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ORIGINAL PAPER

Mental health professionals' attitudes towards mental illness: professional and cultural factors in the INTER NOS study

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Abstract

Background Research shows that personnel working in mental health facilities may share some of the societal prejudices towards mental illness. This might result in stigmatizing behaviours towards people suffering from mental disorders, undermining the quality of their care.

Aims To describe and compare attitudes towards mental illness across a sample of professionals working in a wide range of mental health facilities in Spain, Portugal and Italy.

Method We administered a survey to personnel including two questionnaires related to stigmatizing attitudes: The Community Attitudes toward the Mentally Ill (CAMI) and the Attribution Questionnaire (AQ-27). Data were compared according to professional category, work setting and country.

Results 34.06% (1525) professionals of the surveyed population responded adequately. Psychologists and social therapists had the most positive attitudes, and nursing assistants the most negative, on most factors of CAMI and AQ-27. Community staff had more positive attitudes than hospital-based professionals in most factors on CAMI and in discriminatory responses on AQ-27.

Conclusions Globally, mental health professionals showed a positive attitude towards mental illness, but also a relative support to coercive treatments. There are differences in attitudes modulated by professional category and setting. Results can guide preventive strategies, particularly for the hospital-based and nursing staff.

Keywords Mental illness · Stigma · Mental health professionals · Social distance · Health personnel attitude

Introduction

Stigma against mental illness is a major public health problem [1, 2] and a significant obstacle for the development of mental health services [3, 4], undermining the quality of life of people who suffer from mental disorders [5, 6]. Lowering stigma has become a main goal of health policies worldwide [7] and professional associations [8]. Paradoxically, although they are also victims of stigmatizing attitudes [1, 9–11], mental health professionals are also agents of stigma [12–15] and, therefore, contributing themselves to the same stereotypes and discrimination they are struggling against. That is, they can be stigmatized, "de-stigmatizers" and at the same time "stigmatizers" [16–18].

Research has found an increasing evidence of mental health professionals' stigmatizing attitudes or behaviours [16, 17, 19, 20]. Satisfaction surveys and qualitative research show that users of general and mental health services complain of stigmatizing and discriminatory attitudes among professionals. This includes low-quality services, diagnostic labelling, therapeutic pessimism, poor informed consent, visible side effects, excessive focus on symptoms and pills, disinterest in personal data and physical complaints, and coercive attitudes [21–23]. On the other hand, studies on clinicians' decisions suggest that there is a correlation

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between their attitudes and treatment decisions, such as labelling [24], coercion [25], and low referral to medical care [26]. There is ample evidence that user dissatisfaction with received services [27] and mental illness stigma hamper care seeking and undermines the mental health service system [28–30]. Help-seeking attitudes in mental health have become even more negative in the last decades [31]. All these factors may have profound consequences on service users such as impeding recovery [32], increasing suicidality [33], lower quality of care [28] and higher morbidity and mortality [20].

Review studies comparing beliefs, attitudes and opinions of mental health professionals towards mental illness with those of the general public, other professionals and relatives or patients, have found that mental health professionals share at least some of the prejudices of the general public, and can be even more negative, particularly in terms of pessimistic outcomes and desire of social distance [16, 17, 19, 20].

The attitudes of mental health professionals towards mental illness are thus a major factor impacting on the overall quality of care. However, studies about the attitudes of mental health professionals as a group may be elusive and inaccurate because they are generalizations about different groups with different background, training, experiences and philosophies of treatment [19]. The aim of the present study is to analyze the relevance of selected variables in shaping professionals' attitudes towards mental illness. Personal variables, such as sociodemographic factors (sex, age, education), experience and familiarity with mental illness, are considered to be relatively important in public stigma literature [34–36], but their relevance is less clear in mental health professionals [20, 37–42]. In contrast, as public stigma research also suggests, "cultural" variables may be more relevant than personal factors: they might influence attitudes more powerfully, and because of their nature, are more amenable to implement preventive interventions against stigmatizing attitudes [35, 43, 44]. We have considered the term "culture", not in an ethnic-anthropological way but in an institutional sense, encompassing a mix of professional, organizational and political variables that shape different groups or "subcultures" in an organization, which may differ in attitudes and interpersonal behaviours of people with mental illness [20].

In this regard, professionals working in the mental health field vary in terms of career, theoretical model, responsibility, contact with patients, etc., that may influence their attitudes. Previous research has studied and/or compared the attitudes of psychiatrists [37–39, 42, 45–49], psychologists [37, 39, 46, 50–52], nurses [17, 40, 46, 51, 53–59], and other professionals, yielding mixed results. Attitudes of professionals can also diverge according to the setting they work in (type of facility, institutional dependence, etc.) because of organizational or cultural reasons, as well the different severity of attended patients [37, 38, 59–62]. Also, cultural and political factors shape the attitudes in each country, as it is suggested in a limited number of previous cross-country comparisons of mental health staff [39, 40, 63].

Methods

The present study is part of a research project set out by a non-profit mental health organization (Sisters Hospitallers) with mental health institutions and services across Europe and in the rest of the world, namely in developing countries. The research project aimed to study and prevent stigmatizing attitudes in their professionals. It was based on institutional reports and recommendations [64, 65], following the information retrieved from reviews of previous interventions targeted to prevent potentially prejudiced and discriminatory attitudes in health and mental health settings [16, 20]. The project was named "Inter Nos" (Among Us, in Latin).

Three variables were selected to measure the influence of professional and cultural factors on the attitudes towards mental illness. First, the variable "professional category" included clinical and non-clinical professionals. The latter group was composed by professionals that were not directly involved in health care, such as administrative and general service staff. Clinical staff was grouped in psychiatrists, psychologists, registered nurses, assistant nurses, and two groups named "social therapists" (that included social workers, occupational therapists, rehabilitation technicians, and social educators), and "other clinical" (namely, people that could not classified themselves elsewhere). Second, "work setting" distinguished professionals working in hospitals from those in the community-based centers. Third, "country" encompassed professionals working in three different European Mediterranean countries: Spain, Portugal, and Italy.

Design

The study was a multinational, multicentre, cross-sectional survey. The main objectives of the study were: (a) to measure and describe the attitudes of professionals towards mental illness; and (b) to compare the differences in the attitudes depending on the type of professional ("non-clinical", "psychiatrists", "psychologists", "nurses", "nursing assistants", "social therapists", and "other clinical"), setting ("hospital" and "non-hospital" based services) and country (Spain, Portugal and Italy).

Sample

Study population consisted of the staff of mental health institutions in Spain, Portugal and Italy, all belonging to

the same organization. The estimated number of workers, including clinical and non-clinical staff, was 4478, located at 25 centers covering a heterogeneous array of mental health services, hospital or community-based. From the estimated population, 1729 (38.61%) subjects participated in the study and answered the survey. Only 1525 (34.06%) questionnaires were included in the statistical analysis since uncompleted questionnaires with more than 25% unanswered items were excluded.

Instruments

Survey questionnaire included sociodemographic data and scales assessing attitudes toward mental illness. Sociodemographic data included personal variables (sex, age, education and years of experience in the profession) and professional variables (place of work, professional group, and country).

Following Link's review [66], two scales based on different theoretical models of stigma were used to measure the attitudes toward the mental illness.

The first questionnaire used was Attribution Questionnaire (AQ-27) [67]. The AQ-27 provides a vignette about a man with schizophrenia, with 27 items that evaluate respective assertions related to the hypothetical case. Every item rank, in a 9-point response scale, from 1 (not at all), to 9 (very much). The 27 questions are grouped into nine factors, each composed of three questions, thus every factor has a total score rank from 3 to 27 points. The nine factors are: (1) personal responsibility (people have control over and are responsible for their mental illness and related symptoms); (2) anger (irritated or annoyed because the people are to blame for their mental illness); (3) pity (sympathy because people are overcome by their illness.); (4) help (provision of assistance to people with mental illness); (5) dangerousness (people with mental illness are not safe); (6) fear (fright because people with mental illness are dangerous); (7) avoidance (stay away from people with mental illness); (8) segregation (send people to institutions away from their community); and (9) coercion (force people to participate in medication management or other treatments).

These factors are key constructs of the Corrigan's social cognitive model of stigma [68], based on attribution theory, which holds that behaviour is determined by a cognitive-emotional process: people make attributions about the cause and controllability of a person illness that lead to inferences about responsibility. These inferences lead to emotional reactions such as anger or pity that affect the likelihood of helping, avoidant, or coercive behaviours [67].

AQ-27 scale has shown good levels of internal consistency with alfa ranging from 0.7 to 0.96. Corrigan also showed some evidence of construct validity by correlating subscales as his attributional model predicted [67]. This scale has been widely used in the general public [69, 70], but less often in mental health professionals [41, 71]. For the purposes of the present study, validated versions in Portuguese [70, 72], Italian [69] and a non-published Spanish version [41] were used for the respective countries.

The second scale was The Community Attitudes toward the Mentally Ill (CAMI) [56, 73]. It consists of 40 statements that measure the attitudes and opinions towards people with mental illness and their community care. The level of agreement/disagreement to every statement is measured on a 5-point scale (1, strongly disagree; 2, disagree; 3, neutral; 4, agree; and 5, strongly agree). The 40 questions are grouped into four factors, each consisting of 10 questions, thus scoring from 10 to 50 points. (1) Authoritarianism (a view that people with mental illness are inferior and require a coercive approach); (2) benevolence (a sympathetic view for those experiencing mental illness and is based on humanistic parameters); (3) social restrictiveness: a view that the mentally ill are a threat to society; and (4) Community Mental Health Ideology (concerned with the therapeutic value of the community and acceptance of de-institutionalized care). Although recently some modifications to the scale have been proposed [74], we have used the original scale, for being more widely used and for possessing good levels of internal consistency (ranging from alpha 0.68 to 0.88) and good construct validity [56, 73]. Although it was originally developed for use with the general public, it has also been used with various samples of mental health professionals [40, 59, 75–79].

The original CAMI scale has been validated in Italian [80] and Portuguese [74], so the local researchers in Italy and Portugal used their respective versions. There is a recent Spanish version [81] unavailable at the time when our study was planned, so the original author was contacted to obtain the English version, that was further translated into Spanish and then blindly back-translated, followed by an assessment of the face-validity of the translated tool.

Data collection

Data were collected between June and September 2013. All staff at the centers involved was invited to participate voluntarily in an anonymous survey. The survey could be completed in paper or in an electronic format, through a link to a web page.

Statistical analysis

Means and SDs were used to describe continuous variables, and frequencies and percentages to describe categorical variables.

Differences in sociodemographic variables were analyzed by between-group differences. Categorical variables were compared using Pearson's Chi-squared tests. Continuous

variables were analyzed by *T* test for independent samples or by ANOVA test.

Results for AQ-27 and CAMI in every group were reported by means and SDs and compared, reporting p as the level of statistical significance. ANOVAs were used to compare the attitudes of professional categories or countries and T-tests were used to compare them according to work-setting.

In addition, a linear multiple regression was performed including possibly confounding sociodemographic variables of age, gender, working experience, assessment method and education, to further determine the difference of attitudes between professions, work setting and countries. For any of these categories, one of the groups was taken as the reference level (intercept) and the rest of groups were compared against. While regression coefficients (β) of the intercepts equal their adjusted means, β coefficients of the other groups equal the adjusted difference of means relative to the intercept, so comparisons between group pairs can be made. Thus, regression coefficients (β) and its standard errors, statistical significance p, and adjusted R squared were reported for each regression.

Open-source, statistical package "R" v3.0.2 (R Foundation for Statistical Computing, Vienne, Austria, 2013) was used to perform analysis [82].

Ethical issues

Permission for the study was obtained accordingly with local committees. Formal ethical approval was not deemed necessary under the laws of any of the implicated countries, since this study was concerned with staff and did not involve any issue related with the participants' health. It was stressed that participation was voluntary and anonymous and that all information was confidentially stored.

Results

Total sample was composed by 1525 participants, in which 995 (65.2%) completed the survey online, and 531 (34.8%) were handwritten. Response rates varied according to country (Spain: 34.2%; Portugal: 30.3% and Italy: 52.2%) and work setting (hospital: 27.2%; community: 60%).

Sample characteristics

Sociodemographic characteristics of the sample are summarized in Table 1. The majority of respondents were female (75.15%). Mean age was 39.17 years (SD = 10.04). 54.36% of them attained university education (29.84% graduate and 24.52% postgraduate) and 45.64% did not reach university (10.43% with primary education and 35.21% secondary studies). Most professionals (63.15%) worked in a hospital-based settings, and the remain (36.85%) in various community resources: 6.56% in outpatient or mental health centers, 9.84% in community rehabilitation or day centers, 7.08% in community residential facilities and 13.38% in other community resources. The professional's length of working experience was, on average, 11.47 years (SD = 8.7). According to professional category, they were grouped into 201 (13.2%) of non-clinical professionals, 97 (6.4%) psychiatrists, 159 (10.4%) psychologists, 203 (13.3%) social therapists, 232 (15.2%) nurses, 361 (23.7%) nursing assistants, and 201 (13.2%) of other clinical professionals. According to country, 65.9% were Spanish, 25.7% Portuguese and 8.4% Italian.

There were statistically significant sociodemographic differences among the studied categories (Table 1). Professional groups significantly differed along all variables, i.e. age, gender, experience, education, work setting, country, and survey format ($p < 0{,}001$). Hospital-based staff had less often university education ($p < 0.001$), and differed in country of origin ($p < 0.001$), professional category ($p < 0.001$) and surveying method ($p < 0.001$), from community-based professionals. Finally, sample from the different countries differed in gender ($p < 0.001$), age ($p = 0.02$), education ($p < 0.001$), professional category ($p < 0.001$), work setting ($p < 0.001$) and method of survey ($p < 0.001$).

Sample attitudes

Table 2 shows sample attitudes, measured using mean scores of every factor of both AQ-27 and CAMI scales.

As measured on AQ-27 in the total sample, factors that measure personal responsibility (9.13 ± 3.7), negative emotions, [anger (5.8 ± 3.15) fear (6 ± 3.72), or perceived dangerousness (7.5 ± 4)], negative behaviours [segregation (8.6 ± 5.23), or avoidance (12.8 ± 5.8)] were the least reported. On the other hand, factors measuring pity (16.2 ± 4.5), coercion (17.5 ± 5.3), and help (22.9 ± 3.9) were more endorsed with higher scores.

According to CAMI factors, participants ranked higher in the factors of benevolence (41.2 ± 4) and community mental health ideology (42.4 ± 5.2) compared with the factors of authoritarianism (24.7 ± 4.1) and social restrictiveness (21.3 ± 4.5).

Tables 2 and 3 show comparisons of groups' attitudes within the categories of professional category, work setting and country. In Table 2, mean scores of attitudes of every group are reported, and they are compared within each category. Table 3 shows the results of the multiple linear regressions, adjusted for confounding variables. "Non-clinical", "Hospital", and "Spain" were respectively taken as the reference level (intercepts) and the rest of groups were compared against.

Table 1 Sociodemographic characteristics of the sample and comparison of subgroups by profession, work setting and country

	Total (*N* = 1523)	Non-clinical (*N* = 201)	Psychiatrists (*N* = 97)	Psychologists (*N* = 159)	Nurses (*N* = 232)	Nursing assistants (*N* = 361)	Social therapist (*N* = 203)	Other clinical (272)	*p* value	Hospital (*N* = 963)	Community (*N* = 562)	*p* value	Spain (*N* = 1005)	Portugal (*N* = 392)	Italy (*N* = 128)	*p* value
Age, mean (SD)[a]	39.1 (10)	41.5 (8.8)	44.2 (9.9)	37 (8)	34.9 (10.2)	39.6 (10.1)	36.35 (8.9)	42 (10.2)	< 0.001	39.3 (10.3)	38.9 (9.4)	0.512	38.5 (9.9)	40.5 (11)	40.4 (10)	0.002
Gender female, *n* (%)[b]	1146 (75.1)	142 (70.6)	44 (45.4)	120 (75.5)	176 (75.9)	283 (78.4)	181 (89.2)	200 (73.5)	< 0.001	724 (75.2)	422 (75.1)	0.968	707 (70.3)	345 (88)	94 (73.4)	< 0.001
Work experience, mean (SD)[a]	11.47 (8.7)	11.5 (7.8)	17.2 (9.6)	11 (7.6)	10.2 (8.8)	11.2 (9)	10.8 (7.5)	11.6 (9.1)	< 0.001	11.4 (9.1)	11.5 (7.9)	0.775	11.4 (8.4)	11.9 (9.4)	10.4 (7.9)	0.255
Education, *n* (%)[b]																
University	829 (54.4)	95 (47.3)	97 (100)	159 (100)	232 (100)	37 (10.2)	130 (64)	95 (34.9)	< 0.001	469 (48.7)	360 (64)	< 0.001	594 (59.1)	162 (41.3)	73 (57)	< 0.001
Non-university	696 (45.6)	106 (52.7)	–	–	–	324 (89.8)	73 (36)	177 (65.1)		494 (51.3)	202 (35.9)		411 (40.9)	230 (58.6)	55 (42.9)	
Profession, *n* (%)[b]																
Psychiatrists	97 (6.4)	–	–	–	–	–	–	–	< 0.001	60 (6.2)	37 (6.6)	< 0.001	109 (10.8)	3 (0.8)	9 (7)	< 0.001
Psychologist	159 (10.4)	–	–	–	–	–	–	–		58 (6)	101 (18)		119 (11.8)	19 (4.8)	21 (16.4)	
Nurses	232 (15.2)	–	–	–	–	–	–	–		181 (18.8)	51 (9.1)		125 (12.4)	81 (20.7)	26 (20.3)	
Nursing Assistants	361 (23.7)	–	–	–	–	–	–	–		312 (32.4)	49 (8.7)		297 (29.6)	52 (13.3)	12 (9.4)	
Other clinical	272 (17.8)	–	–	–	–	–	–	–		159 (16.5)	113 (20.1)		109 (10.8)	134 (34.2)	29 (22.7)	
Social assistances	203 (13.3)	–	–	–	–	–	–	–		79 (8.2)	124 (22.1)		150 (14.9)	40 (10.2)	13 (10.2)	
Non-clinical	201 (13.2)	–	–	–	–	–	–	–		114 (11.8)	87 (15.5)		120 (11.9)	63 (16.1)	18 (14.1)	
Work setting, *n* (%)[b]																
Hospital	963 (63.1)	114 (56.7)	60 (61.9)	58 (36.5)	181 (78)	312 (86.4)	79 (38.9)	159 (58.5)	< 0.001	–	–	–	593 (59)	301 (76.8)	69 (53.9)	< 0.001
Community	562 (36.9)	87 (43.3)	37 (38.1)	101 (63.5)	51 (22)	49 (13.6)	124 (61.1)	113 (41.5)		–	–	–	412 (41)	91 (23.2)	59 (46.1)	
Country, *n* (%)[b]																
Spain	1005 (65.9)	120 (59.7)	85 (87.6)	119 (74.8)	125 (53.9)	297 (82.3)	150 (73.9)	109 (40.1)	< 0.001	593 (61.6)	412 (73.3)	< 0.001	–	–	–	
Portugal	392 (25.7)	63 (31.3)	3 (3.1)	19 (11.9)	81 (34.9)	52 (14.4)	40 (19.7)	134 (49.3)		301 (31.3)	91 (16.2)		–	–	–	
Italy	128 (8.4)	18 (9)	9 (9.3)	21 (13.2)	26 (11.2)	12 (3.3)	13 (6.4)	29 (10.7)		69 (7.2)	59 (10.5)		–	–	–	
Survey format, *n* (%)[b]																
Paper	994 (65.2)	105 (52.2)	59 (60.8)	55 (34.6)	150 (64.7)	318 (88.1)	94 (46.3)	213 (78.3)	< 0.001	682 (70.8)	281 (29.2)	< 0.001	704 (70)	217 (55.4)	73 (57)	< 0.001
Online	531 (34.8)	96 (47.8)	38 (39.2)	104 (65.4)	82 (35.3)	43 (11.9)	109 (53.7)	59 (21.7)		312 (55.5)	250 (44.5)		301 (30)	175 (44.6)	55 (43)	

[a]Anova or *T* test analyses; [b]χ^2 test

Table 2 Differences in attitudes of professionals (measured with AQ-27 and CAMI) according to profession, work-setting and country

	Total (*N* = 1523)	Non-clinical (*N* = 201)	Psychiatrists (*N* = 97)	Psychologists (*N* = 159)	Nurses (*N* = 232)	Nursing assistants (*N* = 361)	Social therapists (*N* = 203)	Other clinical (272)	*p* value[a]	Hospital (*N* = 963)	Community (*N* = 562)	*p* value[b]	Spain (*N* = 1005)	Portugal (*N* = 392)	Italy (*N* = 128)	*p* value[a]
AQ-27. mean (SD)																
Responsibility	9.13 (3.74)	8.85 (3.34)	9.52 (3.79)	9.05 (3.31)	8.72 (3.65)	9.86 (4.17)	9.09 (3.53)	8.68 (3.72)	0.001	9.11 (3.86)	9.17 (3.54)	0.754	9.78 (3.68)	8.22 (3.51)	6.8 (3.34)	< 0.001
Pity	16.22 (4.51)	16.67 (4.73)	18.1 (3.48)	16.06 (4.04)	15.37 (4.66)	16.81 (4.31)	14.72 (4.08)	16.38 (4.92)	< 0.001	16.17 (4.62)	16.31 (4.32)	0.559	17 (3.73)	15 (5.23)	13.95 (5.97)	< 0.001
Anger	5.77 (3.15)	6.35 (3.36)	5.21 (2.82)	4.67 (2.2)	5.39 (2.94)	6.35 (3.37)	5 (2.27)	6.30 (3.63)	< 0.001	5.83 (3.24)	5.65 (3.01)	0.275	5.64 (3.04)	6.08 (3.31)	5.78 (3.49)	0.066
Dangerousness	7.46 (4.04)	8.27 (4.24)	6.53 (3.43)	5.67 (3.02)	6.83 (3.52)	9.07 (4.37)	5.81 (2.96)	7.91 (4.21)	< 0.001	7.69 (4.08)	7.08 (3.95)	0.005	7.48 (3.94)	7.38 (4.24)	7.61 (4.21)	0.841
Fear	5.98 (3.72)	6.9 (4.14)	5.22 (3.13)	4.55 (2.53)	5.21 (2.78)	6.88 (4.13)	4.87 (2.82)	6.73 (4.16)	< 0.001	6.09 (3.75)	5.81 (3.64)	0.155	5.63 (3.45)	6.68 (4.03)	6.66 (4.29)	< 0.001
Help	22.94 (3.85)	21.68 (4.26)	23.45 (3.53)	23.67 (3.16)	23.72 (3.41)	22.78 (3.98)	23.23 (3.82)	22.58 (3.92)	< 0.001	23.07 (3.81)	22.71 (3.91)	0.081	23.09 (3.68)	22.9 (3.87)	21.88 (4.8)	0.004
Coercion	17.51 (5.27)	17.78 (5.15)	17.05 (5.03)	14.87 (5.11)	17.17 (4.48)	20.10 (4.58)	15.09 (5.7)	17.68 (5.02)	< 0.001	18.24 (4.88)	16.27 (5.67)	< 0.001	18.32 (5.44)	16 (4.4)	15.77 (4.89)	< 0.001
Segregation	8.58 (5.23)	9.19 (5.14)	6.55 (3.53)	5.69 (3.28)	7.78 (4.23)	11.03 (5.62)	6.13 (4.01)	9.84 (5.74)	< 0.001	9.23 (5.29)	7.48 (4.93)	< 0.001	8.51 (5.23)	8.75 (5.15)	8.66 (5.46)	0.728
Avoidance	12.82 (5.77)	13.02 (5.42)	13.54 (5.93)	11.83 (5.53)	12.76 (5.79)	13.79 (5.83)	11.19 (5.46)	12.99 (5.95)	< 0.001	13.05 (5.69)	12.44 (5.9)	0.047	12.74 (5.74)	12.4 (5.84)	14.77 (5.48)	< 0.001
CAMI. mean (SD)																
Authoritarianism	24.74 (4.12)	25.61 (3.70)	22.6 (4.13)	22.58 (3.91)	23.57 (3.55)	25.9 (4.04)	22.89 (3.78)	22.51 (4.24)	< 0.001	24.77 (4.16)	23.95 (4)	< 0.001	24.22 (4.05)	25.1 (4.11)	24.48 (4.48)	0.001
Benevolence	41.17 (4.02)	40.21 (3.67)	42.65 (3.59)	43.13 (3.46)	41.23 (3.88)	40.61 (3.75)	42.45 (0.90)	39.86 (4.41)	< 0.001	40.79 (4.07)	41.82 (3.85)	< 0.001	41.84 (3.7)	39.6 (4.02)	40.39 (4.98)	< 0.001
Restriction	21.33 (4.53)	22.15 (4.47)	19.53 (3.89)	18.89 (4.05)	20.64 (3.88)	23.14 (4.44)	19.53 (3.8)	22.37 (4.74)	< 0.001	21.8 (4.57)	20.52 (4.35)	< 0.001	21.21 (4.53)	21.4 (4.36)	22.13 (5)	0.089
CMH ideology	42.38 (5.15)	41.98 (4.79)	44.19 (4.21)	45.12 (4.18)	42.56 (5.13)	40.92 (4.95)	44.34 (4.75)	40.68 (5.45)	< 0.001	41.88 (5.13)	43.24 (5.08)	< 0.001	43 (5.03)	41.5 (4.95)	40.02 (5.67)	< 0.001

[a]ANOVA; [b]*T* test

Table 3 Multiple linear regression of attitudes (measured with AQ-27 and CAMI) by profession, work setting and country adjusted by age, gender, working experience, assessment format and education

	Non clinical (*N* = 201) reference level	Psychiatrists (*N* = 97)	Psychologists (*N* = 159)	Nurses (*N* = 232)	Nursing assistants (*N* = 361)	Social therapists (*N* = 203)	Other clinical (272)	Adj *r*-sq	Hospital (*N* = 963) reference level	Community (*N* = 562)	Adj *r*-sq	Spain (*N* = 1005) reference level	Portugal (*N* = 392)	Italy (*N* = 128)	Adj *r*-sq
AQ-27. B (SE)															
Responsibility	9.53 (0.57)***	0.53 (0.48)	0.40 (0.41)	− 0.27 (0.38)	0.62 (0.34)	0.34 (0.37)	0.45(0.35)	0.02	9.79 (0.47)***	0.26 (0.20)	0.01	10.05 (0.45)***	− 1.48 (0.22)***	− 2.92 (0.34)***	0.08
Pity	17.38 (0.68)***	1.32 (0.58)*	− 0.71 (0.50)	− 1.62 (0.46)***	− 0.03 (0.41)	− 2.05 (0.45)***	− 0.43 (0.41)	0.03	16.41 (0.57)***	0.29 (0.24)	< 0.01	16.48 (0.55)***	− 2.03 (0.27)***	− 3.06 (0.41)***	0.06
Anger	6.71 (0.47)***	− 0.84 (0.40)*	− 1.41 (0.34)***	− 0.88 (0.32)**	− 0.32 (0.29)	− 1.31 (0.31)***	0.25 (0.29)	0.04	6.02 (0.39)***	0.04 (0.16)	0.03	5.97 (0.39)***	0.35 (0.19)	0.14 (0.29)	0.04
Dangerousness	8.73 (0.59)***	− 1.55 (0.50)**	− 2.46 (0.43)***	− 1.57 (0.39)***	0.48 (0.36)	− 2.48 (0.39)***	− 0.60 (0.36)	0.10	8.21 (0.50)***	− 0.23 (0.21)	0.05	8.19 (0.5)***	− 0.21 (0.24)	0.15 (0.37)	0.05
Fear	7.32 (0.55)***	− 1.13 (0.46)*	− 1.98 (0.40)***	− 1.56 (0.36)***	− 0.48 (0.33)	− 2.04 (0.36)***	− 0.44 (0.33)	0.08	6.18 (0.45)***	0.03 (0.19)	0.06	6.06 (0.45)***	0.85 (0.22)***	1.04 (0.33)**	0.08
Help	22.46 (0.58)***	1.91 (0.49)***	1.72 (0.42)***	1.85 (0.39)***	1.25 (0.35)***	1.34 (0.38)***	1.03 (0.35)**	0.03	23.98 (0.48)***	− 0.52 (0.20)*	0.02	23.84 (0.48)***	− 0.13 (0.23)	− 1.20 (0.36)***	0.02
Coercion	17.88 (0.76)***	− 0.69 (0.65)	− 2.58 (0.56)***	− 0.58 (0.51)	1.89 (0.46)***	− 2.58 (0.50)***	− 0.40 (0.46)	0.11	18.66 (0.64)***	− 1.49 (0.27)***	0.08	18.74 (0.63)***	− 2.61 (0.31)***	− 2.54 (0.47)***	0.11
Segregation	10.92 (0.73)***	− 1.71 (0.62)**	− 2.54 (0.53)***	− 1.06 (0.49)*	0.79 (0.44)	− 2.78 (0.48)***	0.08 (0.45)	0.17	10.89 (0.61)***	− 1.04 (0.26)***	0.14	10.62 (0.62)***	0.11 (0.30)	0.24 (0.46)	0.13
Avoidance	13.33 (0.88)***	0.49 (0.75)	− 1.03 (0.64)	− 0.43 (0.59)	0.36 (0.53)	− 1.85 (0.58)**	− 0.32 (0.53)	0.02	12.9 (0.73)***	− 0.35 (0.31)	0.01	12.99 (0.72)***	− 0.26 (0.35)	2.20 (0.54)***	0.02
CAMI. B (SE)															
Authoritarianism	26.55 (0.59)***	− 1.93 (0.49)***	− 1.81 (0.42)***	− 1.19 (0.39)**	− 0.72 (0.35)*	− 2.34 (0.38)***	− 0.54 (0.36)	0.15	25.48 (0.49)***	− 0.25 (0.20)	0.13	25.30 (0.49)***	0.61(0.24)*	0.26 (0.36)	0.13
Benevolence	41.06 (0.58)***	1.74 (0.49)***	1.80 (0.42)***	0.06 (0.39)	1.12 (0.35)**	1.78 (0.38)***	0.02 (0.35)	0.12	41.85 (0.48)***	0.65 (0.20)**	0.10	42.36 (0.47)***	− 2.04 (0.23)***	− 1.50 (0.35)***	0.14
Restriction	20.69 (0.64)***	− 2.28 (0.64)***	− 2.38 (0.47)***	− 0.92 (0.43)*	0.33 (0.39)	− 2.21 (0.42)***	− 0.20 (0.39)	0.15	20.56 (0.54)***	− 0.72 (0.23)**	0.12	20.42 (0.54)***	− 0.09 (0.26)	0.91 (0.40)*	0.12
CMH ideology	41.91 (0.75)***	1.33 (0.63)*	1.98 (0.54)***	− 0.24 (0.50)	− 0.13 (0.45)	1.96 (0.49)***	− 0.84 (0.45)	0.12	41.89 (0.62)***	0.79 (0.26)**	0.10	42.23 (0.61)***	− 1.27 (0.30)***	− 3.08 (0.459)***	0.12

Significance codes of p <0.001, *** <0.01, ** < 0.05, *B: regression coefficient; *SE* standard error, *Adj r-sq* adjusted *r*-squared

Differences of attitudes across professional category

On AQ-27, most of clinical professionals differed from non-clinical ones in having less discriminatory attitudes and responses, with two relevant exceptions: nursing assistants and "other clinical" did not show significant differences from non-clinical staff, besides help factor, in which both are slightly better (1.3 ± 0.4 and 1 ± 0.4, respectively), and coercive responses, in which nursing assistants scored even higher than non-clinical (1.9 ± 0.5). On the other hand, psychologists and social therapists had the lowest scores in negative emotions (anger, perceived dangerousness and fear) and in negative behavioural responses (coercion, segregation, and avoidance), with β ranging from -1.3 to -2.6. Psychiatrists and nurses ranked somehow in the middle: they scored lower than non-clinical professionals (but higher than psychologists and social assistants) in negative emotions and segregation (with β ranging from -0.8 to -1.7), but they did not differ with non-clinical staff in coercive and avoidant responses. Both psychiatrists (1.9 ± 0.5) and nurses (1.9 ± 0.4) excelled in the positive factors help, but only psychiatrists were above of non-clinical staff in pity.

On CAMI scale, nursing assistants and "other clinical" again had the most stigmatizing score of professional groups, with no differences with non-clinical staff, but a difference of $\beta = 1.1$ in benevolence for nursing assistants. On the other hand, psychologists and social assistants, (again but this time also with psychiatrists) had the best scores, with similar profiles: their regression coefficients were the lowest in authoritarianism (-2.3 ± 0.4 social therapists; $\beta = -1.9 \pm 0.5$ psychiatrists; and -1.8 ± 0.4 psychologists) and social restriction (-2.4 psychologists ± 0.5 ; -2.3 ± 0.6 psychiatrists; and -2.2 ± 0.4 social therapists) and the highest in benevolence (1.8 ± 0.4 psychologists; and $\beta = 1.7$ for social therapists ± 0.4 and psychiatrists ± 0.5) and support of community mental health ($\beta = 2$ for psychologists ± 0.5 and social therapists ± 0.5; and 1.3 ± 0.6 psychiatrists). Finally, nurses again had an intermediate profile: they had slightly lower responses than non-clinical to negative factors such as authoritarianism (-1.2 ± 0.4), and social restriction (0.9 ± 0.4) but they did not show differences with non-clinical in the positive factors (benevolence and community support).

Hospital vs community

On AQ-27, professionals working in hospitals gave more discriminatory behavioural responses, especially in coercion (-1.5 ± 0.3) and segregation (-1 ± 0.3), and slightly less help responses (-0.5 ± 0.2). Moreover, hospital-based professionals were more stigmatizing on most factors of CAMI scale: they showed more agreement with restrictive opinions (-0.7 ± 0.2) and they disagreed more often with benevolent assertions (0.7 ± 0.2) and support of community mental health (0.8 ± 0.3).

Differences of attitudes across countries

Comparison of the three countries on AQ-27 showed that Spanish professionals had the highest inference of attribution of responsibility for the illness, and held more coercive approaches, but felt more pity and less fear than their counterparts. On the other hand, Italian professionals were at the lowest end of the dimensions of pity (-3.1 ± 0.4) and help (-1.2 ± 0.4), and they ranked the highest in avoidant behaviours (2.2 ± 0.5). Anger, perceived dangerousness, and segregation did not significantly differ along the three countries. On CAMI scale, Spanish professionals supported more positive attitudes toward benevolence and communitarian ideology, Italians were the least supportive of community treatment (-3.1 ± 0.5) and most supportive of social restriction (0.9 ± 0.4), while Portuguese ranked the highest in authoritarianism (0.6 ± 0.2).

Discussion

The aims of this study were to measure and describe the attitudes of professionals towards mental illness, and to compare their differences depending on the type of professional category, setting and country.

As measured on AQ-27 in the total sample, factors weighing negative attitudes to mental illness, i.e. that measure support to blaming people for their mental illness (personal responsibility), negative emotions (anger, fear, and perceived dangerousness) and negative behaviours (as tendency to segregation and avoidance toward the mentally ill) were all less endorsed than positive factors. On the contrary, positive factors as pity (or sympathy toward people experiencing mental health problems) and help (that refers to the provision of assistance to people with mental illness) were more endorsed with higher scores. So, most factors weighing negative attitudes to mental illness scored lower than the positive ones. The only exception to this positive trend was a slight support of coercive treatment and admission. In all comparisons, ANOVA and multiple regressions shows similar findings reflecting the lack of influence of possible sociodemographic variables in the main results.

Results on AQ-27 are comparable to the only (to our knowledge) previous study of mental health professionals using this scale [41], with the only difference that our sample had slightly more support to coercive treatment. However, this might be partially explained by the fact that the sample of this previous study was composed mostly of psychologists and social therapists working in community rehabilitation centers and, as shown in the present

study, they tend to score lower in coercive approaches than hospital-based and sanitary professionals such as nurses.

On CAMI, professionals of the total sample strongly agreed with the positive dimensions of benevolence towards those experiencing mental illness and support of the community mental health ideology or de-institutionalized care. On the contrary, they tend to disagree with the negative views that people with mental illness are inferior and require a coercive approach (authoritarianism) or that they are a threat to society (social restrictiveness).

The positive opinions measured by CAMI in our sample are in accordance with the results of previous studies using this scale in a number of samples of mental health professionals [40, 59, 75–79]. Direct comparisons of results, however, are difficult because of the heterogeneity of samples and different versions of the scale. Only one study [40] measured the attitudes of a comparable sample (810 registered psychiatric nurses from five European countries) with the same version of CAMI. Our sample seems to have slightly higher punctuations in authoritarianism, benevolence and communitarian ideology, and similar results in social restriction.

Globally, the attitudes of our total sample of professionals, as measured by the AQ-27 and CAMI and when compared with equivalent research, seem to be positive and non-stigmatizing towards mental illness. The only possible exception seems to be on the support to coercive treatments or compulsory admissions (measured by factors coercion in AQ-27 and authoritarianism in CAMI). This finding is not unique since previous research using other methods and samples has also showed that mental health professionals tend to support coercive treatments [39, 60].

Regarding comparison of attitudes across different professional categories, we found that clinical professionals had more positive and less negative attitudes than non-clinical on AQ-27 and CAMI, with the exceptions of nursing assistants and "other clinical", that did not differ on most factors. Despite not being comparable to general public, the group of non-clinical professionals has been studied before [54, 77], namely as a control group to measure the difference of attitudes in comparison with clinical professional groups. Results of these studies, however, are inconclusive: one study in Rwanda showed that clinical professionals were more positive in CAMI factors [77], but the other did not find any difference between Japanese clinical and non-clinical staff in stereotypes and social distance [54]. Also, reviews of studies comparing attitudes of mental health professionals with general public have showed mixed results, suggesting that the relation of stigma and mental health professionals is more "intricate" than expected [16, 17, 19, 20]. Some of these inconclusive results could be due to the heterogeneity of professions in our sample, so different mental health professionals were compared and analyzed separately to interpret the results.

Psychiatrists ranked on AQ-27 moderately lower than non-clinical professionals in negative emotions and segregation (but slightly higher than psychologists and social therapists), and showed the most positive emotions, as pity (in which only psychiatrists were above non-clinical staff), and the most positive behaviours as help. However, they did not differ with non-clinical staff in coercive and avoidant responses. On CAMI, psychiatrists had similar results to psychologists and social therapists and, compared to non-clinical staff, they clearly agreed more with positive factors and disagreed with negative ones.

Research comparing psychiatrists with other health professionals have yielded positive but mixed results [37–39, 42, 45–50]. Studies have found that psychiatrists had less stigmatizing beliefs and were more supportive of civil rights when compared with nonmental health professionals [42, 48]. When compared to other mental health professionals, results depend on the studied variable or sample. Psychiatrists seem to have a more pessimistic view on prognosis and outcome of severe mental illness than the rest of mental health professionals [38, 49, 50]. In one study they showed more negative stereotypes compared to psychologists, mental health nurses, and other therapists [46, 60], but in other study they showed more positive attitudes namely on patients' unpredictability and political rights, and recognition of patients' affective rights when compared with mental health nurses [47, 53]. They tend to support involuntary admission more than the general public and other therapists [39, 46]. These inconsistencies have been attributed to the biomedical model that sometimes psychiatrist tend to adhere, the severity of the patients they treat, or simply because psychiatrists are a heterogeneous group regarding stigma toward severe mental disorders [16, 83–85].

Compared with previous research, psychiatrists of our sample also had mixed results. They tend to have positive attitudes, especially when compared with non-clinical and nursing staff. However, compared to non-sanitary therapists (psychologists and social therapists), they relatively had more negative emotional responses and more support of coercive treatments. On the other hand, although views on prognosis and outcome of mental illness were not reported in this study, it might be that psychiatrists' highest support to positive humanitarian attitudes of pity, help and benevolence is related with a more pessimistic stance (and so more care needs) described in the literature.

In our study, professional groups that seem to have the most positive attitudes toward mental illness were psychologists and what we called social therapists, a group that included social workers, occupational therapists, rehabilitation technicians, and social educators. Both groups had on AQ-27 the lowest scores in negative emotions (anger,

perceived dangerousness and fear) and in negative behavioural responses (coercion to treatment, segregation from community, and social avoidance). On CAMI, they ranked the lowest in authoritarian and restrictive opinions, and the highest in benevolent assertions and support of community mental health.

Although previous research has shown that psychologists may have some prejudices towards persons with schizophrenia [52], comparisons with other mental health professionals are similar to our results in which psychologists are more optimistic about long-term outcomes [38, 51], have less negative attitudes toward mental illness [46], and support less involuntary admissions [39] than psychiatrists or mental health nurses. Regarding social therapists, the literature is scarce, but it also shows that social workers or occupational therapists seem to have similar attitudes than psychologists on mental illness and compulsory admission [38, 39, 46].

Nurses ranked on AQ-27 lower than non-clinical professionals in negative emotions and segregation, and supported more positive behaviours as help. However, they did not differ with non-clinical staff in coercive and avoidant responses and in positive emotions as pity. On CAMI, they disagreed more than non-clinical professionals with negative assertions related to authoritarianism and social restriction (but with less strength than psychologist, social therapist, and psychiatrist) but they did not differ with non-clinical staff in positive factors of benevolence and mental health ideology.

Previous research suggest that psychiatric nurses have in general positive attitudes toward mental illness [40, 59], especially compared to general nurses [17], but the results are mixed or intermediate when compared with other mental health professionals. They are less pessimistic about long-term outcomes than the other professionals [38, 51], but they seem to support more legal restrictions [46, 53], and are similar to psychiatrists in their support of involuntary admissions [39] and clinical restraint [86].

Our results support this previous research in which psychiatric nurses held more coercive, restrictive and authoritarian approaches than other mental health professionals. Another potentially relevant result is their lower support of community mental health, a factor not previously described. On the other hand, the somewhat surprising findings of their relatively low scores on pity and benevolence might be tentatively related to a putative more optimistic view of nurses on prognosis, but this hypothesis contradicts the fact that they rank amongst the highest on help, the other humanitarian factor.

Nursing assistants and "other clinical" were the professional groups with the least positive attitudes. Nursing assistants did not show significant differences from non-clinical staff, except slight positive trends in AQ-27's help factor and CAMI's benevolence, but they scored even higher than non-clinical in AQ-27 coercion factor. Compared to the rest of mental health professionals, nursing assistants had the most negative emotions (such as anger, perceived dangerousness and fear) and the most coercive, segregational, authoritarian and restrictive attitudes.

Research on attitudes of assistant or unregistered nurses is scarce, it comes mainly from comparisons with registered or qualified nurses, and it seems to support our findings. Most studies found more negative attitudes in assistants regarding incapability and need to control [55, 57, 87]. On the other hand, only one study did not find differences between registered and unregistered nurses, but results can be due to the fact that the sample mixed general and psychiatric nurses [58].

The other group with the least positive attitudes was called "other clinical", and includes the professionals that marked this option because they did not classify themselves elsewhere. This group did not differ with non-clinical professionals in any factor but in a slightly better response in helping attitudes. Since this group has not characterized professionals, it is difficult to make any interpretation of its results or even its size.

Interestingly, there were only two variables in which no differences were found among professional categories and with non-clinical staff. On one hand, all the groups had the same scores on personal responsibility, i.e., they had similar views on the level of control over and responsibility for the symptoms of mental illness. This unexpected result conflicts with research using AQ-27 and the attributional model in which is based, in which different levels of attributed responsibility mediate different cognitive, emotional and behavioural responses towards persons with mental illness [67, 68].

On the other hand, none of the professional categories, except social therapists, differed on social avoidance. This is consistent with previous literature that have stressed that mental health professionals tend to hold a relative social distance with patients at least similar to general public, and that specifically psychiatrists and nurses had more tendency to stay away from people with mental illness in close encounters [45, 46, 54, 60, 88].

Overall, professionals working in hospitals had more stigmatizing attitudes than those working in community-based resources. On AQ-27, the first group held more discriminatory behaviours, especially in coercion to treatment and segregation from community, and on CAMI they were more stigmatizing on all variables, except for authoritarianism. Although previous studies comparing both populations and measuring expectations on treatment and prognosis did not find differences between them [37, 38, 60], recent studies from Scandinavian countries, [59, 61, 62] using measures of negative beliefs, opinions and attitudes, found that staff working at hospital and residential posts had more negative responses than community-based staff. This evidence

has been attributed to both organizational reasons, and the extrapolation of the severity of the illness of hospital patients compared to the rest of people suffering from mental illness.

Country was the variable in which the magnitude of the differences was less intelligible. Results slightly favoured Spanish professionals on CAMI, but on the AQ-27 were mixed and somewhat contradictory with Corrigan's attributional theory [67].

Recent cross-national research on social profiles of stigma showed that there are important differences between countries due to cultural reasons, and that social stigmatizing attitudes are associated with individual attitudes at a micro-level [43]. Although research on stigma of professionals comes from many countries, the number of cross-country comparisons is already sparse [39, 40, 63], and difficult to compare as they use different measures. One exception was the study [40] that compared nurses from five European countries using CAMI, which found that Portuguese nurses had the most positive, and Lithuanians the most negative, opinions towards people with mental problems, being the Italian nurses between both.

Overall, the differences of the attitudes between the compared subgroups (measured by difference of means or regression coefficients) were low to moderate. Moreover, adjusted r-squared were all under 0.17, so the adjusted proportion of variance explained by the models was lower than 17% (Table 3). Therefore, one might consider that the relevance of these differences would be limited, but given the results, however, some suggestions can be advanced. Global results and differences across professional categories and work setting suggest that efforts should be made to reduce coercive attitudes in clinical staff, in hospital-based personnel, and particularly in nurses. This might be achieved by enhancing professionals' knowledge of alternatives and their skills for co-operative clinical decision-making [16]. More intensive interventions, such as combination of education, contact with trained ex-patients, and teamwork, might target this group [20]. Also, more specific variables, such as professional burnout [89, 90], should be studied as potential mediators of stigmatizing attitudes [91, 92]. This is especially important for nurses, as they can have a powerful impact on recovery, since their close and supportive contact with their patients [17].

Another important point regards the question of what type of professionals could lead anti-stigma efforts based on their relative positive attitudes. Traditionally, psychiatrists are likely to be in positions to make important executive decisions about people with mental illnesses and to act as role models for public opinion [1, 8, 19]. Results of our study and other studies, however, suggest that other professionals, such as psychologists, can be in a similar if not better position to help in those corporate efforts acting as de-stigmatizers of mental illness and those suffering from them [16].

One limitation of the study is the representability of the sample and the generalization of results. Since the study is devoted to measure the attitudes of the staff of a mental health organization, results are not generalizable to professionals working in those countries. Only 6.6% of participants were working in outpatient or mental health centers, what is the main place where mental disorders are treated. Also, the level of participation of professionals and the attrition of uncompleted surveys does not fully let the results as representative of the professionals of the population, i.e. the entire organization. Lastly, response rates varied according to country and work-setting. Differences between respondents and non-respondents could not be compared statistically but admittedly higher relative participation of Italian and community-based professionals could have biased the results.

Another important problem is the validity of the stigma measures in mental health professionals, as this is too complex due to the difficulty in selecting a gold standard [19, 20]. We tried to minimize this limitation using two scales based on different, but putatively complementary, paradigms. Our study suggests that results of CAMI were coherent, which is consistent with the fact that this scale was already validated with mental health professionals [74]. On the contrary, results of AQ-27 were less coherent with the theory in which it was based. It seems that AQ-27 and its construct need to be further validated in mental health professionals. For instance, attributional theory considers that familiarity with persons with mental illness is a protector factor against stigma, by diminishing attribution of responsibility and danger appraisal [67, 68, 93]. However, review studies showed the opposite by demonstrating that increased contact with patients do not protect against stigmatizing attitudes [16, 17, 20].

Inconclusive results of cross-country comparisons might also be related with another limitation of our study, as international comparisons might be better implemented using more homogeneous and comparable subgroups of professionals than our heterogeneous sample. Differences might also be more conclusive when different country regions are compared (e.g. Southern vs Northern, or Western vs Eastern countries). Our organization (Sisters Hospitallers) has its main activity based in Mediterranean and Southern European countries and, therefore, we were not able to include centers from other regions.

Another limitation related to the validity of the scales was the difference in levels of validation between languages (especially in the Spanish versions) which possibly impaired cross-country comparisons. Additionally, the use of self-administered measures casts doubts on the social desirability of responses, although it is difficult to evaluate the direction of this bias [20]. A promising trend is the use of implicit attitudes [94] as a possible way to minimize this bias.

Lastly, it is important to note that statistical and significant differences could have been obtained because of the large samples recruited for this study. On the other hand, it means that error estimates could be more precise. The predictive power of linear models as assessed by R^2 ranged from 1 to 17% in line with values obtained in similar models assessing psychosocial constructs as stigma.

Conclusion

The aims of this study were to measure and describe the attitudes of professionals towards mental illness, and to compare their differences depending on cultural variables such as professional category, work setting and country. In this study, attitudes of mental health professionals towards mental illness were mainly positive but they also showed a relative support to coercive treatments. There are differences in attitudes modulated by professional category and setting that which might guide preventive suggestions: hospital-based staff, and particularly nurses, should be encouraged to discuss non-coercive alternatives to treatment and admission. Professionals different from psychiatrists seem to be able to also help and to act as role models on this discussion. Further research, with increased generalizability of samples, more valid measures and distinct countries should be undertaken.

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