

Stigma for Common Mental Disorders in Racial Minorities and Majorities A Systematic Review and Meta-Analysis

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Abstract

Background There is a strong stigma attached to mental disorders preventing those affected from getting psychological help. The consequences of stigma are worse for racial and/or ethnic minorities compared to racial and/or ethnic majorities since the former often experience other social adversities such as poverty and discrimination within policies and institutions. This is the first systematic review and meta-analysis summarizing the evidence on the impact of differences in mental illness stigma between racial minorities and majorities.

Methods This systematic review and meta-analysis included cross-sectional studies comparing mental illness stigma between racial minorities and majorities. Systematic searches were conducted in the bibliographic databases of PubMed, PsycINFO and EMBASE until 20 th December 2018. Outcomes were extracted from published reports, and meta-analyses, and meta-regression analyses were conducted in CMA software.

Results After screening 2,787 abstracts, 29 studies with 193,418 participants (N=35,836 in racial minorities) were eligible for analyses. Racial minorities showed more stigma than racial majorities ($g=0.20$ (95% CI: 0.12~0.27) for common mental disorders. Sensitivity analyses showed robustness of these results. Multivariate meta-regression analyses pointed to the possible moderating role of the number of studies with high risk of bias on the effect size. Racial minorities have more stigma for common mental disorders when compared with majorities. Limitations included moderate to high risk of bias, high heterogeneity, few studies in most comparisons, and the use of non-standardized outcome measures.

Conclusions Mental illness stigma is higher among ethnic minorities than majorities. An important clinical implication of these findings would be to tailor anti-stigma strategies related with mental illnesses according to specific racial and/or ethnic backgrounds with the intention to improve mental health outreach.

Introduction

Common mental disorders (CMDs) such as depression and anxiety disorders are highly prevalent, disabling and costly with diminished quality of life, medical morbidity and mortality (1-3). It is estimated that every year almost one in five people among the general population worldwide suffers from CMDs (4-5). Even though many people are affected by CMDs globally, there is a strong stigma attached to CMDs and those who have them (6). Mental illness stigma is a multidimensional problem causing great burden on those who are affected (6-7). Not only does it determine negative public opinion and discrimination against people with mental illnesses (7) but it also leads to not to seek or adequately participate in psychological treatment (8-10).

There are various definitions of mental illness stigma in the current stigma literature. Recently, the Mental Illness Stigma Framework (MISF) has been proposed (11) emphasising that how stigma is experienced differs depending on the perspective of the general public who often attributes stigma (i.e. *stigmatizer*) to those who have mental illnesses (i.e. *stigmatized*) (11). There are also shared perceptions and attributions between stigmatizer and stigmatized (i.e. *perceived stigma*). Different cognitive, affective and behavioural mechanisms are associated with each of these perspectives. The cognitive mechanisms are *stereotypes* referring to the collectively agreed upon negative beliefs about an individual with a mental illness (e.g. dangerousness, weakness) (11). The affective mechanisms are *prejudices* which are emotional reactions generated by stereotypes such as fear, anger and pity. The behavioural mechanisms are named as *discrimination* such as withholding help, avoidance, segregation or coercion (11). The impact of stigma on an individual's life can be understood in terms of three components: 1) *Experienced stigma*, referring to the day-to-day experiences of stereotypes, prejudice and discrimination from others, 2) *anticipated stigma*, the expectation to be a target of a stereotype, prejudice or discrimination, and 3) *internalised stigma*, which is the application of mental illness stigma to oneself such as believing that they are dangerous to others or they are incompetent (11).

There are differences in the extent of the impact of mental illness stigma depending on the racial and/or ethnic background of those who are affected (11). Early research on the influence of ethnicity on the mental illness stigma indicated that compared to the White group, the non-White group perceived someone with mental illness as more dangerous (12) and expressed greater need for segregation than the White group (12). These results were replicated by more recent research comparing Asian Americans (13-16), African Americans (17-18) and Hispanics (19-21) with European Americans (White). Further, the variation in mental illness stigma could be even more so among specific ethnic groups within broad racial categories (22). For instance, in a large scale study representative of the ethnic groups in Singapore, Subramaniam and colleagues found that, those of Indian ethnicity who also had low socio-economic status, perceived individuals with mental illness as more dangerous and unpredictable, and desired more social distance compared to those of Malay and Chinese backgrounds (22). Thus, there is intersectionality in experiences of stigma (23-24). This perspective emphasises that the consequences of stigma are worse for some racial and/or ethnic groups who have for instance, personal incompetence attributions of mental illness (23) and who also face with other forms of "minority stress" and adversities such as interpersonal and structural discrimination within policies and institutions and low socio-economic background (8-10,23-24).

To date, there are no prior meta-analyses investigating racial and/or ethnic differences in mental illness stigma. This could be due to the inconsistency in how stigma mechanisms have been defined and measured (11). One implication of this gap in the literature is the lack of information about the evidence base for developing culturally-relevant anti-stigma interventions (25). Since CMDs are highly prevalent globally, it is important that psycho-social interventions focus on changing the negative stereotypes (e.g. I am incompetent) and/or discriminatory behaviours (e.g. social withdrawal) related with CMDs among racial and ethnic minorities specifically (25-26). Nevertheless, there are promising theoretical developments in the stigma field such as the MISF. There is also growing number of studies examining the ethnic variations in stigma for CMDs in Western as well as in Non-Western countries. Thus, the objectives of the current study are twofold. We examine the differences in mental illness stigma between racial minorities and majorities. We expect that racial minorities have more mental illness stigma for CMDs compared to majorities. We also investigate if there are variability in mental illness stigma between racial minorities depending on race, quality of the studies and types of stigma outcomes (self-report vs vignette).

Methods

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Identification and selection of studies

Search strategy

A review protocol was developed based on the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA)-statement (www.prisma-statement.org) (27). The protocol for this meta-analysis was registered at PROSPERO (CRD42018091080).

We conducted a comprehensive systematic literature search in the bibliographic databases PubMed, Embase.com and PsycINFO up to 20th December 2018, in collaboration with a medical librarian. Detailed search strategies for these databases are given in the appendix A. The following terms were used (including synonyms and closely related words) as index terms or free-text words: "Social stigma", "Common mental disorders", "Mood disorders", "Anxiety disorders", "Depression", "Stress disorders", "Migrants", "Minority groups". The search was performed without date or language restriction. Search strategies for other databases were built accordingly. We also checked the references of the included studies to identify additional relevant studies (see figure 1 for the Prisma Flowchart).

Inclusion criteria

The searches were limited to the following criteria: 1) Peer-reviewed papers, 2) Racial minorities (i.e. defined based on the classification of the country of the included studies) 2) Racial majorities (i.e. defined based on the classification of the country of the included studies) 3) Adults aged 18 and above and 4) Participants with/without common mental disorders (i.e. common mental disorders are identified as depression and anxiety spectrum disorders), 2) Empirical studies with cross-sectional designs measuring mental illness stigma about common mental disorders among racial minorities in comparison to majorities 3) Studies were not limited to the European populations only and studies carried out in other continents were included.

Exclusion criteria

The exclusion criteria: 1) Publications focusing on stigma about help-seeking, HIV, physical disorders or sexual minorities (if they are not from a racial minority group), 2) Publications focusing on stigma about severe mental health disorders (e.g. schizophrenia), 3) Empirical studies without a comparison group (studies which are not comparing different racial groups were excluded), 4) Qualitative studies and 5) Publications focusing on adolescent and children sample.

Quality assessment

We assessed the quality of the included studies using the Effective Public Health Practice Project Quality Assessment Tool (EPHPP). This tool assesses possible sources of bias in observational studies and RCTs. Since we have included cross-sectional studies, the following domains of the tool were used in this study: (1) selection bias; (2) study design; (3) confounders; (4) data collection method and; (5) analyses. The studies received an overall assessment in one of the following: 1) high risk of bias (studies which scored high risk of bias in 3 or more of the assessment domains); 2) moderate risk of bias (studies which scored high risk of bias in 2 of the assessment domains) and; 3) low risk of bias (studies which scored high risk of bias in 1 of the assessment domains). Assessment was carried out by two independent assessors and disagreements were solved through discussions.

Data extraction

A customised data extraction form was generated and included the following characteristics: Method of recruitment into the study (community, clinical samples or other recruitment type), target group (adults in general, older adults, student population or other target group), types of stigma perspectives, types of stigma mechanisms and types of outcome measures used to measure stigmas (self-report instruments, vignettes). Vignettes are case descriptions of an individual, presenting symptoms of a CMD (22) (see Appendix B for an example).

Covidence, online software for screening and data extraction for systematic reviews and meta-analyses, was used for the review and extracting data. First, the results of the online database searches were imported to covidence. Two reviewers had personal accounts and selected papers independently in a random order. A third reviewer carried out the reference list search of the selected papers. The titles of all studies were screened, and the abstracts of the studies were checked regarding the inclusion criteria. When no definitive decision could be made based on the abstract, the original papers were used. Discrepancies between the reviewers' selections were resolved through discussions. If not resolved, the opinion of a fourth researcher was sought. The corresponding author filled in the extraction form.

Conceptual frameworks

We conceptualised mental illness stigma based on the MISF (11). The types of perspectives, measured by the studies, were categorised into three groups: 1) the perspective of the stigmatizer (i.e. Public attitudes and beliefs that other people devalue or discriminate against individuals with mental illness. The

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specific components are: stereotype, prejudice and discrimination); 2) The perspective of the stigmatized (i.e. Personal beliefs, attitudes and perceived anger for having a mental illness. The specific components are: experienced stigma, anticipated stigma and internalized stigma) and; 3) The perceived stigma (i.e. shared experiences of stereotypes, prejudices and discrimination between people who stigmatize and who are stigmatized).

The concept of race-ethnicity was defined based on the minority or majority classifications of the country of the included studies. Because there were many ethnic groups (e.g. Chinese, Indian) within the included studies, we decided to use broad racial categories (e.g. Asian, Black) in order to make the studies comparable (28). Six racial groups were identified in consultation with the categories previously defined by Ünlü İnce and colleagues (29). These categories were: Black (African background), Asian, Hispanic (Latin American and Spanish background), Native American (referring to the indigenous people of North America), and White (Caucasian and white European) and other (people from racial-ethnic minority group who could not be identified in one of these categories).

Outcome

For each comparison between ethnic groups in stigma, the effect size indicating the difference between groups was calculated (Hedge's g). Effect size of 0.8 was accepted as large, effect size of 0.5 was accepted as moderate and effect size of 0.2 was accepted as small (30). Effect sizes were calculated by subtracting the means of stigma between racial minorities and majorities and dividing the result by the pooled standard deviation. If means and standard deviations were not reported, we used the procedures of the Comprehensive Meta-Analysis software (see below) to calculate the effect size using dichotomous outcomes; and if these were not available either, we used other statistics (such as t -value or p -value) to calculate the effect size.

In order to calculate effect sizes we used all the self-report measures and vignettes examining mental illness stigma (see table 1 for the outcome measures) [such as Perceived Devaluation and Discrimination Scale (PDD) (31), Internalized Stigma of Mental Illness Scale (ISMI) (32), Community Attitudes to Mental Illness scale (CAMI) (33)]. The decision on which outcome measure is capturing which specific stigma perspective and mechanism was based on the Fox and colleagues' classification (11).

Analyses

To calculate pooled mean effect sizes, we used the computer programme Comprehensive Meta-Analysis (version 3.3070; CMA). We expected considerable heterogeneity among the studies for various reasons. First, our definition of racial minorities and majorities were too broad and did not capture specific ethnic minorities and majority groups within the samples. Second, we pooled the studies employing different outcome measures (self-report and vignette). Third, the included studies are investigating different stigma perspectives and mechanisms associated with them. Fourth, the included studies often investigated mental illness stigma for various common mental illnesses (both anxiety and depression spectrums) and lastly, we included studies from both High Income and Low and Middle Income countries which have variations in how mental illness stigma is defined, measured and experienced. In the light of these, we employed a random effects pooling model in all analyses.

As a test of homogeneity of effect sizes, we calculated the I^2 statistic, which is an indicator of heterogeneity in percentages. A value of 0% indicates no observed heterogeneity, and larger values indicate increasing heterogeneity, with 25% as low, 50% as moderate and 75% as high heterogeneity (34). We calculated 95% confidence intervals around I^2 (35) using the non-central chi-squared based approach within the heterogi module for Stata (36).

We tested publication bias by inspecting the funnel plot on primary outcome measures and by Duval and Tweedie *trim and fill procedure* (37) yields an estimated effect size after publication bias has been taken into account (as implemented in CMA). We also conducted a test of the intercept to quantify the bias captured by the funnel plot and to test whether it was significant.

We also examined whether specific characteristics of the studies were related to the effect sizes. We conducted subgroup analyses according to the mixed effects model, in which studies within subgroups are pooled with the random effects model, while the tests for significant differences between subgroups are conducted with the fixed effects model. The priori decided sub-groups were: ethnicity, type of stigma outcome, type of stigma perspective and the quality of the studies. Further, we used multi-variate meta-regression analyses as implemented in CMA.

Results

Selection and inclusion of the studies

After examining a total of 2,787 abstracts (1,806 after removal of duplicates), we retrieved 1,806 full text papers for further consideration. We excluded 1,732 of the retrieved papers. The PRISMA flowchart describing the inclusion process, including the reasons for exclusion, is presented in Figure 1. A total of 29 studies were included in the quantitative synthesis.

Characteristics of the included studies

Selected characteristics of the included studies are presented in Table 1. Of all the studies included in the analysis, (N=18) 62% were conducted in the United Kingdom. The rest of the countries were: Singapore (N=2) 6%; Australia (N=2) 6%; Spain (N=1) 3%; Nigeria

(N=1) 3%; Germany (N=1) 3%; Canada (N=1) 3% and; Korea (N=1) 3%.

Regarding the participant characteristics, a total of 157,582 (81%) participants were from the majority racial groups and a total of 35,836 (19%) were from the minority racial groups. Minority and majority statuses were defined based on the country of the included study. Of all the participants from the racial majority groups, 96.06% (N=151,383) were White, 2.69% (N=4,239) were Asian, 0.06% (N=91) were Hispanic and 1.18% (N=1,869) were Black. Further, of all the participants from the racial minority groups, 11.30% (N=4,051) were Hispanic, 57.09% (N=20,462) were Black, 23.11% (N=8,285) were Asian, 9.31% (N=3,338) were from other racial background.

With respect to the condition of the CMD, more than half of the studies (N=17) investigated various CMDs and/or not specified the type of CMD in the study, whereas (N=12) 41% studies investigated depression.

A considerable number of the studies (48%) recruited community sample (N=14), 24% recruited student sample (N=7), 14% recruited other sample (e.g. geriatric population) (N=4) and 14% recruited participants from clinical populations (N=4). Regarding the outcomes, (N=7) 24% used a vignette approach to measure stigmas whereas, (N=22) 76% used self-report questionnaires.

Risk of bias

The risk of bias can be seen in table 2. When taking into account the five different bias items, 20 studies (68%) were rated as high risk of bias, 6 studies (21%) were rated as moderately high risk of bias and only 3 (10%) studies were rated as low risk of bias. The selection bias was rated as low risk of bias in 10 studies (34%), high risk of bias in 18 studies (62%), and unclear in 1 study (3%). When taking into account the study design, there was a high risk of bias in 18 studies (62%) and low risk of bias in 11 studies (38%). Data collection methods were rated as low risk of bias in 10 studies (34%), high risk of bias in 16 studies (55%) and unclear in 3 studies (10%). The risk for confounders was high in 20 studies (68%) and low in 9 studies (31%). As for the data analyses, the risk of bias was low in 22 studies (76%), high in 1 study (3%) and unclear in 6 studies (21%) (see table 2).

We assessed whether the authors used stratification and/or matching in the study design in order to control possible confounders (54-55). Only 4 studies (14%) used stratification. Further, the representativeness of the samples was also limited as only 4 studies (14%) used random sampling, whereas the rest of the studies used convenience sampling. In one study, the authors recruited participants from their friends and networks of their friends which increased the chances of selection bias and restricted the representativeness of the racial groups in their sample (15).

Out of the 21 self-report studies, 7 (33%), and out of the 8 vignette studies, 3 (37%) used "study constructed" questionnaires (i.e. questionnaires which are constructed by the author for the purpose of the study) as outcome measures. The psychometric properties of these questionnaires were not tested.

Mental Illness Stigma for CMDs between Racial Minorities and Majorities

First, we run the analyses separately for the studies investigating depression only $g=0.22$ (95% CI: 0.10~0.34) ($I^2=94%$, 95% CI: 93~96) and for the studies investigating various types of CMDs together $g=0.18$ (95% CI: 0.10~0.28) ($I^2=86%$, 95% CI: 81~90). Since this resulted with small effect sizes and with very high heterogeneity in each, we decided to pool all the studies together, regardless of the condition of the mental illness studied, for further sensitivity analyses.

Primary outcome was mental illness stigma defined by the MISF (11). Cognitive (e.g. stereotype), affective (e.g. prejudice), behavioural (e.g. discrimination) and/or combination of each of these components of mental illness stigma were compared between racial minorities and majorities in 29 studies (39 comparisons). We have decided to pool the studies together as stigmatizer perspective measuring the cognitive component of the stigma was over represented, whereas stigmatized perspective measuring how stigma was anticipated was under represented (see table 1). The overall effect size was small but significant $g=0.20$ (95% CI: 0.12~0.27) indicating that racial minorities had more mental illness stigma about CMDs when compared with the majorities, with very high heterogeneity ($I^2=91%$, 95% CI: 89~93). The results of the analyses are reported in table 3, and the forest plot is given in table 5 (see figure 2 in appendix C for the forest plot).

When studies with high risk of bias (i.e. defined as those with high risk of bias scores on three and/or more categories of the risk of bias assessment tool) were excluded, the effect was sustained $g=0.20$ (95% CI: 0.10~0.25) and the heterogeneity was still very high ($I^2=88%$, 95% CI: 84~90) (see figure 3 in appendix D for the forest plot). When only studies with standardized outcome measures were included, the effect size was slightly greater $g=0.23$ (95% CI: 0.10~0.36) and the heterogeneity remained high ($I^2=84%$, 95% CI: 75~89) (see figure 4 in appendix E for the forest plot). Next, excluding outliers resulted in a comparable effect size $g=0.29$ (95% CI: 0.21~0.36) and less heterogeneity ($I^2=29%$, 95% CI: 0~63) (see table 6 and figure 5 in appendix F for the forest plot). To identify outliers, we looked at whether the 95% CI of the study overlaps with the 95% CI of the pooled effects size and we also looked whether a study considerably differs from the other included studies in the meta-analysis (56). Even though the CI of the study by Subramaniam and colleagues (22) did fall between the CI of the pooled effect sizes, the study did conceptualise stigma differently compared to the other studies. Additionally, excluding that study reduced the heterogeneity significantly and therefore we decided to exclude it (see table 3).

Egger's test did not indicate a significant publication bias ($p=0.100$). Duvall and Tweedie's trim and fill procedure indicated 2 missing studies (see the funnel plot with imputed studies in Appendix G). The adjusted effect size (after imputation of the missing studies) was $g=0.27$ (95% CI: 0.20~0.33).

We did not investigate whether there was a variability in stigma perspectives among racial minorities in the subgroup and in multi-variate analyses since the Loading [MathJax]/jax/output/CommonHTML/jax.js priors (perceived stigma N=2, stigmatized N=1) were not sufficient. No significant differences were found in

subgroup analyses (see table 2). Multi-variate analyses indicated no significant associations between the effect size and the racial groups ($p=0.42$), quality ($p=0.12$) and the type of the outcome of the studies (self-report, vignette) ($p=0.48$) (see table 4). However, there was a significant association between studies with high risk of bias and the effect size of stigma ($p=0.04$).

Discussion

This systematic review and meta-analysis was aimed at comparing mental illness stigma associated with CMDs based on racial background. In line with our expectations, the results suggest that racial minorities have more mental illness stigma for CMDs when compared with racial majorities. Sensitivity analyses showed the robustness of these results. The multi-variate meta-regression analyses indicated that studies of poor quality had higher effect sizes than the studies with high quality.

Higher mental illness stigma in racial minorities is in line with the growing literature highlighting the variations in mental illness stigma based on ethnicity and/or race (11-12,18-22-23,57). This finding could be explained in relation to the social identity theory (58). In collectivistic cultures, group harmony and cohesion are of central importance (24). In this context, CMDs might be seen to fall outside of societal expectations (13,58-59) and this would precipitate shame and subsequent mental-illness stigma (58-59). Thus, what is defined as “them” not “us”, would reinforce the public opinion that individuals with CMDs are dangerous and must be segregated (60). Consistent with this notion, there is research evidence indicating that cultural beliefs of CMDs are related with the extent of the impact of mental illness stigma (i.e. fear of someone with CMDs and/or desire for social distance from an individual with CMDs) at individual and societal levels (24,60-63).

In extent, the consequences of mental illness stigma are more harmful especially when the preceding cultural and/or personal attributions coincide with social adversities such as migration, poverty, gender, diagnosis of a CMD, ethnic and/or sexual minority statuses (7-9,63-64). This phenomenon is known as the intersectional impact of stigma and it accounts for the underutilisation of mental health services among those who are affected (10,63-67). For instance, a large scale study from America ($N=15,383$) showed that, Black women with low socio-economic background reported more stigma related concerns and were less likely to utilise mental health services compared to locally born women from White backgrounds (8). Furthermore, the negative impact of the intersection of different types of stigma on utilisation of health services is well-documented in the HIV literature investigating (HIV-related stigma, sexism, racism, and homo/transphobia) on individuals` well-being (65-67).

Studies comparing public beliefs and attitudes regarding CMDs point to the importance of migration status and/or ethnicity in shaping mental illness stigma (23). For instance, in a large scale vignette study ($N=2013$) by Makowski and colleagues in Germany, there was an indication for the differences in mental illness stigma between locally born minorities, migrants and non-minorities (23). When the vignette concerned an individual from a migrant background with depression, participants from migrant background expressed greater stigmatizing attitudes (e.g. negative stereotypes, emotional reactions and desire for social distance) compared to the locally born minorities and majorities (23).

Strengths and limitations

This study has various innovations. This is the first meta-analysis in the stigma field utilizing a unified conceptual framework to pool the studies. This is an important step to advance the current understanding of the mental illness stigma and how racial/ethnic differences impact people`s experiences of mental illness stigma.

Based on the current results an important message for the public health field is to tailor the existing anti-stigma interventions according to the specific racial and/or ethnic groups (25). At present, recommended practices include psycho-educational campaigns aiming to improve the public knowledge on CMDs and individuals with CMDs (25,68). Such practices however, fail to demonstrate changes in attitudes among stigmatized and stigmatizer (69). Often, educational campaigns do not provide evidence for the effectiveness of anti-stigma campaigns in increasing help-seeking for CMDs (69). Our results suggest that the development and the implementation of such campaigns can be improved if the messages of these campaigns are adapted according to the socio-cultural and political contexts of the countries that the individuals live in (69-70).

Even though our results suggest that all racial minorities, regardless, have higher mental illness stigma, various limitations need to be taken into account whilst interpreting our findings. We found no variability in mental illness stigma based on specific races. This could be explained with the small number of studies representing each racial minority group in sub-group analyses. Further, we were also unable to investigate if there were differences in mental illness stigma between racial minorities based on the migration status since this was rarely investigated in the included studies (8,23). It may be that there are other potential moderators such as the degree of acculturation which are overlooked in the current stigma literature and could not be taken into consideration in our study.

Further, the multi-variate analyses pointed to the possible moderating role of the number of studies with high risk of bias on the effect size of stigma. It could be that if there were more studies with low risk of bias, we might have found no racial differences in stigma for CMDs. Given these reasons, the results of this study must be treated with caution.

The studies from North America were overrepresented in the current study. This limits our understanding of how contextual differences between continents influence the impact of mental illness stigma. For instance, the experiences of discrimination related with stigma might be different in Europe compared to America (23).

Related issues were the racial classification and the definition of minority and/or majority statuses in this study. Since there were many ethnic and religious groups in the included studies, we decided that the mutually exclusive category approach (28), re-allocating individuals in existing categories defined by the previous research (29), would be the most suitable. We have also defined minority and majority statuses based on the country of the included studies. Since the definition of race-ethnicity includes history, religion, language and socio-political dynamics (28,70), we oversimplified the term by using broad racial categories. Moreover, our definitions do not capture the changes in ethnicity and minority statuses over time depending on the changing socio-political circumstances (28). An alternative to the preceding is the multiple characteristics approach (28) taking into account the various aspects of ethnicity such as language, country of birth, nationality and religiosity (28). Even though the latter offers more effective approach to the measurement of ethnicity in detail, the former is more pragmatic and facilitates the comparability of the studies across countries (28). In the light of these caveats, our results are restricted with the broad racial categories which are defined at a specific point in time. It is recommended that ethnicity and minority statuses are measured at different time points in prospective studies (28).

Another limitation restricting the representativeness of the sample in our study was the exclusion of clinical populations that had comorbidities. One reason could be that we have excluded HIV, and other comorbidities and yet most clinical studies include people who often have CMDs and other conditions. Some studies indicate that diagnosis of a CMD would reinforce the label indicating that the individual falls out of the societal expectations and therefore is unpredictable and/or dangerous (8,52,71). Alternatively, diagnosis of a CMD might create opportunities for more psycho-education about CMDs, and more contact with the others with CMDs and this might reduce the mental illness stigma in return (71). Since clinical populations are not represented in our study, we were not able to assess if there was a variation in mental illness stigma among racial minorities depending on the presence of a formal diagnosis. Thus, the following questions are important and yet they remain to be answered by the future studies: Among those who have received a diagnosis of a CMD, are there any differences in the experience of mental illness stigma between ethnic minorities and majorities? Among ethnic minorities, are there differences in mental illness stigma between those who have been diagnosed with CMDs and those who have not?

Further, some types of mental-illness stigma are under investigated. There is an indication that stigma is associated with greater burden when it is accepted and internalized by those who have a mental illness (11). In our meta-analysis, many studies investigated stereotypes or prejudices attributed to those who have a mental illness. Conversely, how stigma was anticipated or experienced by ethnic minorities when compared with majorities were rarely investigated (20-21). Given this limitation, we could not investigate whether there was a variation in different perspectives (e.g. anticipated, internalised) and/or components (e.g. cognitive, affective, behavioural) of mental illness stigma between racial minorities.

It is worth to emphasize that there were considerable number of the questionnaires which were developed for the purpose of the studies by the authors themselves. In our sensitivity analyses, exclusion of these questionnaires and limiting the analyses with the validated questionnaires such as CAMI, reduced the heterogeneity. The revision of the existing self-report questionnaires by the authors was another limitation. Often, these questionnaires were revised according to the research question and/or the sample and their psychometric properties were not tested. Additionally, the self-report questionnaires often measured multiple stigma mechanisms within the same scale (11). This might conflate the results as stigma mechanisms might differently relate to the outcomes.

Poor quality of the vignette studies also worth mentioning. The vignettes were developed based on the DSM criteria and the authors' clinical information of the CMDs. Often, there was no information about the psychometric properties of the vignettes with one exception. Subramaniam and colleagues followed a systematic approach by revising the vignettes with clinical experts, piloting them with participants and revising the relevance and acceptability afterwards (23). Since the vignettes are often developed by the researchers themselves, it could be that they are more suggestive when compared with self-report measures and this would confound the results (see appendix B).

Our results are also limited with the MISF as other frameworks exist such as the Framework Integrating Normative Influences on Stigma (FINIS) (72). We have chosen the MISF as to our knowledge, it identifies specific outcome measures capturing specific stigma mechanism (11).

Conclusions

The limitations of our study underscore the importance of investigating the intersection of race/ethnicity, degree of acculturation, presence of a mental illness diagnosis and the impact of mental health stigma. There is a need for more high quality research for the advancement of the stigma field. The quality of the future studies could be improved by defining meaningful controls. For instance, researchers could relate sample characteristics to the general population of the country of the study. Additionally, the racial and or ethnic groups of the country of the studies should be represented. In line with the multiple characteristics approach to define ethnicity, future studies could define the ethnic composition of their sample consistently based on the characteristics such as history and religion which are outlined earlier. Furthermore, more prospective studies are needed to capture the changes in ethnic classification over time. Prospective studies are also crucial to examine whether the degree of acculturation, diagnosis of a CMD and/or minority statuses are effect modifiers in the relationship between ethnicity and mental illness stigma.

To conclude, mental illness stigma is one of the important myriad of factors that might underpin individuals' state of physical, psychological, and social wellbeing. The results of the current meta-analysis indicate differences in mental illness stigma based on racial background and this result highlights the important role of racial and/ethnic background in shaping the mental illness stigma. An important clinical implication of these findings would be to tailor anti-stigma strategies according to the specific racial and/or ethnic backgrounds with the intention to improve mental health outreach (25).

List Of Abbreviations

CMDs: Common Mental Disorders

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MISF: Mental Illness Framework

EPHPP: Effective Public Health Practice Project Quality Assessment Tool

PDD: Perceived Devaluation and Discrimination Scale

ISMI: Internalized Stigma of Mental Illness Scale

CAMI: Community Attitudes to Mental Illness scale

CMA: Comprehensive Meta-Analysis

FINIS: Framework Integrating Normative Influences on Stigma

AQ: Attribution Questionnaire

SDS: Social Distance Scale

DSS: Depression Stigma Scale

DAQ: Depression Attribution Questionnaire

LSCS: Link Stigma Consciousness Scale

RoB: Risk of Bias Assessment

Declarations

Ethics approval and consent to participate

NA

Consent for publication

NA

Competing interests

None

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The dataset of the current study is available from the corresponding author on reasonable request.

Authors' contributions:

OE and PC had the idea for the paper. PC and LdW contributed to the conception of the work. OE, RdV and GTD conducted the searches. OE, LS, ZM and GTD selected the studies. OE and LdW rated the papers. AvS and KB contributed to the acquisition of the data analyses. OE conducted the analyses and wrote the draft of the papers. KB, AK contributed to the interpretation of the findings. All authors read and contributed to the revisions and the final paper.

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Tables

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Figures

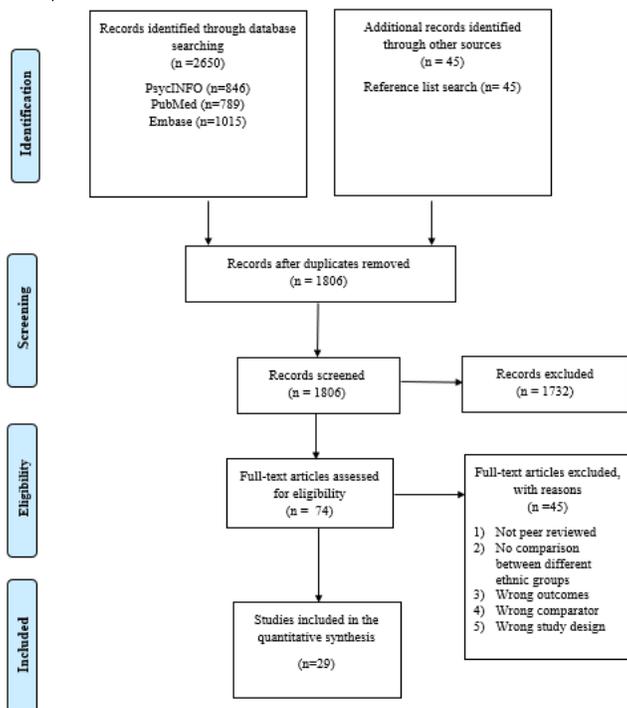


Figure 1

PRISMA flow chart of the study selection process

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