

VIEWS OF SCHIZOPHRENIA AMONG FUTURE HEALTHCARE PROFESSIONALS: DIFFERENCES IN RELATION TO DIAGNOSTIC LABELLING, CAUSAL EXPLANATIONS, AND TYPE OF ACADEMIC DEGREE PROGRAM

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Abstract

Objective: Stereotyped beliefs about schizophrenia are well-established in the society and relatively common among healthcare professionals and students. The aim of this study was to investigate the opinions about the causes, treatment, and outcome of schizophrenia among healthcare students.

Method: Undergraduate nursing and psychology students completed selected items of the Opinion on Mental Illness Questionnaire after reading a clinical vignette of undiagnosed schizophrenia.

Results: Students who labelled the description as schizophrenia were more pessimistic regarding full recovery from the disorder. Those who acknowledged greater relevance to biogenetic risk factors were more convinced of the efficacy of medications. Respondents' opinions on the efficacy of psychological interventions were more positive among psychology students than among nursing students.

Conclusions: The study confirmed the associations of schizophrenia labelling with prognostic pessimism and beliefs about the efficacy of pharmacological treatment among future healthcare professionals. Students' opinions were less influenced by differences between academic degree programs. Information about current recovery rate and comprehensive care for schizophrenia may support future healthcare professionals in the relationship and the clinical management of PWS.

Key words: schizophrenia, opinions, healthcare students, multidisciplinary care, recovery

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Introduction

Despite the growing availability of evidence-based therapeutic approaches and the considerable improvement of the course and outcome of schizophrenia (van Os & Kapur 2009), the representation of schizophrenia as a life-long, recurrent, and highly debilitating disorder is still well-established in the society (Corrigan & Watson 2002; Giunta, La Fiura, Mannino, & Russo, 2018; Thornicroft et al. 2009). A consistent body of research has revealed that stigmatisation directed at people with schizophrenia (PWS) is more prevalent than towards people with more common and socially accepted mental disorders, such as depression (Angermeyer et al. 2015; Schomerus, Matschinger, & Angermeyer, 2013). Systematic reviews on surveys of the general population have consistently shown that people who applied the diagnostic label of schizophrenia (vs. depression) to an undiagnosed clinical vignette were more convinced

of the severity of the disease and more sceptical about the possibility of recovery (Angermeyer & Dietrich 2006; Read, Haslam, Sayce, & Davies, 2006).

As part of society, healthcare professionals are not free from stereotypes and prejudices towards PWS (Mannarini, Rossi, & Munari, 2020; Mestdagh & Hanse, 2014; Sølvhøj, Kusier, Pedersen, & Nielsen, 2021; Stone, Chen, Daumit, Linden, & McGinty, 2019). Systematic reviews have suggested that mental health staff tend to be sceptical about outcome and recovery from schizophrenia (Schulze 2007; Thornicroft, Rose, & Kassam, 2007). Furthermore, healthcare professionals were found to share with the laypeople several stereotypes towards PWS, such as dangerousness and unpredictability, which may result in a greater desire for social distance (Björkman, Angelman, & Jönsson, 2008; Hansson, Jormfeldt, Svedberg, & Svensson, 2013; Giandinoto, Stephenson, & Edward, 2018). Accordingly, the INDIGO study, a sizeable worldwide

multi-centric survey, found that 38% of PWS felt disrespected by mental health staff and 17% experienced discrimination while seeking help for physical health problems (Harangozo et al. 2014). Moreover, 56% of the participants thought they had been avoided by those who knew about their disorder, and as much as 72% felt the need to conceal their diagnosis, to prevent any anticipated negative consequence (Harangozo et al. 2014). Relevant is the impact of experienced and anticipated stigma on reluctance of people to consider their problems as related to mental health disorders, delayed help-seeking, early withdrawal from care, and poor adherence to treatments (Clement et al. 2015; Colizzi, Ruggeri, & Lasalvia, 2020; Corrigan, Druss, & Perlick, 2014; Gronholm, Thornicroft, Laurens, & Evans-Lacko, 2017; Henderson, Fisher, Ball, & Sellwood, 2020; Mannino, Milotta & Minuto, 2018; Wade, Tai, Awenat, & Haddock, 2017), with obvious consequences on the course and recovery from schizophrenia (Gronholm, Thornicroft, Laurens, & Evans-Lacko, 2017; Temesgen, Chien, & Bressington, 2019).

According to the “mental illness as an illness like any other” approach, recognising particular behaviours as part of an illness related to specific biological risk factors (such as a genetic background or a chemical imbalance) should have prevented people from blaming PWS for their mental health problems and should have reduced negative stereotypes towards PWS (Jorm, Angermeyer, & Katschnig, 2000). However, biogenetic causal beliefs of schizophrenia were found to have only a small effect on tendency to blame, but to increase negative stereotypes (such as dangerousness and unpredictability) and desire for social distance (Kvaale, Gottdiener, & Haslam, 2013; Lebowitz & Appelbaum, 2019). Also, biogenetic causal beliefs were associated with prognostic pessimism and greater confidence in the efficacy of medications, than psychological treatments (Larkings & Brown 2017; Read et al. 2006).

Along with medical staff, nursing and psychological professionals play an important role in multidisciplinary teams for comprehensive treatment of schizophrenia (Crespo-Facorro et al., 2017; De Rosa et al., 2017; Lahera et al., 2018; Mannino, Giunta, & La Fiura, 2017; Tamanza et al., 2019). Recent systematic reviews have underscored the value of a continued meaningful relationship between PWS and key staff members, in order to improve engagement with services, guarantee continuity of care, and, ultimately, support the recovery process (Harris & Panozzo 2019; Larkings & Brown 2017; Loughlin, Bucci, Brooks, & Berry, 2019; Newman, O'Reilly, Lee, & Kennedy, 2015). Therefore, understanding the factors underlying the stigmatisation of PWS is of major importance in order to develop effective interventions aimed at improving the attitudes and behaviours of healthcare and future healthcare professionals.

Literature suggests that healthcare students tend to express a stereotyped view of schizophrenia since the beginning of their academic education (Cadge, Connor, & Greenfield, 2019; Sandhu, Arora, Brasch, & Streiner, 2019; Trask, Kameoka, Schiffman, & Cicero, 2019; Yoshioka, Reavley, MacKinnon, & Jorm, 2014). Studies on nursing and psychology students found that, compared to other somatic or mental disorders, schizophrenia was associated with greater stigmatizing attitudes (Arbanas, Bosnjak, & Sabo, 2018; Mannarini & Boffo, 2015; Sreeraj, Parija, Uvais, Mohanty, & Kumar, 2017). A significant proportion of nursing and psychology students were sceptical about recovery from schizophrenia, particularly if PWS do not receive

professional help (Llerena, Cáceres, & Peas-Iledó, 2002; McCann, Lu, & Deegan, 2009; Magliano et al. 2014, 2016a; Picco et al. 2019). These students also were more likely to recommend PWS seeking help from psychiatrist, more confident in the efficacy of pharmacological treatment, and more sceptical about psychological interventions (Magliano et al. 2014, 2016a; Picco et al. 2019).

Furthermore, a few studies on psychology and medical students found that those who more strongly agreed with a biogenetic causal model of mental disorders, also reported prognostic pessimism, greater scepticism in the efficacy of psychological interventions, and desire to maintain social distance from people with psychiatric disorders (Lyndon, Crowe, Wuensch, McCammon, & Davis, 2016; Magliano et al. 2016; Read & Law 1999; Serafini et al., 2011). However, to our knowledge no study has yet investigated the relationship between causal beliefs and opinions about treatment and recovery from schizophrenia among nursing students. Moreover, no study has compared the opinions about schizophrenia of future nursing and psychology professionals.

This study used a cross-sectional study design to investigate the opinions about the causes, treatment, and outcome of schizophrenia in a sample of nursing and psychology undergraduates. Specifically, we aimed to investigate: a) the capacity to identify schizophrenia in a clinical vignette (diagnostic labelling) and the beliefs about the causes of this disorder among the two student groups; b) the opinions of these students regarding the treatment and outcome of the disorder; and c) differences in students' opinions about the treatment and outcome of the disorder in relation to diagnostic labelling, causal explanations, and type of academic degree program. We hypothesised that students who identified schizophrenia in an unlabelled description and those who endorsed biogenetic causal factors would be more pessimistic regarding recovery and more confident in the efficacy of pharmacological treatments. We also hypothesised that, because of their biological background, nursing students would endorse more frequently biogenetic causal beliefs, would recommend more frequently seeking help from a doctor, and would be more confident in the efficacy of pharmacological treatment, compared to psychology students.

Materials and methods

Procedure

Participants were students attending their third year of coursework in the undergraduate course in Nursing or in Psychology at the University of Palermo (Sicily, Italy). Third year students had acquired the theoretical background of their respective disciplines but none of them had attended theoretical or practical training in psychiatry. Participants had to have a sufficient understanding of Italian written language.

Researchers approached classes at the end of regular academic courses and invited all the students to voluntarily participate in a study of their opinions about people with mental health disorders. Information on the study was provided to students by the researchers orally, and also reported on the front page of the questionnaire. Students were instructed to refer to the researchers if they wanted further information on the study. Anonymity was guaranteed and students were informed about their right to withdraw from the study

at any time. Implicit informed consent was obtained by participants returning the completed questionnaires.

The study was approved by the Ethical Committee of the University Hospital "P. Giaccone" of Palermo (Italy).

Measures

Participants were invited to read a clinical vignette of undiagnosed schizophrenia according to ICD-10 criteria (Magliano, Read, Sagliocchi, Patalano, & Oliviero, 2013), answer to a multiple response question about the most appropriate diagnosis, and to a yes/no question regarding previous knowledge of people with a condition similar to that reported in the clinical vignette. Selected items from the student version of the Opinions on Mental Illness Questionnaire, OQ (Magliano, Fiorillo, De Rosa, Malangone, & Maj, 2004; Magliano et al., 2013) were used to investigate: 1) respondents' beliefs about the causes of schizophrenia (yes/no items); 2) the professionals that should be involved in the treatment of people affected with the disorder (yes/no items); 3) the possibility to recover from schizophrenia (3-point scale, from "not true" to "completely true"); and 4) the efficacy of the pharmacological and psychological interventions (3-point scale, from "not true" to "completely true"). In addition, participants were asked to complete a brief demographic sheet including information about gender, age, and occupation of the father (or the main parental figure), which was coded according to the European Socio-economic Classification and employed as a proxy for family social class (Harrison & Rose, 2006).

Analyses

Frequencies and percentages were used to describe students' opinion about diagnostic labelling, causal beliefs, treatment, and recovery from schizophrenia. The association of diagnostic labelling and causal beliefs with students' views about treatment and recovery from schizophrenia were investigated using χ^2 or Fisher's exact test (if cell count was less than 5). Diagnostic labelling was dichotomised as schizophrenia vs. other/ no diagnosis (e.g., depression, anxiety, mental breakdown, physical illness, other). Causal beliefs were dichotomised as biogenetic (heredity, illness during pregnancy or childhood, misuse of alcohol, misuse of street drugs, incorrect therapy, physical illness, chemical imbalance) vs. psychosocial (stress, family conflicts, psychological trauma, disillusionment in love, frequenting bad company). To account for the possibility of type I error, significance level was set at $p < .001$.

The effects of diagnostic labelling, causal beliefs, and academic degree program (independent variables) on students' attitudes towards treatment and recover (dependent variables), controlling for demographic covariates (gender, age, and family social class) were examined using multivariate linear regression. Multicollinearity was preliminary checked using variance inflation factors (VIFs). Analyses were carried out using STATA 12.

Results

Participants

A total of 378 students participated in the study

(corresponding to 77.7% psychology and 76.3% of nursing students enrolled in third-year study courses). Excluding those with missing data in the OQ led to a final sample of 277 participants (171 psychology and 106 nursing students). Students who did not complete the questionnaire did not differ from those with completed data in any of the main demographic characteristics.

The sample comprised 79.4% ($n = 220$) female students, with a mean age of 22.42 years ($SD = 2.57$), coming mostly from middle (i.e., intermediate occupations, such as higher grade white collar workers: 50.0%) and low socioeconomic backgrounds (i.e., working class, such as skilled manual workers: 38.71%). Compared to the 171 psychology students, the 106 nursing students included a greater proportion of males (nursing: 35.85% vs. psychology students: 11.11%; $\chi^2 = 24.50$, $p < .001$) and individuals from a lower socioeconomic background (52.88% vs. 32.69%; $\chi^2 = 21.06$, $p < .001$). Furthermore, nursing students were slightly older than psychology students (nursing: $M = 23.05$, $SD = 2.43$; psychology: $M = 22.02$, $SD = 2.58$; $t = 3.31$, $p = .001$).

Diagnostic labelling and opinions about causes, treatment, and outcome in the whole sample

Overall, 57% students identified schizophrenia in the clinical vignette and about one-third knew at least one person affected with a disorder like that reported in the description. The majority of participants thought that a psychosocial factor was the most frequent (74.73%) and most important cause of schizophrenia (63.90%).

When participants were asked to indicate any professionals that should have been involved in the treatment of people with the condition described in the clinical vignette (multiple response allowed), they more often recommended psychiatrists (83.03%) and psychologists (83.87%) as treating professionals, while only a few students indicated neurologists (19.86%) or general practitioners (5.05%). The majority of the students (73.65%) partially agreed that medications were useful in the treatment of PWS, and a greater number were fully convinced of the usefulness of psychological interventions (68.59%). One third of the respondents (30.69%) believed that PWS could make a complete recovery, and more than a half (55.23%) thought that these people could reach a partial recovery from schizophrenia (table 1).

Association between diagnostic labelling, causal beliefs, treatment, and outcome of schizophrenia in the whole sample

Compared to students who did not recognise schizophrenia in the description, those who did recognise schizophrenia more frequently named biogenetic factors as the most frequent causes of the disorder ($\chi^2 = 38.01$, $p < .001$). Furthermore, students who did identify schizophrenia were more confident in the efficacy of pharmacological treatment (Fisher's $p < .001$), more often would refer people affected with that condition to a psychiatrist ($\chi^2 = 10.56$, $p = .001$), and were more sceptical about full recovery from the disorder (Fisher's $p < .001$) (table 2).

Compared to students who believed that the most frequent causes of schizophrenia were psychosocial, those who were sure of the relevance of biogenetic factors were more convinced of the efficacy of

Table 1. Schizophrenia labelling and opinion regarding cause, outcome, and treatments for schizophrenia

	Total sample (N= 277) n (%)	Nursing students (n = 106) n (%)	Psychology students (n = 171) n (%)	χ^2 or Fisher's exact test (p)
Diagnosis of schizophrenia correctly identified				
- Yes	158 (57.04)	25 (23.58)	133 (77.78)	78.43 (<.001)*
- No	119 (42.96)	81 (76.42)	38 (22.22)	
Knowledge of at least one person with a disorder like that reported in the description				
- Yes	93 (33.57)	50 (47.17)	43 (25.15)	14.23 (<.001)*
- No	184 (66.43)	56 (52.83)	128 (74.85)	
Most frequent causes				
- Biogenetic	70 (25.27)	23 (21.70)	47 (27.49)	1.16 (.281)
- Psychosocial	207 (74.73)	83 (78.30)	124 (72.51)	
Most important causes				
- Biogenetic	100 (36.10)	47 (44.34)	53 (30.99)	5.05 (.025)
- Psychosocial	177 (63.90)	59 (55.66)	118 (69.01)	
Professionals that should be involved in the treatment of PWD**				
- Psychiatrist	230 (83.03)	91 (85.85)	139 (81.29)	0.97 (.325)
- Psychologist	229 (83.87)	77 (72.64)	152 (88.89)	
- Neurologist	55 (19.86)	20 (18.87)	35 (20.47)	0.11 (.746)
- General Practitioners	14 (5.05)	7 (6.60)	7 (4.09)	0.86 (.354)
Drugs are useful in the treatment of PWD				
- Completely true	45 (16.25)	9 (8.49)	36 (21.05)	8.03 (.045)
- Partially true	204 (73.65)	84 (79.25)	120 (70.18)	
- Not true	14 (5.05)	7 (6.60)	7 (4.09)	
- Unsure	14 (5.05)	6 (5.66)	8 (4.68)	
Psychological interventions are useful in the treatment of PWD				
- Completely true	190 (68.59)	58 (54.72)	132 (77.19)	<.001)*
- Partially true	83 (29.96)	44 (41.51)	39 (22.81)	
- Not true	2 (0.72)	2 (1.89)	0	
- Unsure	2 (1.89)	2 (1.89)	0	
PWD will be well again				
- Completely true	85 (30.69)	42 (39.62)	43 (25.15)	<.001)*
- Partially true	153 (55.23)	42 (39.62)	111 (64.91)	
- Not true	8 (2.89)	2 (1.89)	6 (3.51)	
- Unsure	31 (11.19)	20 (18.87)	11 (6.43)	

PWD: People with a disorder like that reported in the description; *significant after Bonferroni correction for multiple testing; **multiple responses allowed

medications (Fisher's $p < .001$) (table 2) and, before Bonferroni correction, more sceptical about the efficacy of psychological treatments (Fisher's $p = .021$). Furthermore, there was a marginal association between causal beliefs and the choice of the professionals to involve in the care of PWS, as students who endorsed biogenetic causes tended to recommend psychiatrists (Fisher's $p = .003$) and neurologists among treating professionals (Fisher's exact test's $p = .006$), and less frequently recommended psychologists (Fisher's $p = .007$). No associations were found between personal knowledge of people with a disorder like that described in the clinical vignette and students' beliefs about the causes and outcome of schizophrenia.

Differences in schizophrenia labelling, causal beliefs, treatment, and outcome of schizophrenia between the student groups

Compared to psychology students, nursing undergraduates more frequently referred having been in contact with someone with the condition described in the case vignette ($\chi^2(1) = 14.23, p < .001$), but were less likely to recognize that condition as "schizophrenia" (χ^2

(1) = 78.43, $p < .001$) (table 1).

Compared to psychology students, nursing undergraduates less frequently thought that psychologists should be involved in the care of PWS ($\chi^2 = 10.24, p = .001$) and were more sceptical about the efficacy of psychological interventions (Fisher's $p < .001$). Before Bonferroni correction, the analyses also showed that nursing students more often considered biogenetic factors as the most important cause of schizophrenia ($\chi^2 = 5.05, p = .025$) and were less convinced about the efficacy of medications ($\chi^2 = 8.03, p = .045$). Opinions about full recovery from schizophrenia were more optimistic among nursing than psychology students (Fisher's $p < .001$) (table 1).

Multivariate analyses

Multivariate analyses confirmed that students who identified schizophrenia in the description ($\beta = 0.20, 95\% \text{ CI } [0.06, 0.335]; t = 2.92, p = .004$) and those who endorsed biogenetic risk factors as the most frequent cause of schizophrenia ($\beta = 0.25, 95\% \text{ CI } [0.12, 0.38]; t = 3.73, p < .001$) were more confident in the efficacy of pharmacological treatment ($F = 7.53, p < .001, adj.$

$R^2 = .16$), while the effect of degree program became non-significant. Furthermore, a diagnostic label of “schizophrenia” ($\beta = -0.36$, 95% CI [- 0.51, 0.21]; $t = -4.53$, $p < .001$) predicted scepticism about recovery from schizophrenia ($F = 6.77$, $p < .001$, $adj. R^2 = .13$), independently by degree program.

Adherence to biogenetic causal model of the disorder was associated with greater confidence in the efficacy of medications. Before Bonferroni correction, the analyses also showed that students who considered biogenetic risk factors as the most frequent causes of schizophrenia were more sceptical about the efficacy of

Table 2. Significant associations between schizophrenia labelling and opinions regarding cause, outcome, and treatment for schizophrenia

	Total sample (N= 277) n (%)	Diagnosis of schizophrenia correctly identified (n = 158) n (%)	Other incorrect diagno- ses (n = 119) n (%)	χ^2 or Fisher's exact test (p)
Most frequent causes				
- Biogenetic	70 (25.27)	62 (39.24)	8 (6.72)	38.01 (< .001)
- Psychosocial	207 (74.73)	96 (60.76)	111 (93.28)	
Psychiatrists should be involved in the care of PWD				
- Yes	230 (83.03)	142 (89.87)	88 (73.95)	12.22 (.001)
- No	47 (16.97)	16 (10.31)	31 (26.05)	
Drugs are useful in the treatment of PWD				
- Completely true	45 (16.25)	40 (25.32)	5 (4.20)	< .001
- Partially true	204 (73.65)	112 (70.89)	92 (77.31)	
- Not true	14 (5.05)	1 (0.63)	13 (10.92)	
- Unsure	14 (5.05)	5 (3.16)	9 (7.56)	
PWD will be well again				
- Completely true	85 (30.69)	31 (19.62)	54 (45.38)	< .001
- Partially true	153 (55.23)	106 (67.09)	47 (39.50)	
- Not true	8 (2.89)	8 (5.06)	0	
- Unsure	31 (11.19)	13 (8.23)	18 (15.13)	
	Total sample (N= 277) n (%)	Most frequent causes Biogenetic (n = 70) n (%)	Most frequent causes Psychosocial (n = 207) n (%)	
Drugs are useful in the treatment of PWD				
- Completely true	45 (16.25)	28 (40.00)	17 (8.21)	< .001
- Partially true	204 (73.65)	40 (57.14)	164 (79.23)	
- Not true	14 (5.05)	1 (1.43)	13 (6.28)	
- Unsure	14 (5.05)	1 (1.43)	13 (6.28)	

PWD: People with a disorder like that reported in the description.

Discussion

Consistently with previous studies on healthcare professionals (Schulze 2007; Thornicroft et al. 2007) and students (Llerena et al. 2002; McCann et al., 2009; Magliano et al. 2014, 2016a; Picco et al. 2019), a diagnostic label of “schizophrenia” was associated with biogenetic causal beliefs, higher relevance to pharmacological treatment, and greater scepticism about the possibility of recovery. Relevant is the impact of prognostic pessimism on the clinical practice of mental health professionals. Biased expectations of the staff may reduce their engagement with PWS and their motivation to achieve therapeutic goals (Koehn, & Cutcliffe, 2007; Kylmä, Juvakka, Nikkonen, Korhonen, & Isohanni, 2006), which in turn may affect patients' adherence and participation to treatment, thus reinforcing the original stereotype of incurability – as a self-fulfilling prophecy (Bressan, Grohs, Matos, & Shergill, 2017). This is particularly important for the professionals working in early psychosis services, as prognostic pessimism may affect the capacity to establish a good relationship with patients and their family members, and to support them in the pathway to recovery, since their first contact with the mental health care system (Odeyemi, Morrissey, & Donohue, 2018).

psychological interventions and more frequently would have involved medical professionals (e.g., psychiatrists or neurologists) in the care of PWS. The findings confirmed previous studies on medical and psychology students (e.g., Magliano et al., 2016a) and supported the idea that the biomedical model of schizophrenia and anti-stigma campaigns based on the “mental illness as an illness like any other” approach may have obscured the relevance of psychosocial treatments for PWS (Cunningham & Peters 2014). There is now compelling evidence that the clinical management of schizophrenia cannot be limited only to pharmacological treatment, and current guidelines recommend that psychological interventions – such as cognitive behavioural therapy (CBT) and family interventions – were offered to PWS and their caregivers, both at the onset and during the subsequent phases of the disease (Kuipers, Yesufu-Udechuku, Taylor, & Kendall, 2014). Consistently with an integrated bio-psycho-social model of schizophrenia (World Health Organization, 2016), academic courses in psychiatry should address this stereotyped view by providing information about the concurrent role of biogenetic and psychosocial risk factors in the development of schizophrenia and about the evidence-based pharmacological, psychological, and rehabilitative interventions.

In this first comparison with other non-medical professionals, nursing students appeared more optimistic about recovery from schizophrenia, compared to psychology students. This is consistent with a previous study on professionals (Caldwell & Jorm 2008), which found a more positive view of long-term outcome of schizophrenia among mental-health nurses than among clinical psychologists. However, the difference was no longer evident in multivariate analyses, when the effect of schizophrenia labelling was taken into account, suggesting that respondents' attitude towards recovery was mostly influenced by a stereotyped view of schizophrenia. Furthermore, the study revealed that respondents' opinions regarding the appropriateness and the efficacy of psychological treatments for schizophrenia were more positive among future psychologists than among nursing students. In this regard, psychology students' opinions may have been influenced by the psychology education received during their undergraduate studies and, possibly, also by their professional choice. Reassuringly, a study on Australian nursing undergraduates found that the perceived efficacy of psychological interventions for schizophrenia significantly improved in the final stage of their coursework, after attending theoretical and practical lessons in mental health nursing, suggesting a potential impact of psychiatric education on such opinions (McCann & Berryman, 2009).

Implications

The association between schizophrenia labelling and the stereotypes of chronicity and incurability may support the current debate about the need to replace the term "schizophrenia" with a less stigmatising one, in the context of correct information about the disease, its causes, course, and recovery (Lasalvia, Penta, Sartorius, & Henderson, 2015; van Os 2009). For instance, there are indications that using the term "psychosis" instead of schizophrenia is associated with more positive attitudes and bio-psycho-social causal models among future psychologists (Magliano, Petrillo, Ruggiero, & Schioppa, 2018). An alternative strategy to reduce the stigmatisation towards PWS involves the interpretation of psychosis in light of a continuum from "normality" to severe mental disorders (Verdoux & van Os, 2002), rather than according to a categorical model (Corrigan et al., 2017; Subramaniam et al., 2017). Acknowledging psychotic experiences as events that, at some point in life and with differing degrees of severity, can be experienced by anyone was found to be related to more positive attitudes and a lower desire for social distance in several population surveys (Angermeyer et al. 2015; Schomerus et al. 2016, 2013). The likely mechanism through which continuum beliefs may contribute to improve opinions toward PWS was related to the increased perception of similarities between the individual and the stigmatized group (Violeau, Valery, Fournier, & Prouteau, 2020). Furthermore, the use of a "person-first language" has also been advocated to refer to people affected with severe mental disorders (e.g., "people with schizophrenia", rather than "schizophrenics"). Emphasising the person, rather than the disability or the diagnostic label, may help future healthcare professionals to communicate respect for the individual, reduce the distance between professionals and service users, and, ultimately, facilitate the provision of recovery-oriented care (Jensen et al. 2013).

The relationship between a biological model of schizophrenia and a greater confidence in

pharmacological treatments underscore the critical role of mental health training in providing future professionals with a comprehensive care model for schizophrenia (Crespo-Facorro et al., 2017; World Health Organization, 2016). Recent systematic reviews pointed out that nursing care in mental health settings is rarely limited to medication administration and surveillance, in particular, when delivered in outpatient services (Ameel, Kontio, & Välimäki, 2019; Frauenfelder, Müller-Staub, Needham, & van Achterberg, 2013). Examples of common interventions are: building on the strengths and improving the functioning of the patients and their caregivers, providing information about the disorder and the management of medications (e.g., psycho-education), and developing therapeutic relationship (Ameel et al., 2019).

Therefore, updated information about the outcome and treatment of schizophrenia may improve the attitude of future nursing and psychology professionals towards PWS, support them in the clinical management of these persons, both in general medicine and psychiatric services, and encourage further training and career in mental health. Promising interventions for improving attitudes towards PWS among nursing and psychology students involved multiple components, such as: information about biological and psychosocial causes of the disorder, as well as the onset, course and recovery from psychotic symptoms, and contact with PWS who live in the community (Fokuo et al., 2017; Lincoln, Arens, Berger, & Rief, 2008; Magliano et al., 2016b; Pingani, Coriani, Galeazzi, Nasi, & Franceschini, 2020).

Limitations

The study has limitations suggesting caution in the interpretation of its results. Since participants were recruited voluntarily, selection bias may have affected the findings. As students' views were examined by explicit measure, biases related to social desirability cannot be excluded. Although efforts were made to ensure the representativeness of the sample, this study involved participants from a single university, and a majority of female students, thus limiting generalizability. Furthermore, the association between schizophrenia labelling, causal beliefs, and opinion on the treatment and outcome of schizophrenia should be interpreted accounting for the potential influence of other non-measured factors, such as personal values, (Norman, Windell, Lynch, & Manchanda, 2011), religious beliefs (Mannarini, Boffo, Rossi, & Balottin, 2018), personality traits (Arvaniti et al. 2009), attachment, and self efficacy (Mannarini, Reikher, Shani, & Shani-Zinovich, 2017).

Conclusions

The study confirmed the associations of schizophrenia labelling with prognostic pessimism and beliefs about the efficacy of pharmacological treatment among future healthcare professionals. Students' opinions were more influenced by schizophrenia labelling and biogenetic causal beliefs rather than by differences between academic degree programs. Education for future nursing and psychology professionals should offer information on the evidence-based pharmacological and psychosocial treatments, and on the current recovery rate from schizophrenia.

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