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Stigma Towards Mental Illness in Portuguese Students of the Integrated Master's Degrees in Medicine, Veterinary Medicine and Pharmaceutical Sciences

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Stigma Towards Mental Illness in Portuguese Students of the Integrated Master's Degrees in Medicine, Veterinary Medicine and Pharmaceutical Sciences

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Dedicatória

At the end of the day, we can endure much more than we think we can.

- Frida Kahlo

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À Prof. Drª Alice, pela acessibilidade, boa disposição e confiança, sempre aliadas ao profissionalismo e exigência máxima. Obrigada por me ter desafiado, no âmbito de uma especialidade médica que tanto aprecio.

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A vida tem formas estranhas de nos fazer dar valor às coisas mais simples. Mas todos os dias acordo otimista e com esperança na Humanidade.

Resumo

Antecedentes: O estigma em relação à doença mental é um problema enfrentado pelos profissionais das ciências da saúde, atuando como uma barreira à prestação de cuidados e à procura de ajuda.

Objetivo: Avaliar o impacto dos programas de ensino de Medicina, Farmácia e Veterinária nas atitudes dos estudantes em relação aos doentes com doença mental, com especial incidência na comparação entre as três áreas de conhecimento.

Métodos: Estudo observacional transversal, envolvendo estudantes do primeiro e do último ano dos Mestrados Integrados em Medicina e em Medicina Veterinária do Instituto de Ciências Biomédicas Abel Salazar (ICBAS) e do Mestrado Integrado em Ciências Farmacêuticas da Faculdade de Farmácia da Universidade do Porto (FFUP), do Porto/Portugal. Para avaliar as atitudes face à doença mental foi utilizado um questionário online, utilizando a versão preliminar portuguesa do Attribution Questionnaire AQ-27. Adicionalmente, foi feito um breve questionário sociodemográfico, que também inquiria sobre o contacto com problemas de saúde mental.

Resultados: Foi considerada para análise uma amostra de 182 alunos, dos quais 78 do Mestrado Integrado em Medicina, 22 do Mestrado Integrado em Medicina Veterinária e 82 do Mestrado Integrado em Ciências Farmacêuticas. Em termos de análise comparativa, os estudantes do primeiro ano de farmácia demonstraram uma pontuação mais elevada na dimensão segregação em comparação com os estudantes do primeiro ano de medicina veterinária e do último ano de medicina. A idade mais jovem e um nível de escolaridade mais baixo corresponderam a pontuações médias mais elevadas nas dimensões de Evitamento e da Segregação. No entanto, os alunos mais velhos apresentaram uma pontuação média mais baixa no domínio da Pena. Os alunos que não têm qualquer tipo de relação com problemas de saúde mental apresentaram uma média mais elevada na dimensão do Evitamento, e aqueles que coabitam com indivíduos com problemas de saúde mental apresentaram uma média mais baixa no domínio Segregação.

Conclusões: O estudo realça a importância de uma melhor compreensão do estigma social em estudantes de diferentes áreas das ciências da saúde, de forma a implementar unidades curriculares ou intervenções académicas que visem a redução do estigma, com a consequente mudança do paradigma associado à doença mental na próxima geração de Profissionais da área das ciências da saúde.

Palavras-chave: Estigma social, Estudantes de medicina, Escolas de medicina, Doença mental, Estudantes de farmácia, Estudantes de veterinária

Abstract

Background: Stigma towards mental illness is a problem faced by health science professionals, acting as a barrier to providing care and seeking help.

Aim: Assess the impact of Medical, Pharmacy and Veterinary education programmes on students' attitudes towards patients with mental illness, with a particular focus on the comparison between the three areas.

Methods: Observational cross-sectional study, involving first and final-year students of the Integrated Master's Degrees in Medicine and Veterinary Medicine at the Abel Salazar Institute of Biomedical Sciences (ICBAS) and the Integrated Master's in Pharmaceutical Sciences at the Faculty of Pharmacy of the University of Porto (FFUP), from Oporto/Portugal. An online self-report questionnaire, using the preliminary Portuguese version of the Attribution Questionnaire AQ-27, was employed to assess attitudes towards mental illness. Additionally, a brief sociodemographic questionnaire was administered, also inquiring about the respondents' close contact with mental illness.

Results: A total of 182 students were considered for analysis, comprising 78 students from the Integrated Master's Degree in Medicine, 22 from the Integrated Master's Degree in Veterinary Medicine and 82 from the Integrated Master's Degree in Pharmaceutical Sciences. In terms of comparative analysis, first-year pharmacy students exhibited a higher score in the Segregation dimension compared to first-year veterinary medicine and final-year medicine students. Younger age and a lower level of education corresponded to higher mean scores in the dimensions of Avoidance and Segregation. However, the older students exhibited a lower mean score in the Pity domain. Students who do not have any kind of relationship with mental health issues demonstrate a higher mean score in the Avoidance dimension, whereas those who cohabited with individuals with mental health problems demonstrated a lower mean score in the Segregation domain.

Conclusion: The study emphasises the importance of a better understanding of social stigma in students from different areas of the health sciences in order to implement curricular units or academic interventions aimed at reducing stigma, with a consequent paradigm shift associated with mental illness in the next generation of healthcare providers.

Keywords: Social stigma, Medical students, Medical schools, Mental Illness, Pharmacy Students, Veterinary Students

Abbreviation List

AQ-27 - Attribution Questionnaire 27-item version

FFUP - Faculty of Pharmacy of the University of Porto

ICBAS - Abel Salazar Institute of Biomedical Sciences

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1. Introduction

The first significant literary approach to stigma is Erving Goffman's 1963 monograph, "Notes on the Management of Spoiled Identity". Here, stigma is described as the result of "an attribute that profoundly discredits its object", involving stereotyping and, ultimately, the segregation of groups. Accordingly, Goffman posits that stigma is the consequence of a convergence of personal attributes and social stereotypes, which culminates in the categorisation of individuals with specific characteristics that are deemed "unacceptable" or "inferior". In other words, stigma encompasses the ascription of pejorative characteristics, such as weakness, dishonesty or dangerousness, to a particular issue or group of people, including those with mental illness[1]. Indeed, current evidence suggests that people with mental illness are often seen as dangerous, unpredictable and aggressive[2].

The measures taken to reduce stigma attached to mental illness, with a particular focus on specific target groups such as students[3-6] and the impact of stigma on help-seeking, care-seeking and participation in treatment among people with mental illness have been the subject of the most attention, along with stigma conceptualisation[7-10]. As a result, individuals with mental illness have frequently reported stigmatising attitudes from health professionals when seeking assistance[11,12]. They have asserted that these attitudes have impeded the quality of care and treatment provided, as well as hindered their recovery due to the negative emotions triggered by their interactions with these professionals[13]. With regard to interventions aimed at reducing stigma, the literature highlights that clinical exposure through curricular placements promoting contact with people with mental illness and specific anti-stigma training have been effective in reducing mental health stigma among students[10,14,15].

Stigma towards people with mental health problems is a pervasive phenomenon, affecting not only the general population but also doctors and other health professionals[16]. The results of previous studies in the literature are inconsistent. Some studies have indicated that health professionals may even exhibit a higher level of stigma than the general population[12,17-19], while others have demonstrated the opposite[20-22]. The higher levels of stigma among health professionals can be explained by the phenomenon of physician bias[11]. Conversely, a more positive attitude on the part of health professionals can be justified by a wider knowledge of mental illness and explained by the "contact hypothesis"[23,24].

In accordance with this hypothesis, numerous studies have demonstrated that interpersonal contact with individuals diagnosed with mental illness is a highly effective method of promoting acceptance as a means of changing attitudes in the general population, particularly among medical

students. Furthermore, these studies have shown that such contact produces superior results to those achieved through the use of theoretical content alone[14,25,26].

Pharmacists, along with other health professionals, play a significant role in the field of mental health[27,28]. The great accessibility of community pharmacies allows them to be closer to individuals with mental illness. Additionally, it allows for the provision of care to those residing in remote geographical areas distant from hospital centres, with pharmacists themselves exerting a greater impact on these populations[27].

In addition to the traditional role of prescribing and providing detailed information about medicines, pharmacists can also contribute to enhancing adherence to treatment, optimising the use of medications and, potentially, reducing hospitalisations[29]. The literature also contains other potential interventions for pharmacists in healthcare multidisciplinary teams[28]. However, those seeking mental health counselling and support are not always aware of the pharmacist's vast role in this field[30]. Conversely, the stigma associated with mental illness is also perceived as a barrier to the implementation of effective pharmaceutical interventions[28,31].

It is of significant importance to target medical and pharmaceutical students as a group when attempting to influence attitudes towards mental illness, as they are the future doctors and pharmacists, playing a role in shaping healthcare culture.

With regard to veterinary students, there is a lack of evidence indicating the presence of social stigma. Nevertheless, several studies have indicated that students in this field exhibit elevated levels of self-stigma, sometimes even higher than other student populations[32,33]. Furthermore, in a manner analogous to the population of veterinary doctors, they experience high rates of mental health issues, including depression, anxiety, and burnout, with a potential high risk of suicide[34,35]. Corrigan differentiates between social stigma and self-stigma, but also points out that the two amplify each other. This is because the latter results from a process of internalisation of the former, in a symbiosis that acts as a barrier to seeking help[7,35]. In fact, social stigma is a predictor of self-stigma, which in turn conditions attitudes towards seeking help, which ultimately influences help-seeking intentions[36].

Therefore, the aim of this study is to analyse and compare the stigma associated with mental illness in students of the Integrated Master's in Medicine and Veterinary Medicine at the Abel Salazar Institute of Biomedical Sciences (ICBAS) and the Integrated Master's in Pharmaceutical Sciences at the Faculty of Pharmacy of the University of Porto (FFUP), from Oporto/Portugal. This analysis will consider first- and final-year students, as all have a final year of professional training, corresponding to the 5th for Pharmaceutical Sciences and the 6th in the other two, allowing for the assessment of the impact of knowledge acquisition and clinical contact on the stigma associated with mental illness. In addition, it will seek to understand how stigma differs in these academic

populations according to their respective areas of interest and knowledge, and whether this difference is evident after specific academic training.

2. Material and methods

2.1. Study design, participants, and procedure

A cross-sectional study was conducted among first- and final-year students of the Integrated Master's in Medicine and Veterinary Medicine at ICBAS, as well as those of the Integrated Master's in Pharmaceutical Sciences at FFUP, Oporto/Portugal. Data was collected via a digital questionnaire, which was disseminated via the university's institutional email and with an appeal to the respective student associations and the respective students overall. Prior to the initiation of the study, official approval was obtained from the ICBAS Ethics Committee (Annex 1). Participation was entirely voluntary, and the data was anonymised.

2.2. Measures

The Attribution Questionnaire 27-item version (AQ-27)[37] (a preliminary version in Portuguese approved for use by the author) and a brief socio-demographic questionnaire, including age, gender, place of birth, education, nationality and marital status (Annex 2), were conducted online. Participants were also queried about their close contact with individuals with mental illness, including whether they reside with them. Additionally, participants were asked about their need for professional assistance with mental health issues. The questionnaire requested respondents to consider any situation of varying severity, affecting thought, mood and/or behaviour, with a significant functional/social impact, as a mental health problem. This included anxiety disorder, depression, eating disorders, bipolar disorder, schizophrenia, psychosis, personality disorders, and other conditions without a necessary medical diagnosis.

The AQ-27 beholds a vignette about a patient with schizophrenia, followed by 27 assertions that must be scored using a 9-point Likert scale, where 1 represents "no or nothing" and 9 represents "very much or completely." The AQ-27 allows for the assessment of nine stereotypes about people with mental illness, including Responsibility, Pity, Anger, Dangerousness, Help, Segregation, and Avoidance. Some of these dimensions are correlated with discriminatory attitudes, such as Responsibility, Dangerousness, Fear, Anger, Coercion, Segregation, and Avoidance. Others are correlated with attitudes of closeness and assistance, such as Help and Pity[38]. The dimension's scores are calculated considering the mean scores obtained for the items covering each dimension. Questions in the avoidance dimension are reverse scored. The questionnaire contains several

alternative vignettes, corresponding to variations in the characteristics of the mental illness assessed, especially regarding severity. The following vignette (Portuguese version) was used in the present study: “Harry is a 30-year-old single man with schizophrenia. Sometimes he hears voices and becomes upset. He lives alone in an apartment and works as a clerk at a large law firm. He has been hospitalized six times because of his illness.”

2.3. Statistical analysis

Descriptive and inferential statistics were used to analyse the data. The data is presented employing measures of central tendency and dispersion for continuous variables and absolute and relative frequencies for categorical variables. To analyse the relationship between variables and between groups, different statistical tests were employed according to the variables enrolled. The analysis of variance (ANOVA) was used to compare means between three or more independent groups (e.g., age groups), and the Scheffe or Tukey tests were used for multiple comparisons. If the assumption of homogeneity of variance was not verified, multiple comparisons were performed considering the Games-Howell test. The T-test was employed to assess statistical significance differences between two independent groups (e.g., level of education). Pearson's correlation coefficient was also used to quantify the linear association between the various dimensions of the AQ-27.

The statistical analysis was conducted using the SPSS software version 29.0. The significance level, α, was set at 0.05. The study was conducted in accordance with the latest version of the Declaration of Helsinki.

3. Results

3.1. Socio-demographic characteristics

The sample comprised of 182 students, 78 (42.86%) of whom were enrolled in the Integrated Master's in Medicine (ICBAS), 22 (12.09%) in Veterinary Medicine (ICBAS), and 82 (45.05%) in the Integrated Master's in Pharmaceutical Sciences (FFUP). The participants were grouped according to age into three ranges: less than or nineteen years old (46.15%), between twenty and twenty-four years old (43.96%), and more than or twenty-five years old (9.89%). The majority of participants were female (81.32%), single (98.35%), Portuguese (99.45%), and from the north of Portugal (83.52%), with an educational level corresponding to the 12th grade (62.64%). Regarding the other questions related to contact and proximity to mental health problems, it was found that only a minority (17.03%) have no personal or close contact with mental health problems, and 42.86% have

never needed professional assistance due to mental health issues. Conversely, 25.27% of respondents indicated that they have personal contact with mental health problems, while 23.08% have a first-degree relative and 32.97% have a relative or close friend with mental health issues. The category "other" encompasses situations in which more than one of these circumstances applies. Of these, 23.63% reside with the individual in question, 40.11% have attended psychological appointments, 13.18% have visited psychiatrists, and 3.30% have attended both. The latter category, "other," includes those who have sought medical assistance from their family physician. All of this data is presented in Table I.

3.2. AQ-27

The mean scores for each of the 27 statements that comprise the AQ-27 are presented in Table II. The dimension with the highest mean score was Help, with two items scoring above 7 on average: "I would be willing to talk to Harry about his problems" and "How likely is it that you would help Harry?". Nevertheless, the statement with the highest average score was ‘If I were in charge of Harry's treatment, I would require him to take his medication’, which relates to the Coercion dimension. The items related to Pity also scored highly, particularly the item ‘How much concern would you feel for Harry?’. This was followed by the Avoidance dimension, with higher mean scores for the items "If I were a landlord, I probably would rent an apartment to Harry" and "If I were an employer, I would interview Harry for a job."

The items with the lowest mean scores belong to the Responsibility dimension, namely “I would think that it was Harry's own fault that he is in the present condition’ and ‘How responsible, do you think, is Harry for his present condition?”, the latter with a maximum score of 6. Another item with a low mean score and a maximum of 6 concerns the question “How angry would you feel at Harry?”, from the Anger dimension.

The dimensions with the highest global mean scores on the AQ-27 were, in descending order, Help, Pity and Coercion. In contrast, Responsibility, Anger and Segregation had the lowest scores (Table III).

Table IV shows the results of the comparison of AQ-27 dimensions according to the Integrated Master's Degree and the respective year of attendance, and significant difference were found in the Segregation dimension ($p<.001$). It can be observed that 1st year Pharmaceutical Sciences students have a higher score in this dimension compared to 1st year Veterinary Medicine and the 6th (final) year of Medicine students. According to this, a comparative analysis of each item on the AQ-27 (Table V) reveals a statistically significant difference in the three items of this dimension. Furthermore, final-year medicine students exhibit a significantly lower score on Q15 compared to

first-year medicine students and both first- and final-year pharmacy students ($p<.001$). With regard to the remaining items, Q5 (Coercion) exhibits a significantly higher mean score among final-year pharmacy students in comparison to first-year medicine students, while Q7 (Avoidance) displays a significantly higher mean score between first-year pharmacy students compared to final-year medicine students ($p<.001$).

Significant differences were found between groups when considering only the integrated master's degrees (grouping first and final year students for each of them) for the Segregation dimension, as well as in the dimensions of Coercion and Fear. Pharmacy students exhibited a higher mean score than medical students in the Fear dimension ($p=0.007$). Similarly, pharmacy students demonstrated a higher mean score than medicine and veterinary students in the Coercion and Segregation dimensions ($p=0.007$ and $p<0.001$, respectively) (Table VI).

The Table VII presents the results of the comparison of AQ-27 dimensions according to age range, and significant differences were found in the dimensions of Avoidance, Pity and Segregation. With regard to Avoidance and Segregation, the group aged nineteen or under demonstrated a higher mean score than the other groups ($p=0.006$ and $p<.001$, respectively). With regards to Pity, the group aged twenty-five or above exhibited a lower mean score in comparison to the other younger groups ($p=0.009$).

As shown in Table VIII, there is also significant differences between level of education' groups in the dimensions of Avoidance and Segregation. The group with a lower level of education, corresponding to the 12th grade, exhibited higher mean scores than the group with higher education (university) in these dimensions ($p=0.008$ and $p<0.001$, respectively).

Additionally, the Avoidance dimension present significant differences according to the relationship with mental health problems (Table IX): those who do not have any kind of relationship with mental health issues demonstrate a higher mean score than those who have a personal relationship with mental health issues and those who have a first-degree relative with a mental health problem ($p=0.041$).

With regard to students who cohabitate with individuals with mental health problems, including first-degree relatives and close family or friends, a lower mean score was observed in the Segregation domain for those who do so than for those who do not ($p = 0.014$, as illustrated in Table X).

Finally, correlations observed between the nine dimensions of the AQ-27 are presented in Table XI.

4. Discussion

The purpose of this study was to assess the differences in social stigma between three areas of interest, with a particular focus on students enrolled in Integrated Master's Degrees in Medicine, Veterinary Medicine and Pharmaceutical Sciences. Additionally, the study aimed to understand the influence of their respective curricula and knowledge acquisition on social stigma by comparing students in the first and final years of their respective master's degrees.

In contrast to a previous study conducted in Portugal which assessed the differences between first- and final-year students of the Integrated Master's Degree in Medicine and demonstrated a significant difference in the Segregation dimension of the AQ-27, with lower scores at the end of the course[39], no statistically significant difference was found between students in the first and final year of the Integrated Master's Degree in Medicine. However, final-year students tend to achieve lower mean scores in several dimensions when compared to first-year students. The literature on the impact of curricular plans and internships in psychiatry in medical schools on social stigma is inconclusive. Some studies have indicated that close contact with individuals with mental illnesses is an effective method of promoting acceptance and a change in attitudes, both among the general population and among medical students[14,25,26] and that psychiatry internships can effectively reduce stigma[16,40-45]. However, other studies conclude that in a long-term follow-up, the results are incongruent, even indicating a decrease in the initial positive impact of the interventions[14,46]. Consequently, some authors propose that medical education has a limited effect on anti-stigma attitudes and that even long-term contact with mentally ill patients does not necessarily result in a change in negative attitudes[47]. Further research is required in this field in order to gain a more comprehensive understanding.

The findings of this study indicate that pharmacy students exhibited a statistically significant higher mean score in the Coercion, Fear and Segregation dimensions, that found to be highly and positively correlated. This suggests a greater tendency to exclude people with mental illness from the community and also reflects an idea that students can better help these patients through medication. In accordance, a study conducted with a population of Portuguese medical students revealed that students who exhibited fear and apprehension towards a colleague with a mental illness were also those who believed that involuntary treatment in a psychiatric hospital would be preferable for the patient[48].

A comparison between students in the first and last year of pharmacy degree revealed no statistically significant differences in any of the dimensions of stigma and items assessed. However, there was a downward trend in Avoidance and Segregation, where the mean scores differed slightly more than in the other dimensions. This may indicate a potential reduction in stigma, since the

desire for social distancing is a way of determining stigma and the discriminatory attitude towards mental illness is correlated with higher scores in those dimensions[38,49,50]. Despite this, there was a tendency for pharmacy students to exhibit higher mean scores than medical students in all parameters, which suggests a greater stigma associated with mental illness.

Pepa P.A. et al. (2021) have shown that a course covering topics such as the role of psychiatric pharmacists, psychotherapy, maternal mental health and new treatments, taught by leading clinicians in the field of psychiatry and designed to be highly interactive, with the particular feature of students being present at community psychiatric interventions, can have an impact on reducing stigma among pharmacy students[51]. In addition to theoretical knowledge of the pathophysiology and pharmacology of mental illness, there is a growing body of literature that emphasises the significance of incorporating modules and content aimed at reducing stigma surrounding mental health disorders in pharmacy education[31,52,53]. Indeed, this can even make students perceive the role of pharmacists in reducing mental health stigma by enhancing mental health education and raising public awareness[31].

In light of the above, it is important to note that the curriculum for the Master's Degree in Pharmaceutical Sciences at FFUP did not include any mandatory subjects that aimed to enhance the understanding of the pathophysiology and implications of mental health issues, nor did it include any subjects that were specifically designed to reduce the stigma associated with mental health. Consequently, the only opportunity for contact with the subject matter occurs during the final internship, which is undertaken by final-year students in community pharmacies. Nevertheless, given the significance of contact with patients with mental health problems, which has been demonstrated to markedly enhance pharmacy students' attitudes towards mental health disorders[52,54], these internships could potentially influence the stigma assessment and could be a rationale for the observed trend.

To the best of our knowledge, this is the inaugural study to examine social stigma in veterinary students and to conduct a direct comparison between students from these three areas of study and knowledge. The fact that there is a considerable drop-out rate during this master's degree means that the sample of final-year students, although proportional, is too small to obtain statistically significant data to compare with the first-year students and to understand the role of the curriculum in possibly changing attitudes and behaviour towards mental illness. Nevertheless, when considering the broader picture of the results for veterinary medicine, it becomes evident that there is a tendency for the scores obtained for the various dimensions and respective questions of the AQ-27 to be closer to those obtained among medical students. It would be beneficial to conduct further research into this population of animal health sciences to ascertain whether anti-stigma

content and interventions or optional curricular units in the field of psychology and psychiatry could have an impact on the stigma experienced by this population.

A comparison of the three master's degrees and a more generalised analysis of the sample surveyed reveals that, in a manner similar to the Portuguese study conducted by Pinto I.C. et al. (2020) on a population of medical students[39], the dimensions of stigma that scored the highest on the AQ-27 were Help, Pity and Coercion, while the dimensions that scored the lowest were Responsibility, Anger and Segregation. This may indicate a global tendency for these to be the most marked dimensions of stigma in health science students.

With regard to age, the results indicated that students aged nineteen and under exhibited higher scores in the dimensions of segregation and avoidance, while older students, belonging to the twenty-five and over age group, exhibited a lower level of pity. These results are also consistent with a previous study carried out on the general population of Swedish, which showed that age-related results were mixed. While younger age was associated with better mental health literacy and a positive intention to interact with mental illness in the future, older age was associated with more positive attitudes in the domains of integration, avoidance and community mental health ideology[55].

The observation that students with a lower level of education scored higher on the Avoidance and Segregation dimensions, denoting greater discrimination, is consistent with the existing literature, which posits that education alone can be an effective strategy for reducing stigma. This is achieved through a more comprehensive understanding of the disease and the potential for treatment[56].

Students who had no previous contact with mental health problems, either personally or through a family member or close friend, exhibited a higher average score on the avoidance dimension. This is consistent with a substantial body of literature indicating that greater familiarity with individuals with mental health problems is associated with a reduction in stigma (Familiarity Effect), which is reflected in a lower desire for social distance[26,53,57-59]. This finding is also consistent with a study conducted in Portugal on a nationwide population of medical students, which demonstrated a reduction in stigma among students who had a personal or family contact with mental illness[48].

In accordance with the aforementioned, the students who cohabite with at least one individual with a mental health problem with whom they have a close relationship also exhibited a notable decline in the mean score for the Segregation dimension.

Although Pinto I.C. et al. (2020)[39] found that those who had been to a psychiatric consultation had a significantly lower Segregation score, no statistically significant difference was identified in the present study.

Limitations

The main limitations of this study is its cross-sectional design and the bias on the sample selection. It would have been preferable to compare the same sample of students when they were in their first year and later in their final year. This would have enabled a more accurate assessment of the impact of the educational programme and the respective internships on social stigma about mental illness. It is not possible to generalise the results, as the sample size is too small to be representative. This is particularly evident in the case of veterinary medicine students, where the sample size, although proportional, is much smaller. Moreover, the results presented here are based on individual responses to a survey that assessed self-reported attitudes, which may be subject to response bias. It is also important to note that although the AQ-27 is a validated stigma assessment tool, a preliminary version is still being used in Portugal. Furthermore, numerous published studies employ alternative instruments for the assessment of stigma, which limits the comparability of results.

5. Conclusion

To the best of our knowledge, this is was an inaugural study to assess the impact of medical, pharmacy and veterinary curricula on students' attitudes towards patients with mental illness, with a particular focus on the comparison between the three areas.

The results of this study emphasise the importance of considering curricula that include anti-stigma subjects or educational content and that promote greater contact with mental health patients in order to improve health science students' attitudes towards mental illness. This could play a significant role in improving the attitudes of these populations, shaping the future culture of healthcare professionals.

Further studies are recommended to assess the need for academic measures to combat negative attitudes and stigma towards mental illness in this target population. The present study indicates that pharmaceutical science students exhibit a higher level of stigma towards psychiatric patients compared to medical and veterinary students. As their role is increasingly recognised in community pharmacies, where they are likely to interact with these patients, it is important to

consider strategies for reducing stigma in this group of students throughout their curriculum. It could therefore be beneficial to evaluate the impact of potential anti-stigma educational models not only at the beginning of training, but also throughout the years of training.

Identifying the stigma dimensions that score highly is a valuable tool for more effectively guiding the planning of potential measures to combat negative attitudes towards mental illness.

Furthermore, it would be beneficial to evaluate the effectiveness of potential anti-stigma educational programmes in reducing social and self-stigma and to determine whether there is a causal relationship between them and a greater propensity for students to seek mental health care at a national level.

6. Annexes

Annex 1 - Official approval obtained by ICBAS Ethics Committee

Exma. Senhora
Dra. Beatriz Campos
ICBAS-UP

v.referência	v.comunicação	n.referência	data
		GS/HCC/18	12.03.2024

Assunto
2024/CE/P18(P429/2023/CETI)

Exma. Senhora Dra. Beatriz Campos,

Informa-se que o Trabalho Académico de Investigação com o título "Estigma em relação à Doença Mental em Estudantes Portugueses dos Mestrados Integrados em Medicina, Medicina Veterinária e Ciências Farmacêuticas", com a referência 2024/CE/P18(P429/2023/CETI), submetido à Comissão de Ética conjunta CHUSA/ICBAS, foi apreciado em reunião plenária de 07 de fevereiro de 2024, tendo obtido parecer favorável nessa data.

Com os nossos cumprimentos,

O Diretor,

Assinado por: **HENRIQUE JOSÉ CYRNE DE CASTRO MACHADO CARVALHO**
Num. de Identificação: 03661011
Data: 2024.03.13 14:02:54+00'00'
Certificado por: **Diário da República**
Atributos certificados: **Diretor do Instituto de Ciências Biomédicas Abel Salazar da Universidade do Porto - Universidade do Porto**
CARTÃO DE CIDADÃO

(Prof. Doutor Henrique Cyrne Carvalho)

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PR

Annex 2 - Survey applied including informed consent, sociodemographic questionnaire, questions about close contact with mental illness and The Attribution Questionnaire (AQ-27) (a preliminary version in Portuguese approved for use by the author)

Stigma Towards Mental Illness

Car@ Participante,

O presente questionário tem como objetivo a recolha de dados que serão analisados no âmbito da Dissertação de Mestrado do 6º ano do Mestrado Integrado em Medicina, num estudo que pretende avaliar o Estigma Social dos estudantes acerca da Doença Mental.

Ao preencher e submeter este questionário, concorda com a recolha e utilização das respostas para o propósito declarado acima. Os dados recolhidos serão tratados de forma confidencial e utilizados apenas para efeitos do presente estudo. Para além disso, não serão recolhidas informações pessoais que possam identificar nenhum dos participantes, garantindo o anonimato.

Dados Sociodemográficos

1. Sexo: Feminino/Masculino/Prefiro não dizer

2. Idade: 17/18/19/20/21/22/23/24/25-30/30-40/>40

3. Estado Civil: solteir@/casad@/divorciad@/viúv@/união de facto/outro

4. Nacionalidade: Portuguesa / Outra: ___________

5. Natural de (concelho/distrito): _________________

6. Nível de escolaridade completo: 12º ano/Licenciatura/Mestrado/ Doutoramento/Pós-graduação não conferente de grau/outro

7. Considere um Problema de Saúde Mental como uma situação de gravidade variável, que afeta o pensamento, o humor e/ou o comportamento, com impacto funcional/social significativo, e que inclui perturbação de ansiedade, depressão, perturbações do comportamento alimentar, perturbação bipolar, esquizofrenia, psicose, perturbações de personalidade, entre outras, sem necessário diagnóstico médico conhecido

   - Tem relação com pessoas com problema(s) de saúde mental?
   Pessoal
   Familiar 1º grau
   Familiar/Amigo próximo
   Nenhum
   Outro:

   - Se alguma vez precisou de ajuda profissional devido a questões de saúde mental, que tipo de ajuda foi?
   Consultas de psicologia
   Consultas de psiquiatria
   Nenhum
   Outro

   - Se selecionou Familiar/Amigo próximo, vive com alguma(s) dessa(s) pessoa(s)?
   Sim/Não/Não se aplica

8. Aluno do Mestrado Integrado em:
   Medicina/ICBAS / Medicina Veterinária/ICBAS / Ciências Farmacêuticas/FFUP / Outro

9. Ano Curricular (conforme consta no boletim de inscrição): 1º,2º,3º,4º,5º,6º

QUESTIONÁRIO DE ATRIBUIÇÃO AQ-27

(Versão portuguesa elaborada para investigação por S. Sousa, C. Queirós, A. Marques, N. rocha & A. Fernandes (2008), traduzido do original A.Q. – 27 (P. Corrigan et al., 2003) com autorização de P. Corrigan para adaptação em Portugal[1])

POR FAVOR LEIA A SEGUINTE INFORMAÇÃO SOBRE O JOSÉ:

O José é um homem com 30 anos de idade, solteiro e com Esquizofrenia. Às vezes ouve vozes e fica perturbado. O José vive sozinho num apartamento e trabalha como estafeta num grande escritório de advogados. Já foi internado seis vezes devido à sua doença.

AGORA RESPONDA A CADA UMA DAS QUESTÕES QUE SE SEGUEM SOBRE O JOSÉ. MARQUE COM UMA CRUZ O NÚMERO QUE MELHOR CORRESPONDE À SUA RESPOSTA, SENDO 1 - NÃO/NADA/POUCO PROVÁVEL e 9- SIM/MUITO/MUITO PROVÁVEL

1. Eu iria sentir-me incomodado pelo José

1	2	3	4	5	6	7	8	9

2. Eu iria sentir-me inseguro perto do José

1	2	3	4	5	6	7	8	9

3. O José iria assustar-me

1	2	3	4	5	6	7	8	9

4. Até que ponto ficaria zangado com o José?

1	2	3	4	5	6	7	8	9

5. Se eu fosse responsável pelo tratamento do José, pediria para ele tomar a medicação

1	2	3	4	5	6	7	8	9

6. Penso que o José coloca a sua vizinhança em risco se não for internado

1	2	3	4	5	6	7	8	9

7. Se eu fosse um empregador, entrevistaria a José para um emprego

1	2	3	4	5	6	7	8	9

8. Eu estaria disposto a conversar com o José sobre os seus problemas

1	2	3	4	5	6	7	8	9

9. Eu iria sentir piedade pelo José

1	2	3	4	5	6	7	8	9

10. Eu iria pensar que o José é o culpado da sua situação atual

1	2	3	4	5	6	7	8	9

11. Até que ponto acha que é controlável a causa da situação atual do José?

1	2	3	4	5	6	7	8	9

12. Até que ponto se sentiria irritado com o José?

1	2	3	4	5	6	7	8	9

13. Até que ponto sentiria que o José é perigoso?

1	2	3	4	5	6	7	8	9

14. Até que ponto concorda que o José deveria ser forçado a tratar-se com o seu médico mesmo que ele não quisesse?

1	2	3	4	5	6	7	8	9

15. Eu penso que seria melhor para a comunidade onde o José está inserido se ele fosse colocado num hospital psiquiátrico

1	2	3	4	5	6	7	8	9

16. Eu partilharia uma boleia de carro com o José, todos os dias

1	2	3	4	5	6	7	8	9

17. Até que ponto acha que um asilo, onde o José pudesse estar afastado da sua vizinhança, seria o melhor local para ele?

1	2	3	4	5	6	7	8	9

18. Eu iria sentir-me ameaçado pelo José

1	2	3	4	5	6	7	8	9

19. Até que ponto sentiria medo do José?

1	2	3	4	5	6	7	8	9

20. Até que ponto estaria disposto a ajudar o José?

1	2	3	4	5	6	7	8	9

21. Até que ponto tem a certeza de que iria ajudar o José?

1	2	3	4	5	6	7	8	9

22. Até que ponto sentiria pena do José?

1	2	3	4	5	6	7	8	9

23. Até que ponto acha que o José é responsável pela sua situação atual?

1	2	3	4	5	6	7	8	9

24. Até que ponto se iria sentir assustado pelo José?

1	2	3	4	5	6	7	8	9

25. Se eu fosse responsável pelo tratamento do José, iria forçá-lo a viver numa residência comunitária?

1	2	3	4	5	6	7	8	9

26. Se eu fosse senhorio, provavelmente alugaria um apartamento ao José

1	2	3	4	5	6	7	8	9

27. Até que ponto se iria preocupar com o José?

1	2	3	4	5	6	7	8	9

Annex 3 Table I - Socio-demographic characteristics of the sample (n=182)

Variable	Frequency (n)	Percentage (%)
Gender		
Female	148	81.32
Male	31	17.03
Prefer not to say	3	1.65
Civil Status		
Single	179	98.35
Married	2	1.10
Divorced	1	0.55
Age Range		
≤ 19	84	46.15
20-24	80	43.96
≥ 25	18	9.89
Nationality		
Portuguese	181	99.45
Other	1	0.55
Birth Place / Natural from		
North	152	83.52
Centre	14	7.69
Metropolitan Area of Lisbon	3	1.65
Islands	7	3.84
Foreign	3	1.65
Prefer not to say	3	1.65
Education level		
12th grade	114	62.64
University	68	37.36
Relationship with mental health problems		
Personal	46	25.27
First-degree relative	42	23.08
Close relative or friend	60	32.97
None	31	17.03
Other	3	1.65
Lives with one or more of the aforementioned individuals (with mental health problems)		
Yes	43	23.63
No	58	31.87
Not applicable	81	44.50
If ever required professional assistance due to mental health concerns, what kind of help		
Psychology appointments	73	40.11
Psychiatry appointments	24	13.18
Both	6	3.30
None	78	42.86
Other (MGF)	1	0.55
Student of the Integrated Master's Degree in		
Medicine/ICBAS	78	42.86
Pharmaceutical Sciences/FFUP	82	45.05
Veterinary Medicine/ICBAS	22	12.09
Year and Integrated Master's Degree		
1st/Medicine	33	18.13
6th/Medicine	45	24.73
1st/Pharmaceutical Sciences	50	27.47
5th/Pharmaceutical Sciences	32	17.58
1st/Veterinary Medicine	16	8.79
6th/Veterinary Medicine	6	3.30

Annex 4

Table II - Descriptive analysis for each item of the AQ-27

Item	Statement	Dimension	Min	Max	Mean	SD
Q1	I would feel aggravated by Harry.	Anger	1	9	3.60	1.93
Q4	How angry would you feel at Harry?		1	6	1.95	1.23
Q12	How irritated would you feel by Harry?		1	7	2.38	1.49
Q7	If I were an employer, I would interview Harry for a job.	Avoidance	1	9	6.24	2.02
Q16	I would share a car pool with Harry every day.		1	9	5.31	2.21
Q26	If I were a landlord, I probably would rent an apartment to Harry.		1	9	6.42	2.02
Q5	If I were in charge of Harry's treatment, I would require him to take his medication.	Coercion	1	9	7.88	1.66
Q14	How much do you agree that Harry should be forced into treatment with his doctor even if he does not want to?		1	9	5.16	2.39
Q25	If I were in charge of Harry's treatment, I would force him to live in a group home.		1	7	2.27	1.63
Q2	I would feel unsafe around Harry.	Dangerousness	1	9	3.66	1.91
Q13	How dangerous would you feel Harry is?		1	9	3.56	1.89
Q18	I would feel threatened by Harry.		1	9	2.69	1.56
Q3	Harry would terrify me.	Fear	1	9	3.57	2.00
Q19	How scared of Harry would you feel?		1	9	3.10	1.76
Q24	How frightened of Harry would you feel?		1	9	3.20	1.90
Q8	I would be willing to talk to Harry about his problems.	Help	1	9	7.79	1.56
Q20	How likely is it that you would help Harry?		1	9	7.62	1.50
Q21	How certain would you feel that you would help Harry?		2	9	6.24	1.80
Q9	I would feel pity for Harry.	Pity	1	9	6.87	2.05
Q22	How much sympathy would you feel for Harry?		1	9	6.17	2.25
Q27	How much concern would you feel for Harry?		1	9	7.35	1.51
Q10	I would think that it was Harry's own fault that he is in the present condition.	Responsibility	1	9	1.33	0.98
Q11	How controllable, do you think, is the cause of Harry's present condition?		1	9	4.97	2.27
Q23	How responsible, do you think, is Harry for his present condition?		1	6	1.45	0.98
Q6	I think Harry poses a risk to his neighbours unless he is hospitalized.	Segregation	1	9	3.14	1.87
Q15	I think it would be best for Harry's community if he were put away in a psychiatric hospital.		1	9	2.88	1.80
Q17	How much do you think an asylum, where Harry can be kept away from his neighbours, is the best place for him?		1	8	2.08	1.45

Max = maximum; Min = minimum; SD = standard deviation

Annex 5

Table III - Descriptive analysis for each dimension in the AQ-27

Dimension	Min	Max	Mean	SD
Anger	1	6.33	2.64	1.20
Avoidance	1	8.67	4.01	1.67
Coercion	1	8	5.10	1.35
Dangerousness	1	9	3.30	1.61
Fear	1	9	3.29	1.76
Help	2.67	9	7.21	1.30
Pity	2	9	6.80	1.48
Responsibility	1	6.33	2.58	1.02
Segregation	1	7.67	2.70	1.42

Max = maximum; Min = minimum; SD = standard deviation

Annex 6

Table IV - Comparison of AQ2-7 dimensions according to the Master's Degree and year

Item	n	Mean	SD	ANOVA (F)	p
Anger				0.408	0.843
Avoidance				2.159	0.061
Coercion				1.991	0.082
Dangerousness				0.802	0.550
Fear				2.119	0.065
Help				0.128	0.986
Pity				1.633	0.154
Responsibility				0.845	0.519
Segregation				8.142	<.001*
1st/Medicine	33	2.75	1.32		
6th/Medicine	45	1.99	0.99		
1st/Pharmaceutical Sciences	50	3.53	1.57		
5th/Pharmaceutical Sciences	32	2.80	1.21		
1st/Veterinary Medicine	16	2.21	1.37		
6th/Veterinary Medicine	06	1.67	0.60		

SD = standard deviation; *p < 0.050

Annex 7

Table V - Comparison of AQ2-7 items according to the Master's Degree and year

Item	Dimension	N	Mean	SD	ANOVA (F)	p
Q1	Anger				0.607	0.694
Q4					0.828	0.531
Q12					0.788	0.56
Q7	Avoidance				3.208	0.008*
6th/Medicine		45	2.82	1.63		
1st/Pharmaceutical Sciences		50	4.34	2.08		
Q16					1.414	0.222
Q26					0.556	0.734
Q5	Coercion				3.279	0.007*
1st/Medicine		33	7.18	1.94		
5th/Pharmaceutical Sciences		32	8.34	1.31		
Q14					1.155	0.334
Q25					2.119	0.065
Q2	Dangerousness				0.2	0.962
Q13					0.95	0.45
Q18					1.796	0.116
Q3	Fear				2.065	0.072
Q19					2.225	0.054
Q24					1.658	0.147
Q8	Help				0.944	0.454
Q20					0.514	0.766
Q21					0.119	0.988
Q9	Pity				0.875	0.499
Q22					1.606	0.161
Q27					1.094	0.365
Q10	Responsibility				0.906	0.478
Q11					0.708	0.618
Q23					0.479	0.791
Q6	Segregation				3.460	0.005*
6th/Medicine		45	2.73	1.91		
1st/Pharmaceutical Sciences		50	3.88	1.83		
1st/Veterinary Medicine		16	2.38	2.00		
Q15[a]					7.792	<.001
1st/Medicine		33	3.15	1.82		
6th/Medicine		45	1.87	1.12		
1st/Pharmaceutical Sciences		50	3.82	1.99		
5th/Pharmaceutical Sciences		32	3.06	1.56		
Q17[a]					6.680	<.001
6th/Medicine		45	1.36	0.65		
1st/Pharmaceutical Sciences		50	2.9	1.85		

SD = standard deviation; $^{*}p < 0.050$; [a]Multiple comparison performed by the Games-Howell test

Annex 8

Table VI - Comparison of AQ-27 dimensions according to the Master's Degree

Item	n	Mean	SD	ANOVA (F)	p
Anger				0.335	0.715
Avoidance				1.908	0.151
Dangerousness				1.983	0.141
Help				0.195	0.823
Pity				2.722	0.068
Responsibility				1.765	0.174
Coercion				5.044	0.007*
Medicine	78	4.89	1.31		
Pharmaceutical Sciences	82	5.44	1.27		
Veterinary Medicine	22	4.62	1.58		
Fear				5.097	0.007*
Medicine	78	2.95	1.75		
Pharmaceutical Sciences	82	3.74	1.64		
Segregation				12.82	<.001*
Medicine	78	2.31	1.20		
Pharmaceutical Sciences	82	3.25	1.48		
Veterinary Medicine	22	2.06	1.22		

SD = standard deviation; *p < 0.050

Annex 9

Table VII - Comparison of AQ-27 dimensions according to age range

Item		n	Mean	SD	ANOVA (F)	P
Anger					0.691	0.503
Coercion					0.040	0.961
Dangerousness					0.711	0.493
Fear					0.527	0.591
Help					0.842	0.433
Responsibility					0.086	0.918
Avoidance					5.183	0.006*
Age	≤ 19	84	4.41	1.57		
	20-24	80	3.75	1.68		
	≥ 25	18	3.31	1.74		
Pity					4.792	0.009*
Age	≤ 19	84	6.92	1.35		
	20-24	80	6.90	1.52		
	≥ 25	18	5.80	1.54		
Segregation[a]					8.033	<.001*
Age	≤ 19	84	3.13	1.60		
	20-24	80	2.40	1.15		
	≥ 25	18	2.06	0.98		

SD = standard deviation; *p < 0.050; [a]Multiple comparison performed by the Games-Howell test

Annex 10

Table VIII - Comparison of AQ-27 dimensions according to previous Education Level

Item	n	Mean	SD	t (df=180)	p
Anger				0.516	0.607
Coercion				0.788	0.432
Dangerousness				0.782	0.435
Fear				0.866	0.388
Help				0.776	0.439
Pity				1.770	0.078
Responsibility				0.843	0.400
Avoidance				2.690	0.008*
12th grade	114	4.27	1.58		
University	68	3.59	1.75		
Segregation				3.812	<.001*
12th grade	114	3.00	1.49		
University	68	2.20	1.12		

SD = standard deviation; df = degrees of freedom; *p < 0.050

Annex 11

Table IX - Comparison of AQ-27 dimensions according to relationship with mental health problems

Item	n	Mean	SD	ANOVA (F)	p
Anger				0.062	0.993
Coercion				0.783	0.538
Dangerousness				0.446	0.775
Fear				0.095	0.984
Help				0.976	0.422
Pity				0.197	0.939
Responsibility				0.742	0.564
Segregation				2.105	0.082
Avoidance				2.556	0.041*
Personal	46	3.69	1.64		
1st-degree relative	42	3.67	1.73		
Close relative/friend	60	4.11	1.62		
None	31	4.76	1.59		
Other	3	4.11	1.68		

SD = standard deviation; *$p < 0.050$

Annex 12

Table X - Comparison of AQ-27 dimensions according to cohabitation with individuals with mental health problems

Item	n	Mean	SD	t (df=99)	P
Anger				0	1
Avoidance				1.016	0.312
Coercion				-0.796	0.428
Dangerousness				0.009	0.993
Fear				-0.681	0.497
Help				0.325	0.746
Pity				-0.390	0.698
Responsibility				0.332	0.74
Segregation				2.515	0.014*
no cohabitation	58	2.85	1.29		
cohabitation	43	2.19	1.31		

SD = standard deviation; df = degrees of freedom; *p < 0.050

Table XI - Correlation between different AQ-27 dimensions (Pearson's correlation coefficient)

	Anger	Avoidance	Coercion	Dangerousness	Fear	Help	Pity	Responsibility	Segregation
Anger	1								
Avoidance	0.411*	1							
Coercion	0.226[1]	0.263*	1						
Dangerousness	0.674*	0.497*	0.353*	1					
Fear	0.666*	0.497*	0.362*	0.886*	1				
Help	-0.295*	-0.418*	0.036	-0.214[1]	-0.188[1]	1			
Pity	0.068	0.115	0.239[1]	0.136	0.185[1]	0.299*	1		
Responsibility	0.219[1]	0.101	0.281*	0.218[1]	0.208[1]	-0.048	0.028	1	
Segregation	0.413*	0.477*	0.486*	0.531*	0.526*	-0.141	0.215[1]	0.258*	1

[1] $p < 0.05$
*$p<0.001$

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