' as more or less supportive and/or stigmatizing, since some recent studies found that greater community support and social capital are associated to less perceived discrimination ^{35,36}.

Explanatory models of mental disorders and self-attribution may also play a relevant role in shaping the perception of discrimination by people suffering from depression. Traditional societies in low income countries offer cultural belief systems that generally externalize causality of psychiatric problems (eg, God's will, Karma or other supernatural entities)^{7,37}, thus lessening individual and family blame. In contrast, in most high income industrialized countries the prevailing paradigm is based on the biomedical model where mental disorders are assumed to have a biological basis ³⁸. The notion that mental disorders are simply 'brain diseases' that exist as such in nature has proved to be extremely damaging to those suffering from mental ill-health conditions. This notion is responsible for unwarranted and destructive pessimism about the chances of recovery, and has ignored what is actually going on in these

people's lives, in their families, and in the societies they live in³⁹. This results in stigmatization and rejection from the outside, and self-attribution and self-blame from the inside. This is in contrast to low-income countries where expectations of severe mental disorders are that these conditions are like any other acute illness, and societal reactions are in keeping with this view⁴⁰.

In relation to the difference between high- and medium/low-income countries being particularly evident for *anticipated* discrimination, this may be because of a stronger and more visible service user movement in some high-income countries campaigning on issues of discrimination, which has raised awareness amongst those with mental health problems of discrimination they may experience. This is supported by a growing body of research detailing the nature and extent of discrimination across a range of settings⁴. As service user groups/movements emerge in low-income countries, it may be that people with mental health problems in these countries will also become more aware of the discrimination they may experience.

Strengths and limitations

The study has the following strengths. The use of interviews to gather direct self-reports from people with depression, both of discrimination that was actually *experienced* (rather than hypothetical scenarios or vignettes) and that which was *anticipated*. Most research on discrimination and depression has largely been descriptive, concerning surveys of public attitudes on hypothetical situations rather than how discrimination is experienced by people suffering from MDD. Moreover, collection of self-report on discrimination may empower service users by giving them a voice and acknowledge the validity of their experience.

This study has also several limitations. Samples sizes in the participating countries were relatively small. Participants were selected from treated patients rather than from people with MDD living in the community, thus limiting the generalizability of results to all people with MDD living in participating sites. Selection bias could have occurred as participants were recruited on the basis of access to mental health services, the judgment of local research staff and their willingness to participate. Moreover, due to the relatively low sample size in the participating countries, we could not control for possible contextual differences within a given country (eg, rural vs. urban / deprived vs. affluent areas). Disability and clinical severity measures were not used, therefore it was not easy to understand how far discrimination reported by respondents was more realistically attributable to disorder-related impairments, or to negative appraisal of life circumstances influenced by current levels of depressive symptoms; this issue warrants further investigation. The cross-sectional study design does not provide evidence of causal relationships between putative predictors and levels of discrimination, nor about the time that it takes for stigma to develop and have consequences. The nature of this study was explanatory and therefore no *a priori* hypothesis was formulated about the direction of possible associations between cross-cultural differences and discrimination. No information was gathered on other possible minority statuses; this could have been a potential source of bias in case of patients with multiple minority statuses (eg, ethnic, religious, sexual, physical illness). Finally, social desirability is a common limitation of self-report stigma measures which may vary cross-culturally.

Implications for future research

Overall, the results of this study suggest that close personal relationships and informal social support networks may play a significant role in buffering anticipated discrimination in people

with depression; therefore the 'social distance' element of stigma is an important focus for future research. This also implies that culturally sensitive measures of social capital should be included in future cross-cultural research on stigma and discrimination. Moreover, we need more high-quality qualitative research in this field in order to gain a more in-depth insight on how discrimination really impacts on peoples' lives and studies that will allow relating these reported/perceived findings to the outcome of mental disorders and the impact on people's lives. Longitudinal studies indicating how and when stigma develops and how stigma and its consequences changes over time would also be very useful.

A tentative agenda for future interventions

The majority of people in high income countries tend to attribute major depression to neurobiological causes¹⁸. The percentage of the general public endorsing this view has steadily increased over the last fifteen years, in parallel with the spread of the message launched by some campaigns worldwide claiming that mental illness is "a disease like any other". However, social distance and perceived danger associated with people with depression has not decreased significantly over the same period in western Europe⁴¹ and the USA⁴². Holding a neurobiological conception of mental disorders seems to increase the likelihood of support for treatment, but it appears unrelated to stigma, and where associated the effect is to increase, not decrease, community rejection^{18,38}. The assumption underlying a number of anti-stigma campaigns launched over the last decades in the high income countries (ie, educating people about biological basis of mental disorders automatically leads to the improvement of their attitudes towards the mentally ill) therefore appears questionable. Because the public holds a tacit understanding of the aetiology of mental illness, our efforts need to move past this message⁴². Reconfiguring stigma reduction

strategies in high income countries may require providers and advocates to shift to an emphasis on competence and inclusion. Efforts should prioritize inclusion, integration, competences for the reduction of cultural barriers to recognition, response, and recovery. Unless we tackle stigma at the cultural level, the prospects for changing the lives of those affected by mental disorders will be unlikely to happen.

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Full details on the ASPEN Project Group are given at www.antistigma.eu.

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Table 1. Socio-demographic and illness-related characteristics of the overall sample stratified by country groups (Very high HDI, High HDI, Medium/Low HDI) (n=1087)

	Very high HDI (n=503)	High HDI (n=314)	Medium/Low HDI (n=270)	P*
Male, %	34.0	30.3	38.5	0.110
Age, mean (SD)	47.2 (15.3)	45.3 (14.6)	39.8 (14.0)	<0.001
Lower education, %	44.1	35.1	55.0	<0.001
Marital status, %				
married /cohabiting	44.4	51.6	59.0	0.001
single	30.5	24.0	26.1	
widowed / separated / divorced	25.1	24.4	14.9	
Employment [§] , %				
full-time / part-time	39.2	39.9	40.5	<0.001
volunteer / sheltered / at home	4.4	8.6	22.7	
unemployed / student	36.5	33.9	31.5	
retired	19.9	17.6	5.3	
Yrs since first MH contact, mean (SD)	11.7 (12.2)	9.2 (9.4)	6.4 (8.7)	<0.001
Outpatient MH care, %	87.2	82.6	84.3	0.185
Advantage to have a diagnosis of MDD as an explanation for one's own MH problems, %	80.8	79.0	78.6	0.737
Lifetime depressive episodes ≥ 6 , %	41.4	30.0	25.0	<0.001
Ever psychiatric admission, %	41.2	42.4	27.2	<0.001

* Chi-square for percentages and Kruskal-Wallis for means (SDs)

[§] The original 11 categories were collapsed by distinguishing participants who: work and are paid, work but are not paid, do not work, and are retired

Figure 1. Discrimination scores by countries within groups with very high, high and medium/low HDI (n=1082)

Figure 1a. Experienced discrimination [number of items (range 0-21) in which participants reported a disadvantage]

Very high HDI

High HDI

Medium/Low HDI

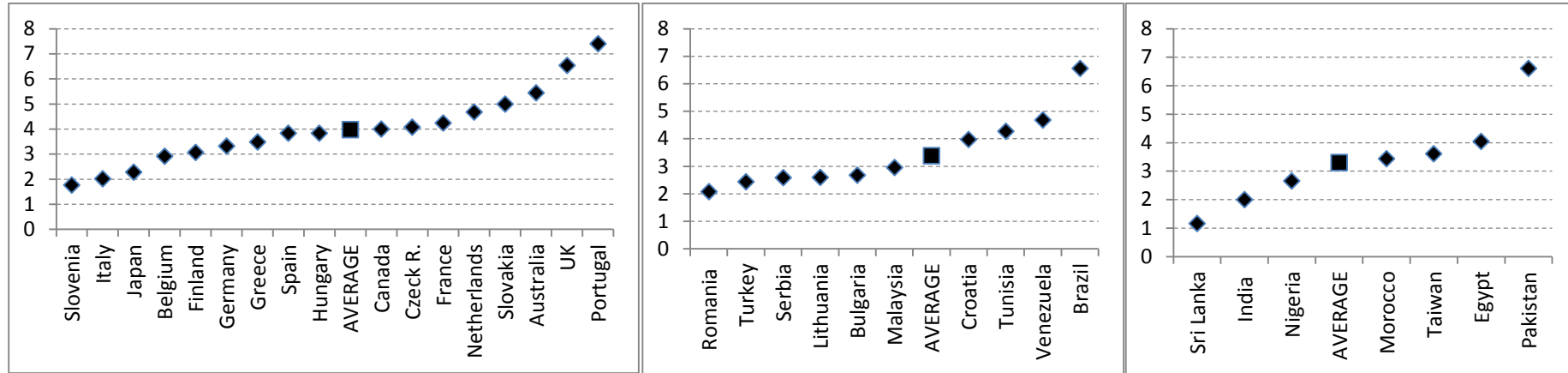


Figure 1b. Anticipated discrimination [number of items (range 0-4) in which participants reported a disadvantage]

Very high HDI

High HDI

Medium/Low HDI

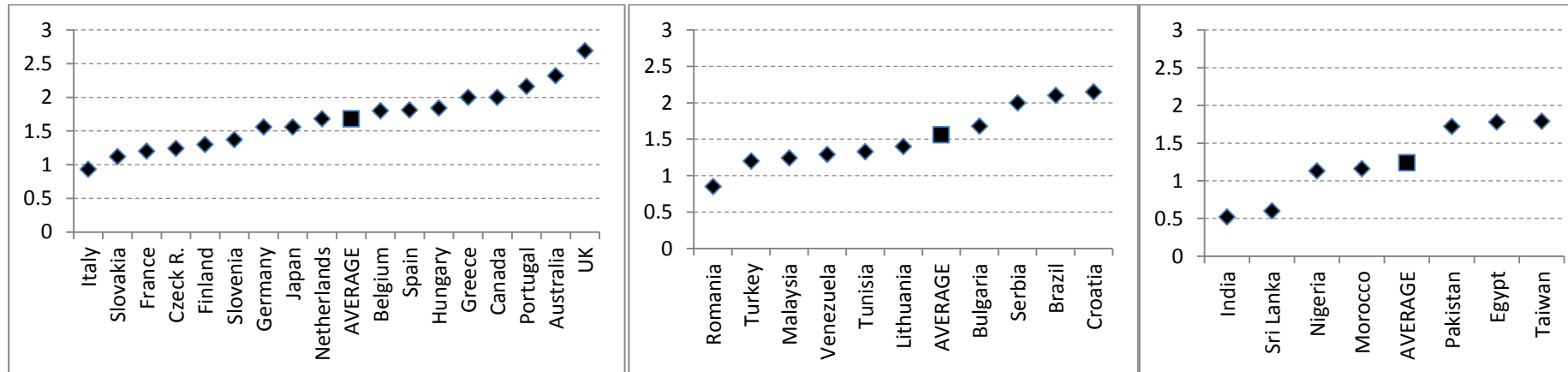


Table 2. Comparison of percentages of participants with MDD reporting discrimination in the various DISC-12 items by country groups (Very high HDI, High HDI, Medium/Low HDI) (DIS = discriminated; NA= not applicable)

	Very high HDI		High HDI		Medium/Low HDI		P
	DIS (%)	NA (%)	DIS (%)	NA (%)	DIS (%)	NA (%)	Chi-square
Experienced discrimination (n=1082)	n=501		n=312		n=269		
Making or keeping friends	41.1	6.2	30.4	7.3	27.8	1.9	<0.001
Neighbourhood	17.2	29.6	23.2	12.7	17.8	1.5	0.116
Dating or intimate relationships	32.5	29.6	27.3	59.6	28.0	18.9	0.348
Housing	13.2	36.2	14.0	35.7	13.9	17.0	0.953
Education	22.7	44.3	18.6	44.6	19.5	25.6	0.511
Marriage or divorce	38.9	35.4	30.6	28.3	31.2	23.7	0.081
Family	44.4	2.4	43.8	1.9	30.0	0.7	<0.001
Finding a job	27.5	46.1	23.8	45.9	16.5	29.6	0.022
Keeping a job	34.5	29.8	31.1	32.8	26.0	36.7	0.150
Public transport	7.7	21.9	6.4	24.5	8.8	11.1	0.607
Welfare benefits or disability pensions	27.8	50.1	18.0	48.1	9.4	67.8	0.001
Religious practices	7.2	39.0	2.7	27.1	10.1	4.4	0.005
Social life	23.1	9.9	17.0	18.8	19.7	1.5	0.149
Police	11.1	40.4	5.4	28.7	9.6	22.6	0.073
Physical health problems	23.1	6.6	15.1	4.1	11.8	2.6	<0.001
Mental health staff	26.0	3.6	16.8	1.0	12.5	1.5	<0.001
Personal privacy	14.3	3.4	20.7	5.4	19.4	2.2	0.044
Personal safety and security	24.2	7.6	19.6	1.9	21.9	1.5	0.323
Starting a family or having children	16.8	59.4	17.0	50.6	12.7	32.6	0.446
Role as a parent	26.5	46.1	18.4	35.4	14.2	28.9	0.004
Avoided or shunned by people	40.7	2.2	34.1	5.1	25.4	1.5	<0.001
Anticipated discrimination (n=1080)	n=501		n=310		n=269		
Applying for a job	48.2	38.6	40.6	35.0	27.2	27.4	<0.001
Applying for education or training	35.2	33.0	33.7	35.7	23.3	33.0	0.019
Close personal relationship	47.5	10.5	43.2	10.8	30.4	11.5	<0.001
Concealed or hidden MH problems	77.7	0.8	69.0	0.6	62.4	1.1	<0.001

DIS was obtained by combining discrimination categories 1, 2, 3 for each item

Table 3. Multilevel negative binomial regression models for experienced discrimination (overall sample n=1082). Only independent variables significantly associated (p<0.05) with the dependent variable in the univariable models were introduced in the multivariable models

	M0: Variance Components		M1: M0+Patient-level characteristics		M2: M1+Country-level Characteristics	
	Estimate (SE)	p-value	Estimate (SE)	p-value	Estimate (SE)	p-value
Fixed effects						
Intercept	1.25 (0.07)	0.000	0.88 (0.16)	0.000	0.90 (0.18)	<0.001
Patient level characteristics						
Anticipated discrimination			0.29 (0.03)	0.000	0.29 (0.03)	<0.001
Age			-0.01 (0.00)	0.001	-0.01 (0.00)	0.001
Advantage to have a diagnosis of MDD			0.07 (0.08)	0.399	0.06 (0.08)	0.405
Ever admitted for psychiatric treatment			0.32 (0.07)	0.000	0.32 (0.07)	<0.001
Six or more lifetime episodes of depression			0.23 (0.07)	0.001	0.23 (0.07)	0.001
Marital status						
Married or co-habiting			Ref		Ref	
Single or no co-habiting partner			0.01 (0.08)	0.970	0.01 (0.08)	0.984
Widowed, separated or divorced			0.16 (0.08)	0.043	0.17 (0.08)	0.042
Low education [up to secondary (≤16 yrs)]			-0.08 (0.07)	0.255	-0.08 (0.07)	0.230
Working condition						
Full-time or part-time			Ref		Ref	
Volunteer, sheltered or at home			0.26 (0.11)	0.020	0.26 (0.11)	0.021
Unemployed or a student			0.14 (0.07)	0.048	0.14 (0.07)	0.048
Retired			-0.10 (0.12)	0.410	-0.10 (0.12)	0.420
Country level characteristics						
Human Development Index						
Very high HDI					Ref	
High HDI					-0.10 (0.15)	0.531
Medium/Low HDI					0.01 (0.17)	0.941
Random effect variances						
Country level	0.13 (0.04)	-	0.09(0.03)	-	0.09 (0.03)	-
Proportion reduction in variance estimates compared to intercept only model			30.8%		30.8%	
LR test	87.44	0.000	42.07	0.000	37.81	<0.001

Table 4. Multilevel poisson regression models for anticipated discrimination (overall sample n=1080). Only independent variables significantly associated (p<0.05) with the dependent variable in the univariable models were introduced in the multivariable models

	M0: Variance Components		M1: M0+Patient-level characteristics		M2: M1+Country-level Characteristics	
	Estimate (SE)	p-value	Estimate (SE)	p-value	Estimate (SE)	p-value
Fixed effects						
Intercept	0.39 (0.06)	0.000	0.30 (0.15)	0.043	0.42 (0.16)	0.008
Patient level characteristics						
Experienced discrimination			0.06 (0.01)	0.000	0.06 (0.01)	<0.001
Age			-0.01 (0.00)	0.052	-0.01 (0.00)	0.052
Advantage to have a diagnosis of MDD			0.07 (0.07)	0.356	0.07 (0.07)	0.374
Six or more lifetime episodes of depression			0.09 (0.07)	0.167	0.08 (0.07)	0.256
Marital status						
Married or co-habiting			Ref		Ref	
Single or no co-habiting partner			0.16 (0.08)	0.040	0.15 (0.08)	0.054
Widowed, separated or divorced			0.01 (0.08)	0.911	-0.01 (0.08)	0.994
Working condition						
Full-time or part-time			Ref		Ref	
Volunteer, sheltered or at home			-0.13 (0.11)	0.267	-0.08 (0.12)	0.473
Unemployed or a student			0.01 (0.07)	0.976	0.01 (0.07)	0.989
Retired			-0.16 (0.12)	0.201	-0.16 (0.12)	0.187
Country level characteristics						
Human Development Index						
Very high HDI					Ref	
High HDI					-0.06 (0.11)	0.605
Medium/Low HDI					-0.34 (0.13)	0.007
Random effect variances						
Country level	0.08 (0.03)	-	0.05 (0.02)	-	0.03 (0.02)	-
Proportion reduction in variance estimates compared to intercept only model			37.5%		62.5%	
LR test	88.45	0.000	21.86	0.000	13.30	<0.001