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The relationships between sociodemographic, psychosocial and clinical variables with personal-stigma in patients diagnosed with schizophrenia

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Background. Studies suggest that people with a diagnosis of schizophrenia are one of the most stigmatized groups in society.

Aim. To comprehensively analyze personal stigma in patients diagnosed with schizophrenia.

Method. Data were obtained from 89 patients. Patients were evaluated with the following scales: a sociodemographic and clinical questionnaire, the Discrimination and Stigma Scale, the Self-perception of Stigma Questionnaire for People with Schizophrenia, the Positive and Negative Syndrome Scale, the Calgary Depression Scale for Schizophrenia, the Global Assessment of Functioning Scale, and the Brief Social Functioning Scale.

Results. Relations between personal stigma and sociodemographic and psychosocial variables were poor. However, clinical variables correlated with different facets of personal stigma. Personal stigma subscales´ correlations were between experienced stigma, anticipated stigma, and self-stigma to each other. 29.5% of the experienced stigma subscale variance was explained by age of onset and level of depression. 20.1% of the anticipated stigma subscale variance was explained by level of depression and gender. 27.3% of the overcoming stigma subscale variance was explained by level of depression and positive and negative psychotic symptoms. 35.8% of the self-stigma scale variance was explained by the level of depression.

Conclusions. Addressing stigma within treatment seems of crucial importance since all stigma facets seem to be highly related to clinical dimensions, especially depression Therefore, including strategies to reduce stigma in care programs may help patients with schizophrenia to better adjust in life and improve their illness process.

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Relación entre variables sociodemográficas, psicosociales y clínicas y el estigma personal en pacientes con diagnóstico de esquizofrenia

Antecedentes. Estudios previos sugieren que las personas con esquizofrenia son uno de los grupos más estigmatizados de la sociedad.

Objetivo. analizar ampliamente el estigma personal en pacientes con esquizofrenia.

Método. Se obtuvieron datos de 89 pacientes. Éstos fueron evaluados con los siguientes instrumentos: características sociodemográficas y clínicas, Escala de Discriminación y Estigma, Cuestionario de Autopercepción del Estigma, Escala de Síndromes positivos y negativos, Escala de depresión de Calgary, Escala de Evaluación de la Actividad Global y Escala Breve de Funcionamiento Social.

Resultados. las relaciones entre el estigma personal y las variables sociodemográficas y psicosociales resultaron escasamente significativas. Sin embargo, las variables clínicas correlacionaron significativamente con diferentes facetas del estigma personal. Las correlaciones de las subescalas de estigma personal fueron entre estigma experimentado, estigma anticipado y autoestigma entre sí. El 29,5% de la variación de la subescala "trato injusto" se explicó por la edad de inicio y el nivel de depresión. El 20,1% de la variación de la subescala "autolimitación" se explicó por el nivel de depresión y el género. El 27,3% de la subescala "superación del estigma" se explica por el nivel de depresión y los síntomas psicóticos positivos y negativos. El 35,8% de la variación de la escala de autoestigma se explicó por el nivel de depresión.

Conclusiones. Abordar el estigma dentro del tratamiento parece de crucial importancia ya que todas las facetas del estigma están altamente relacionadas con las dimensiones clínicas, especialmente la depresión. Por lo tanto, incluir estrategias para reducir el estigma en los programas de atención puede ayudar a los pacientes con esquizofrenia a una mejor adaptación funcional y proceso evolutivo.

Palabras clave: Psicosis, Esquizofrenia, Estigma, Estigma Personal, Discriminación

INTRODUCTION

Stigma processes consider components of labeling, stereotyping, emotional reactions, status loss, and discrimination[1]. Research about stigma in mental disorders is on the increase. Stigma can be described in many different ways, such as the reflection of prejudice and discrimination held by people about other people with mental disorders--public stigma--[2]. However, stigma can also be explained in terms of who suffers the disorder point of view--personal stigma. Personal stigma is composed of perceived or anticipated stigma, experienced stigma and self-stigma in most studies[3]. However, Brohan et al [4] include two other facets of personal stigma in the definition: overcoming stigma and positive treatment. Anticipated stigma includes what an individual thinks most people believe about the stigmatized group in general and how the individual thinks society views him/her personally as a member of the stigmatized group; experienced stigma refers to discrimination or restrictions actually met by the affected person[3] while self-stigma is the internalization of the general public stigma[5]. In addition, overcoming stigma refers to the strategies the patient uses to face stigma, and positive treatment refers to the perception of positive discrimination because of the disease or its treatment [4].

Studies investigating stigma have been carried out considering different mental disorders[6]. Wood et al.[7] suggested that people with a diagnosis of schizophrenia are one of the most stigmatized groups in society, which highlights the importance of the study of stigma in these patients.

Personal stigma and internalized stigma has been studied in people with psychosis considering sociodemographic variables with inconsistent results as Gerlinger et al.[3] review and Livingston et al.[8] meta-analysis found. In relation to psychosocial variables relations were poor and from the variables reviewed by Gerlinger et al.[3] only lower levels of functioning correlated with anticipated stigma. Finally, clinical variables have also been studied. In fact, Gerlinger et al.[3] proved that personal stigma was related to positive symptoms, depression, and general psychopathology in a sample with schizophrenia spectrum diagnoses.

The study of stigma seems of crucial importance nowadays. Stigma has multiple implications on those coping with severe mental illness including less self-esteem, less sense of self-efficiency, less empowerment, less social support, lower hope, lower compliance to treatment and lower quality of life[9–11]. In addition, stigma and discrimination in relation to mental illnesses have been described as having worse consequences than the conditions themselves, and no clear finding on interventions to reduce stigma has been report[12].

While there are many studies on stigma and severe mental illness results are equivocal and difficult to compare. These studies vary on: the type of personal stigma reported, the scale used in order to do it, the different diagnoses include- even when considering schizophrenia spectrum disorders- and other variables, such as the country where the study was done[13]. In light of all the above considerations that make studies difficult to interpret, the present study aimed to comprehensively analyze personal stigma in a sample of patients diagnosed with schizophrenia with the intention of clarifying the relation that sociodemographic, psychosocial and clinical variables have with personal stigma. In addition, in this study, we aimed to study the relation among the different constructs of personal stigma.

METHODS

Sample

Our study was conducted at the Institute of Psychiatry and Mental Health (IP&MH) at the San Carlos University Hospital in Madrid. Study participation was offered to 96 patients with a diagnosis of schizophrenia; however, 7 of them refused participation. Data collection was done from February to September 2015.

A consecutive sample of patients who met inclusion/exclusion criteria was approached by their referring psychiatrist for consent. To be included in the study, participants had to meet criteria for a DSM –IV-TR[14] diagnosis of schizophrenia. Patients had to be between 18 and 80 years old, stable for at least 8 weeks after hospitalization to limit the potential confounding effect of acute symptomology on test performance[15], fluent in Spanish, and able to provide informed consent. Exclusion criteria included traumatic brain injury, dementia, confirmed intellectual disability (Wechsler Adult Intelligence Scale[16] – tested IQ<70), and comorbidity with other mental disorders in DSM-IV-TR axis I, with the exception of drug abuse disorder.

Ethical approval

The Ethical and Clinical Research Committee of the San Carlos University Hospital approved study procedures, and all participants provided written informed consent. All procedures were in accordance with the Helsinki Declaration.

Instruments

Sociodemographic and clinical questionnaires were made *ad hoc* for the purpose of this study. The sociodemographic variables were age, gender, marital status, living arrangements, education and occupational situation. In relation to clinical variables, information on age of onset of psychosis, duration of illness and number of psychiatric hospitalizations was elicited.

Discrimination and Stigma Scale DISC 12[4] in its Spanish version was used[17]. This instrument is interview-based and requires an example of every question in case of doubt in order to be sure of the answer. The DISC-12 scale assesses stigma and perceived and anticipated discrimination in people with mental disorders. The instrument includes a total of 32 items which are composed of 4 subscales: Unfair Treatment or experienced stigma (assesses experiences of discrimination of the person being assessed, 21 items), Stopping Self or anticipated stigma (assesses anticipated discrimination considering to what extent the individual has limited their participation in social spaces, 4 items), Overcoming Stigma (explores what strategies the patient has to face stigma, 2 items) and Positive Treatment (assesses the possibility of positive discrimination because of the disease or its treatment, 5 items). All items are rated with a 4-point Likert scale ranging from 'nothing' to 'a lot'. A higher score indicates higher dimension in each subscale.

Self-perception of Stigma Questionnaire for people with schizophrenia (SSQ)[18] was also used. The questionnaire is composed of 14 items which gather data on perception of social stigma. Higher scores indicate lower self-stigma.

The Positive and Negative Syndrome Scale (PANSS)[19] in its Spanish adaption[20] was also employed to capture the severity of psychotic symptoms in patients. For the purpose of this study we used the Van der Gaag et al.[21] model since it has proved its utility for assessing psychosocial variables[22]. This scale considers positive (9 items), negative (10 items), disorganized (10 items), excited (8 items), and emotional (8 items) symptoms on a 7-point scale, with higher scores indicating greater severity of illness.

Calgary depression scale for schizophrenia (CDSS)[23] in its Spanish version[24] was used as well. This scale is a nine-item structured interview that assesses symptoms of depression at any stage of schizophrenia.

The Global Assessment of Functioning (GAF) in its Spanish version[14] was used. The GAF assesses global functioning in the preceding month. Both symptoms and disability dimensions are assessed using an impression score of 1 to 100[25], and lower scores represent greater severity of symptoms and poorer level of functioning.

Brief Social Funtioning scale (SFS)[26] is a short validated version of the Social Functioning Scale[27]. This scale evaluates social functioning in schizophrenia patients. Higher scores indicate higher functioning.

Procedure

A consecutive sample of patients who met inclusion/exclusion criteria was approached by their psychiatrist and asked if they wanted to participate in the study. In case of acceptance, the participants received all the information and signed the informed consent. All patients were required to meet criteria for DSM-IV-TR for schizophrenia. The diagnosis of schizophrenia was made based on clinical grounds by the referring psychiatrist. The *ad hoc* clinical questionnaire was completed based on clinical records or by directly asking the referring psychiatrist who also completed the GAF scale for each referred patient. The sociodemographic questionnaire, the DISC-12, the SSQ, the SFS, the CDSS and the PANSS scales were completed in a following session by a researcher trained in all the scales with the patient.

Statistical analysis

Sociodemographic and clinical variables were described in terms of mean or frequency. Pearson correlations between personal stigma and some continuous sociodemographic, psychosocial and clinical variables were calculated. Mann-Whitney U test and Krustal Wallis were carried out in order to study differences of sociodemographic variables in personal stigma. Finally, multiple linear regressions with stepwise method were used in order to study the influence that sociodemographic, psychosocial and clinical variables had on the different domains of stigma subscales. Only variables that were $p \leq 0.05$ in the bivariate analysis were included in the model. Due to the exploratory nature of our study we did not perform multiple comparison corrections following Bender & Lange[28] considerations about these studies. All analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 22.0.

RESULTS

Sociodemographic profile

Table 1 shows the sociodemographic and clinical variables of the sample.

Personal stigma and sociodemographic variables

Relations between personal stigma and sociodemographic variables are shown in Table 2. The only significant different found was that male patients scored significantly higher in anticipated stigma subscale than female patients.

Personal stigma and clinical variables

Correlations between personal stigma and clinical variables are presented in Table 3. Experienced stigma correlated negatively with age of onset (p<0.001), and positively with level of depression (p=0.004), positive (p=0.007) and disorganized psychotic symptoms (p=0.015), as also with the total severity of psychotic symptoms (p=0.016), and duration of illness (p=0.013). The anticipated stigma subscale positively correlated with depression (p<0.001) and emotional psychotic symptoms (p=0.03). Overcoming stigma subscale negatively correlated with age of onset (p=0.014), level of depression (p=0.013) and negative psychotic symptoms (p=0.014), and positively with positive symptoms (p=0.047). Positive treatment subscale positively correlated with excited psychotic symptoms (p<0.001). Finally, self-stigma scale negatively correlated with level of depression (p<0.001), positive (p=0.024), disorganized (p=0.022), emotional (p<0.001), and total severity of (p=0.003) psychotic symptoms.

Personal stigma and psychosocial variables

Correlations between personal stigma and psychosocial variables are presented in Table 3. Overcoming stigma subscale positively correlated with global functioning (p=0.007) and social functioning (p=0.001).

Personal stigma domains

Table 4 shows the relation among the different stigma domains, considering the DISC subscales and the SSQ scale. Experienced stigma subscale positively correlated with anticipated stigma subscale (p=0.005) and also with self-stigma (p<0.001). The anticipated stigma-subscale also correlated with self-stigma scale (p<0.001).

Personal-stigma and sociodemographic, psychosocial and clinical variables

The percentage of the variance of personal stigma domains that can be explained by sociodemographic, psychosocial and clinical variables are shown in table 5. The age of onset and the level of depression explained 29.5% of the

Table 1 Sociodemographic and clinical variables of the sample of patients with schizophrenia diagnosis

Sociodemographic variables		
		Mean (SD)
Age		43.82 (11.41)
		N (%)
N		89 (100)
Gender	Male	67 (75.3)
	Female	22 (24.7)
Marital Status	Single	71(79.8)
	Married	6(6.7)
	Widow	1(1.1)
	Divorced	11(12.4)
Living arrangements	By themselves	20(22.5)
	Family of origin	45(50.6)
	Own created family	6 (6.7)
	Friends	3(3.4)
	Institucionalized	14 (15.7)
	Other	1(1.1)
Education	Primary or lower	7(7.9)
	Secondary	18(20.2)
	Further	48 (53.9)
	Higher	15(16.9)
Occupational situation	Total Disability	52(28.4)
	Short term Disability	6(6.7)
	Employed	11(12.4)
	Unemployed	12(13.4)
	Student	7(7.9)
Clinical Variables		
		Mean (SD)
Age of onset		26.72(8.82)
Duration of illness		16.95(11.67)
Number of hospitalizations		3.65(4.95)

.../...

Table 1 Continuation		
Variables Clínicas		
		Mean (SD)
PANSS	Positive	11.29(4.27)
	Negative	11.45 (4.86)
	Disorganized	15.53(4.19)
	Emotional	15.71(5.07)
	Excitement	11.21(2.89)
	Total	48.11(10.89)
DISC-12	Experienced stigma	4.84(5.53)
	Anticipated stigma	2.63(1.98)
	Overcoming stigma	1.06(1.26)
	Positive treatment	2.57(2.63)
SSQ	Self-stigma	67.68(17.03)
GAF		61(9.38)
Depression		3.15(3.29)
Social Functioning		25.11(5.51)

DISC-12: Discrimination and Stigma Scale; GAF: Global Assessment of Functioning; PANSS: Positive and Negative Syndrome Scale; SSQ: Self-perception of Stigma Questionnaire for people with schizophrenia

variance of the experienced stigma subscale. Gender and level of depression explained 20.1% of the variance of anticipated stigma subscale. Additionally, level of depression and positive and negative psychotic symptoms explained 27.3% of the variance of overcoming stigma, and finally, level of depression 35.8% of self-stigma.

DISCUSSION

This study is an attempt to explore the relation between personal stigma with sociodemographic, psychosocial and clinical variables in patients with a diagnosis of schizophrenia. Our results suggest that personal stigma is mainly related with clinical variables while sociodemographic and psychosocial variables seem to have a lesser influence on personal stigma. Additionally, we found that among the different domains of personal stigma, experienced stigma, anticipated stigma and self-stigma correlated with each other.

Personal stigma and sociodemographic variables

In relation to sociodemographic variables, the only significant different that we found was that anticipated stigma subscale was higher in male in comparison to female patients. This finding is very interesting considering that we did not find gender differences in experienced stigma as Farrelly et al.[29] found. We hypothesize that this might be related with the fact that these items are related to their own perception of success which may be adversely affected by causes other than experiences of situations. Males have an earlier onset of the illness, more negative symptoms and cognitive deficits, neuropsychological abnormalities, worse course of the illness and more critical families, among other deficits[30]. These intrinsic aspects might have an affect on when male patients stop themselves from doing something challenging independently of their experiences, and may be more closely related to their own perception of success given the gravity and history of their mental disorder. Nonetheless, we believed that further studies considering all these variables in gender differences in personal stigma should be carried out.

Personal stigma and psychosocial variables

In relation to psychosocial variables, general and social functioning positively correlated with overcoming stigma. Since it is difficult to establish the cause-effect relationship of these variables this finding might be related to the finding that patients who had higher functioning had lower participatory restrictions[31], which may provide more confidence and situations for the person to develop strategies to overcome stigma.

Personal stigma and clinical variables

Clinical variables were related with personal stigma in multiple ways which shed light on the importance of working on stigma and clinical variables together. In relation to age of onset, the younger the person was when illness started correlated with higher experienced stigma and overcoming stigma. As reported by Świtaj et al.[32] it seems that becoming ill at a younger age, when one's personal circumstances are not quite established and one's social network is still underdeveloped, leaves mentally ill people more exposed to rejection. Level of depression is related with personal stigma in all the domains assessed in the study as was found by Gerlinger et al.[3]. In relation to psychotic symptoms, correlation with stigma was also common. As found in Gerlinger et al.[3], positive symptoms and general psychopathology correlated with personal stigma. Lysaker et al.[33] hypothesized that the relation between positive symptoms and self-stigma might be related with the fact that

Table 2 Relations between personal stigma and sociodemographic variables

Sociodemographic Variables		DISC-12								SSQ	
		Experienced stigma		Anticipated stigma		Overcoming stigma		Positive treatment		Self-stigma	
		Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value	Mean (SD)	P value
Gender	Female	5.05(5.95)	0.703	1.86(2.00)	0.03	0.81(0.98)	0.391	2.33(2.63)	0.447	66.6(20.24)	0.815
	Male	4.78(5.44)		2.87(1.93)		1.13(1.34)		2.64(2.64)		68.03(15.99)	
Marital Status	Single	5.23(5.76)	0.368	2.76(1.97)	0.363	1.04(1.24)	0.510	2.5(2.35)	0.099	65.45(17.6)	0.099
	Married	3.17(3.86)		2.17(1.83)		1.83(1.94)		5.33(5.05)		74.4(15.82)	
	Widower	4(0)		0		0		0		75 (0)	
	Divorced	3.36(4.9)		2.27(2.15)		0.81(0.87)		1.72(1.73)		77.8(9.21)	
Living arrangements	By themselves	4.32(4.14)	0.307	2.89(2.33)	0.172	0.74(1.1)	0.539	1.53(1.65)	0.071	63.77(22.9)	0.259
	Family of origin	5.6(6.33)		2.76(1.84)		1.2(1.36)		2.7(2.45)		67.15(14.57)	
	Own created family	5.67(5.79)		2.83(2.71)		1.33(1.97)		2.83(2.23)		74.17(14.16)	
	Friends	1(1.73)		0(0)		0.67(0.58)		1(1)		87(13.23)	
	Institucionalized	3.92(4.81)		2.43(1.6)		1.07(0.92)		4.07(3.85)		67.25(15.03)	
	Other	0(0)		1(1)		0(0)		0(0)		-	
Education	Primary or lower	8.71(8.11)	0.538	2.14(1.95)	0.731	0.57(0.53)	0.801	2.28(2.62)	0.950	64.57(19.89)	0.940
	Secondary	5(7.3)		2.5(2.15)		1.11(1.32)		2.28(2.14)		68.27(18.03)	
	Further	4.55(4.86)		2.83(2.05)		1.04(1.23)		2.72(2.64)		68.29(16.73)	
	Higher	4.07(3.034)		2.33(1.76)		1.33(1.54)		2.6(2.38)		66.54(17.2)	
Occupational situation	Total Disability	5.24(5.96)	0.538	2.63(2.01)	0.731	1.02(1.44)	0.801	2.45(2.49)	0.950	65.17(18.34)	0.267
	Short term Disability	6.17(9.04)		2.83(1.94)		0.67(0.52)		3.17(0.98)		60.75(19.28)	
	Employed	3.09(2.21)		2.27(2.1)		1.18(0.87)		1.91(0.94)		74.82(14.9)	
	Unemployed	4.5(3.99)		2.83(1.85)		1.42(1.08)		4.08(4.46)		67.3(10.45)	
	Student	4.86(5.4)		2.57(2.5)		1(1.29)		1.43(1.4)		78.14(12.54)	

DISC-12: Discrimination and Stigma Scale; SSQ: Self-perception of Stigma Questionnaire for people with schizophrenia
* Mann-Whitney U test and Krustal Wallis

positive symptoms may attract attention and may be misunderstood by people as signs of danger or incompetence, thereby increasing discrimination which, in fact, may also explain its relation to experience stigma. Disorganized and emotional psychotic symptoms also correlated with experience and self-stigma. Although these psychotic symptom subscales are not always studied, emotional psychotic symptoms were found to be related to self-stigma in Lysaker et al.,[33] longitudinal study. They found that internalized stigma predicted later emotional distress which, as they hypothesized, may explain how discrimination reinforces negative beliefs about self, leading to a cycle of self-fulfilling prophesies of failure and suffering. None of the personal stigma domains correlated with negative psychotic symptoms but overcoming stigma. These results are in accordance to Lysaker et al.[33] findings who hypothetized that negative symptoms may not attract attention or may not be understood as cues of person's illness and therefore are not interpreted in the person´s stigmatization. Since, overcoming stigma is related to the strategies the patient employs to face stigma we support the idea that an individual's limited strategies may be impaired by negative symptoms, as asserted by Kommescher et al.[34].

Table 3 Correlations between personal stigma and clinical variables

Personal Stigma		Clinical and psychosocial variables												
		PDesor	PEmot	P Excited	Total Panss	EEAG	SFS	Depresión	P pos	P Neg	P Des	P Emo	P Exc	Panss Total
		R (p)	r (p)	r (p)	r (p)	r (p)	R (p)	r (p)	r (p)	r (p)	r (p)	r (p)	r (p)	r (p)
DISC-12	Experienced stigma	-0.022 (0.841)	-0.393 (0.000)	0.268 (0.013)	0.145 (0.191)	-0.204 (0.073)	0.033 (0.766)	0.304 (0.004)	0.307 (0.007)	-0.057 (0.629)	0.279 (0.015)	0.334 (0.004)	0.152 (0.194)	0.277 (0.016)
	Anticipated stigma	-0.111 (0.302)	-0.111 (0.310)	-0.03 (0.784)	0.017 (0.880)	-0.030 (0.793)	0.100 (0.362)	0.379 (0.000)	0.102 (0.382)	0.0625 (0.594)	0.0587 (0.617)	0.252 (0.030)	0.114 (0.329)	0.152 (0.193)
	Overcoming stigma	-0.127 (0.237)	-0.265 (0.014)	0.081 (0.457)	0.004 (0.971)	0.304 (0.007)	.355 (0.001)	-0.266 (0.013)	0.230 (0.047)	-0.283 (0.014)	0.024(0.840)	0.005 (0.964)	-0.063 (0.591)	-0.040 (0.732)
	Positive treatment	-0.073 (0.502)	-0.207 (0.055)	0.072 (0.509)	0.191 (0.083)	-0.160 (0.161)	0.193 (0.077)	-0.171 (0.116)	0.076 (0.519)	0.109 (0.351)	0.087 (0.458)	0.076 (0.520)	0.135 (0.000)	0.143 (0.223)
SSQ	Self-stigma	-0.35 (0.759)	0.154 (0.178)	-0.151 (0186)	0.001 (0.992)	0.158 (0.172)	0.120 (0.287)	-0.605 (0.000)	-0.26 4(0.024)	-0.089 (0.451)	-0.267 (0.022)	-0.428 (0.000)	-0.241 (0.069)	-0.340 (0.003)

Disorg: disorganized; DISC-12: Discrimination and Stigma Scale; Emot:Emotional; GAF: Global Assessment of Functioning; N of Hospit: number of hospitalizations; PANSS: Positive and Negative Syndrome Scale; SFS: Social Functioning scale; SSQ: Self-perception of Stigma Questionnaire for people with schizophrenia.
*Pearson Correlations

Table 4 Relation among experience, anticipated, overcoming and positive stigma and self stigma scales

Personal Stigma		Personal Stigma				
		DISC-12				SSQ
		Unfair treatment	Stoppping self	Overcoming stigma	Positive treatment	Self-stigma
		r (p)	r (p)	r (p)	r (p)	r (p)
DISC-12	Experienced stigma	1	0.296 (0.005)	0.179 (0.095)	0.096 (0.375)	-0.407 (0.000)
	Anticipated stigma	0.296 (0.005)	1	0.110 (0.310)	0.004 (0.972)	-0.484 (0.000)
	Overcoming stigma	0.179 (0.095)	0.110 (0.310)	1	0.132 (0.219)	0.108 (0.338)
	Positive treatment	0.096 (0.375)	0.004 (0.972)	0.132 (0.219)	1	-0.29 (0.8)
SSQ	Self-stigma	-0.407 (0.000)	-0.484 (0.000)	0.108 (0.338)	-0.29 (0.8)	1

DISC-12: Discrimination and Stigma Scale; SSQ: Self-perception of Stigma Questionnaire for people with schizophrenia
*Pearson Correlations

Personal stigma domains

In relation to stigma subscales, experience stigma and anticipated stigma subscales correlated to each other and self-stigma correlated to them which is in line with the definition of personal stigma as a concept that consists of anticipated stigma, experienced stigma and self-stigma[2]. While experience stigma and anticipated stigma have been found

Table 5 Effect of sociodemographic and clinical variables on experience, anticipated and overcoming stigma and self-stigma

Personal Stigma		Age of onset		Depression		Gender		P Positive		P Negative		Model R2 Nagelkerke
		B (ET)	p	B (ET)	p	B (ET)	p	B (ET)	p	B (ET)	p	
DISC-12	Experienced stigma	-0.241(0.060)	0.000	0.562(0.161)	0.001							0.295
	Anticipated stigma			0.240(0.064)	0.000	-0.868(0.491)	0.081					0.201
	Overcoming stigma			-0.134(0.039)	0.001			0.101(0.031)	0.002	-0.078(0.033)	0.020	0.273
SSQ	Self-stigma			-3.024(0.484)	0.000							0.358

DISC-12: Discrimination and Stigma Scale; PANSS: Positive and Negative Syndrome Scale; SSQ: Self-perception of Stigma Questionnaire for people with schizophrenia

* Multiple linear regressions with stepwise method

** The table only includes effects that were significant

to correlate to each other in other studies[29] it is not clear that experienced stigma is a precursor or a consequence of anticipated stigma[35,36]. Therefore it seems of crucial importance that interventions against stigma consider working in measures to minimize stigma towards patients and at the same time to develop effective methods to reduce anticipated stigma in patients[36]. In addition, from our study we neither can determine self-stigma as a precursor or a consequence of experience and anticipated stigma. However, the importance of working at every level of personal stigma seems relevant. In fact, one study found anticipated stigma to be indirectly related to seeking treatment, influencing whether or not people decide to seek treatment for mental health problems by potentially increasing self-stigma and increasing preferences for handling problems on their own[37].

Personal-stigma and sociodemographic, psychosocial and clinical variables

Taking into account sociodemographic, psychosocial and clinical variables together our results suggested that clinical variables were the most relevant variables in relation to personal stigma. While variables such as age of onset, gender and positive and negative psychotic symptoms explained experience stigma, anticipated stigma and overcoming stigma respectively, depression was presented in the model of explanation of all domains, having a clear importance in personal stigma. The relevance of depression on personal stigma might be explained by Corrigan et al.,[38] model: "why try?" which allows to understand self-stigma considering its evolution and consequences. According to this model self-stigma has three components: awareness of the stereotype, agreement with it and applying it to oneself. As a result of these processes, people suffer reduced self-esteem, self-efficacy and hop [39] which lead to an avoidance of the pursuit of life goals, which may influence mood, as the person leads to less involment in activities such as work, social relationships and the process of recovery that helps to regain meaning in life[9].

LIMITATIONS

Notwithstanding the strengths of our research, that comprehensively studies personal stigma considering exclusively patients with a diagnosis of schizophrenia our results must be interpreted in light of the following limitations. First, the diagnosis of schizophrenia was made on clinical grounds instead of using a clinical interview. However, the high reliability of clinically-based diagnoses of psychosis in comparison to instrument-based diagnoses has been demonstrated. In addition, although the robustness of some DISC-12 subscales may be questioned, the experienced stigma subscale has been found to be a robust subscale and the rest of the subscales are sufficiently reliable, acceptable and feasible for current use[40]. Reneses et al.[17] also found the positive treatment subscale to be robust in their Spanish validation of the scale. However, overcoming stigma has not been found to have good psychometric characteristics due to the low Cronbach's alpha score and therefore the results of this subscale should be approached with caution.

FUTURE RESEARCH

Future prospective longitudinal research might shed light on health outcomes by examining the course of stigma in relation to clinical measures in adults with schizophrenia. This seems an important research line considering the high

correlation of clinical variables and stigma above other variables. In addition, given the high correlation among some stigma subscales it might be interesting to explore a general factor that brings them together.

CONCLUSIONS

To date, on the basis of our results and other findings from recent studies[3,29,33] light has been shed on the importance of working on stigma at every level of psychiatric care since all facets of stigma seem to be highly related to clinical dimensions, especially the level of depression. Therefore, including strategies to reduce stigma and work on affective symptoms in care programs considering its relations with stigma may help patients with schizophrenia to better adjust to life and improve the illness process.

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CONFLICT OF INTEREST

The authors have not reported any conflicts of interest based on business relationships of their own or of immediate family members.

CONTRIBUTORS

JSL wrote the first draft of the manuscript and undertook the statistical analyses. BRP and SO designed the study and wrote the protocol. BRP and JSL managed the literature review. BRP, SO, JSL reviewed and revised the final version of the manuscript. All authors contributed to and have approved the final manuscript.

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