

Ruth Gervás¹
Llanyra García-Ullán²
Víctor Amor³
Alberto Bullón⁴
Purificación Vicente Galindo⁵
Carlos Roncero⁶

Effectiveness and types of interventions to reduce mental illness-related stigma among Medical university students: A literature review (1997-2020)

¹ PhDc, Pys, MSc, Department of Medicine. Psychiatry Area (University of Salamanca) Salamanca, Spain; Associate Investigator, IBSAL (Institute of Biomedicine of Salamanca) University Hospital of Salamanca; Salamanca, Spain. <https://orcid.org/0000-0002-5250-9592>.

² Professor, MD, PhD, Department of Medicine. Psychiatry Area (University of Salamanca), Salamanca, Spain. Psychiatrist of Psychiatry Service (Health Care Complex of Salamanca) Salamanca, Spain. Associate Investigator, IBSAL (Institute of Biomedicine of Salamanca), University Hospital of Salamanca; Salamanca, Spain. <https://orcid.org/0000-0001-7023-4935>.

³ Professor, PhD, Department of Medicine. Statistics Area (University of Salamanca), Salamanca, Spain. <https://orcid.org/0000-0003-0313-0196>.

⁴ Psychiatrist, MD, Psychiatry Service (Health Care Complex of Salamanca) Salamanca, Spain.

⁵ Professor, PhD, Department of Medicine. Statistics Area (University of Salamanca), Salamanca, Spain. <https://orcid.org/0000-0002-5854-273X>.

⁶ Professor, MD, PhD, Department of Medicine. Psychiatry Area (University of Salamanca), Salamanca, Spain. Head of Psychiatry Service (University of Salamanca Health Care Complex) Salamanca, Spain. Principal Investigator, IBSAL (Institute of Biomedicine of Salamanca) University Hospital of Salamanca; Salamanca, Spain. <http://orcid.org/0000-0003-1421-7385>

ABSTRACT

There is a high prevalence of stigma among medical students towards mental illness, which can have far reaching negative consequences. It is essential to intervene and modify their preconceptions in order to fight against stigma. The objective of this study is to describe the types and effectiveness of interventions to reduce mental illness-related stigma among medical university students through a review of the literature published from 1997 to 2020. A systematic search was carried out in the following databases: PubMed, Web of Science (WOS) and Cochrane Library, following the PRISMA methodology. After the search, 87 manuscripts were found.

49 documents met the selection criteria, and 6 additional texts were included after a search for related studies. 44 stu-

dies were assessed, with a global participation of 20.196 MEDICINE students. In 97% of the cases, the methods of intervention for the reduction of stigma towards mental disorders (TM) were effective. 16 different types of interventions were found, with a limited number of methodologies. Teaching practices are the most effective in the long-term, together with a positive medical understanding, the search for help and the in vivo experiential contact, which are presented as strong strategies to combat stigmatizing attitudes.

Keywords. *Stigma, mental illness, interventions, medical students.*

Actas Esp Psiquiatr 2022;50(2):106-13

EFICACIA Y TIPOS DE INTERVENCIONES PARA REDUCIR EL ESTIGMA HACIA LA ENFERMEDAD MENTAL EN ESTUDIANTES UNIVERSITARIOS DE MEDICINA: UNA REVISIÓN DE LA LITERATURA (1997-2020)

RESUMEN

Entre los estudiantes de medicina existe una alta prevalencia de estigma hacia la enfermedad mental, lo que puede provocar consecuencias negativas de gran alcance. Es de gran importancia intervenir y modificar las cogniciones en los futuros médicos para luchar contra el estigma. El objetivo de este trabajo es describir los tipos y la efectividad

* Autores de correspondencia:

Ruth Gervás PhDc
Medicine University of Salamanca,
Department of Psychiatry and Medical Psychology
Paseo de la Universidad de Coimbra S/N, Tel: +34 923 291100 ext. 55456;
37007, Salamanca, Spain.
E-mail: ruthgervas@usal.es

Dr. Carlos Roncero
University of Salamanca Health Care,
Paseo de San Vicente 58-182,
37007 Salamanca, Spain. Tel: +34 923 291100 ext. 55448;
E-mail: croncero@saludcastillayleon.es

de las intervenciones para la reducción del estigma hacia las enfermedades mentales entre los estudiantes de medicina a través de una revisión de la literatura existente de 1997 a 2020. Se realizó una búsqueda sistemática en las bases de datos: PubMed, Web of Science (WOS) y Cochrane Library según la metodología PRISMA. Se localizaron un total de 87 manuscritos, tras la lectura de sus resúmenes se procedió a la exclusión de 49 por no adaptarse a los parámetros de estudio. Se seleccionaron 38 documentos que cumplieran con los criterios de inclusión y 6 añadidos de búsquedas relacionales. Se evaluaron 44 estudios con una participación de global de 20.196 estudiantes de medicina. En el 97% las metodologías de intervención de reducción de estigma fueron eficaces. Se hallaron 16 tipos de intervenciones diferentes que presentan alta heterogeneidad metodológica. Las intervenciones aplicadas para la reducción del estigma hacia los trastornos mentales (TM) entre los estudiantes de medicina demuestran efectividad prácticamente en su mayoría. Las prácticas educativas las más eficaces a largo plazo, junto con la comprensión médica positiva, la búsqueda de ayuda y el contacto experiencial en vivo, se presentan como fuertes estrategias de combate hacia las actitudes estigmatizantes.

Palabras clave. *Estigma, enfermedad mental, intervenciones, estudiantes de medicina.*

INTRODUCTION

Mental disorders (MD) are characterized by a combination of alterations of behavior, thought, perception, emotions, and relationships with others. The global burden of disease of mental disorders occupies the 11th position out of 88 items. According to the WHO¹, the prevalence of MD is on the increase, with considerable effect on people's health, and with severe socioeconomic and human rights consequences.

One of the barriers in the care of these patients is the stigma towards mental illness², which is considered a multidimensional construct that may vary its presentation depending on the context and the relationships that take place in it³. The combination of these constructs encompasses different aspects, from "*problems of knowledge*", which cause a massive lack of knowledge on mental health and MD, and which are directly related to generalized ignorance on this topic, to "*Negative stereotypes*", which are the social attributions that define a person with MD, together with the attitudes or the predisposition of the society, to "*Prejudice*". Therefore, all these constructs are translated into a negative discriminatory behavior that integrates the normative influences of stigma and the co-occurrence of its components (labeling, stereotyping, separation, status loss and discrimination). For stigmatization to occur, power must be exercised⁴. Stigma is considered a global public

health challenge⁵ and it has worse consequences than the mental illnesses themselves⁶. Although the existence of mental illness has been described among medical students, there is a high prevalence of stigma among them⁷, which can have far-reaching negative consequences in the future management of patients.

The most common discriminatory behaviors among students are *avoidance, rejection, abuse* (usually in the form of mockery and insults), *overprotection* and *control*. It all leads to the concealment of the diagnosis as a self-defense mechanism in people with MD⁸. It is important to intervene and modify the preconceptions of future doctors in order to fight against stigma⁹.

The objective of this study is to describe the *types and effectiveness of interventions to reduce mental illness-related stigma among medical university students* through a review of the literature published from 1997 to 2020.

METHODS

A systematic search was carried out in the following databases: PubMed, Web of Science (WOS) and Cochrane Library, following the PRISMA methodology¹⁰, (Preferred Reporting Items for Systematic reviews and Meta-Analyses). A combined search strategy was applied in PubMed in order to obtain publications with information on the prevalence of stigma and interventions to reduce it. The search included the following MeSH entry terms: [stigma], [mental health] and [medical students], with the following filters: review, abstract, full text, publication date from 1997/01/01 to 2020/12/31 and species: "Humans". No language filters were applied.

The following search details were applied: (("social stigma"[MeSH Terms] OR ("social"[All Fields] AND "stigma"[All Fields]) OR "social stigma"[All Fields] OR "stigma"[All Fields]) AND ("mental health"[MeSH Terms] OR ("mental"[All Fields] AND "health"[All Fields]) OR "mental health"[All Fields]) AND ("students, medical" [MeSH Terms] OR ("students"[All Fields] AND "medical"[All Fields]) OR "medical students"[All Fields] OR ("medical"[All Fields] AND "students"[All Fields]))) AND (Review[ptyp] AND ("1997/01/01"[PDAT]: "2020/12/31"[PDAT]) AND "humans"[MeSH Terms]).

After the search, 87 manuscripts were found, and after reading their abstracts, 38 were excluded because they did not match the parameters of the study. Finally, 44 documents were selected that met the criteria: (i) medical students, (ii) information on mental illness-related stigma, and (iii) an intervention to reduce the stigma. Six additional texts were included after a search for related studies.

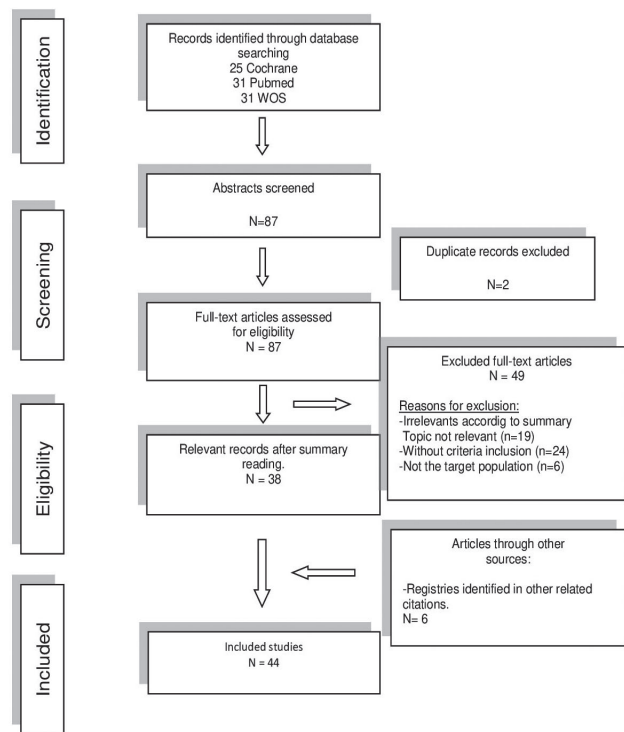


Figure 1 PRISMA-Flow diagram

RESULTS

In our review, 44 studies were assessed, with a global participation of 20.196 MEDICINE students. In 97% of the cases, the methods of intervention for the reduction of stigma were effective. In total, 16 different types of interventions were found, with a with a limited number of methodologies.

There was a predominance of interventions in "teaching practices" with regard to the number of studies (23%) compared with "direct contact" interventions, including filmed interventions and role-playing interventions, with regard to the number of students who participated in them (6762 students, 6% of the studies). The origin of the students was varied, with a predominance of students from Asia and Europe.

We found that interventions based on "social contact"^{11, 12}, "teaching practices"^{6, 13, 14, 15, 16, 17, 18}, "direct contact"¹⁹, "filmed contact"²⁰, "contact with recovered patients"²¹, "educational emails"²² and "in vivo exposure"^{23, 24}, generally led to short-term behavior improvements (which persisted after 12 months), but with fewer instances of long-term improvement¹⁷ and they only led

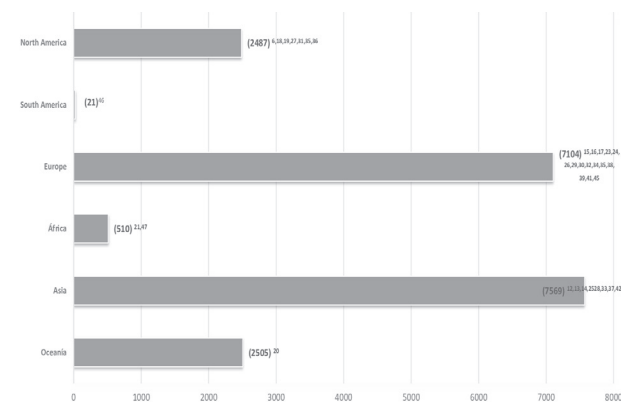


Figure 2 Distribution number of students by continent

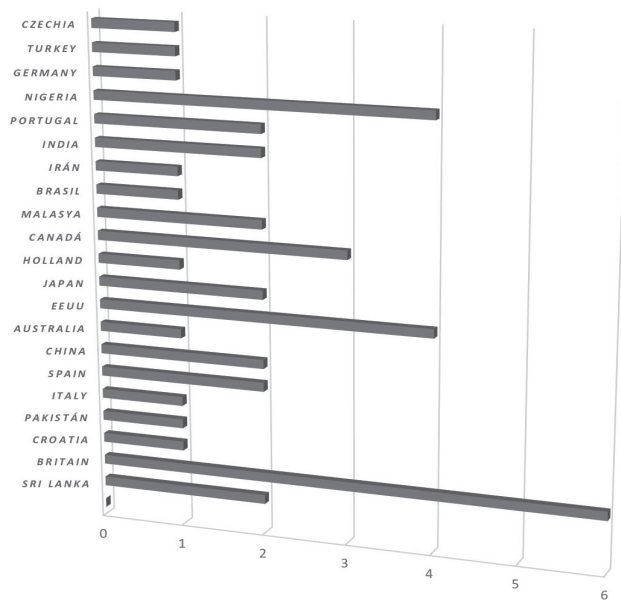


Figure 3 Distribution of countries by publications

to knowledge gain in a few cases. "Personal experience" and "family members" (760) were associated with less stigmatizing attitudes¹¹ and they have been shown as an essential factor for an increase in empathy²³ which promotes the respect and dignity of patients with mental illness¹¹. The role-playing intervention was the only one which did not show any benefits²⁵.

Preconceptions affect the perception of students (an improvement in the attitude was observed associated with increased knowledge of mental health (144) and confidence in their future career²⁶ which means that it is necessary to modify them.

Table 1		
Interventions used to reduce the stigma, measures, and results. (EM): Mental illness. (OMS-HC): Scale of Open Minds for Health Service Providers. (IAT): Implicit association test. (MCRS): Medical Conditions Consideration Scale. (MICA): Scale mental illness-attitudes of doctors. (ESEM): exploratory modeling of structural equations.		
<i>Interventions</i>	<i>Measure instruments</i>	<i>Results</i>
<i>Educational practices.</i> <i>Short course on stigma</i>	OMS-HC IAT MCRS MICA	Better evaluation of the disease. Significant and effective anti-stigma intervention. More research needed.
<i>Personal experiences or family members</i>	MCRS T independent simples, ANOVA	Less stigmatizing attitudes. The most effective is direct contact.
<i>Online surveys</i>	Random reinforcers Course E-learning	The intervention improved mental health knowledge, confidence to help and for the future career. Existence of non-participation bias.
<i>Self-reported semi-structured questionnaires</i>	ESEM OMS-HC	Positive effects. Negative attitudes were the lowest among medical students. Specific knowledge of psychiatry reduces stigma.
<i>Cross-sectional survey</i>	Questionnaires 45 items	Best in 3rd year students for Anti-stigma module against EM. Less stigma for 4th grade students due to greater exposure to curriculum psychiatry. Self-stigma improvement.
<i>Images presentation</i>	Schizophrenia images	Improved contact and interaction with people with mental disorders
<i>Anonymous questionnaire</i>	Lickert Scale	Finding of identical negative emotions towards MS among doctors and medical students.
<i>Non-randomized controlled trial</i>	Random essay, face to face or video+educational conference	Training in real stigma, didactic teaching and self-directed learning, showed greater improvements in knowledge about depression and improvements in attitudes about depression.
<i>Factorial analysis</i>	<i>Factorial analysis</i>	Medical care students more positive attitudes towards MS. Need for curricular intervention in education.
<i>Voice simulation</i>	<i>Voice simulation</i>	Effectiveness. students saw simulation as an effective teaching methodology.
<i>READead:</i>	An anti-stigma training for medical students towards patients with mental illness; included educational practices, Self-reported semi-structured questionnaires, Images presentation.	Minimise perceived discriminatory behaviours and increase opportunities for patients, therefore developing the ability of future doctors to address and challenge mental illness related discrimination.
<i>Social contact and films</i>	<i>Social contact and films</i>	Social contact or video-based social contact interventions appeared to be the most effective in improving attitudes and reducing the desire for social distance..
<i>Autobiographical narratives</i>	Single test	Complementary campaign therapy against stigma. Decreased self-stigma, immediate positive effects on variables with the stigma behind.
<i>Augmented reality in real time. Live exhibition.</i>	<i>Augmented reality in real time. Live exhibition</i>	Good educational resource for stigma reduction.
<i>Direct contact tests + filming</i>	<i>Direct contact tests + filming</i>	The most effective. Tests direct contact reduction of stigma maintained after 12 months.
<i>Role plays.</i>	<i>Role plays.</i>	Role play only ineffective intervention. There is no evidence of long-term benefits. Damages self-stigma.

In the intervention with "semi-structured self-administered questionnaires" (648), addictions (to drugs and alcohol) were subject to a greater general stigma than schizophrenia, depression, panic disorder and dementia. Students were particularly prone to blaming the patients²⁷, which leads to increased self-stigma. With regard to cross-sectional surveys, "specific knowledge of psychiatry" (325) has been shown to strongly reduce stigma²⁸. Stigma decreased in the last years of training of the students, after greater exposure to psychiatry (398)²⁹, (184)³⁰, (112)³¹ but not during the first years, with statistically significant differences. When university students were trained and were provided experiential contact (615)³², a strong reduction of stigma was achieved, and the same applied to medical students with self-directed learning (110) through "non-randomized controlled trials"²² and "factorial analysis"³³. All these groups showed great improvement in their knowledge and behavior, compared with students in the control groups.

We observed that the mere "presentation with slides" on the topics of schizophrenia and depression (452) led to an improvement in contact and interaction with mental illness patients³⁴; and a single trial with an "autobiographical narrative" revealed immediate positive effects on stigma stress-related variables³⁵. In an anonymous questionnaire, *doctors* and *students* (1273) showed the same negative emotions³⁶ towards mental health, which reveals the persistence of stigma along their professional development, since there was no social desirability bias and there had been intervention during their training years. This fact is greatly significant, because these students will be future doctors who will maintain the stigma alive unless a permanent intervention is implemented.

All the "direct contact" interventions (6762) (with the exception of the role-playing intervention, which was the only one with controlled tests in the trial which showed no effect)¹⁸, showed a maintained reduction of the stigma after 12 months. On the other hand, they did not show long-term benefits, contrary to what happened in the case of "teaching practices" during their university training, with better results in the higher courses. In the field of "online surveys", differences were found regarding sex, and the stigma was more prevalent among men³⁷ (222), with fewer stereotypes and cases of behavioral intention after interventions for reducing stigma among women^{17, 23} who presented more prosocial attitudes¹⁴.

DISCUSSION

The presence of mental illness-related stigma among medical university students is widespread (97% of the cases)⁷, but there are different types of effective interventions that can reduce it, with varying degrees of intensity. In a list

ranked from most effective to least effective, we can find teaching practices in the first position^{6, 14, 17, 38, 39, 40}; with better results in their last years, which raises the question of their close relationship with preconceptions and of the potential benefits of implementing these interventions in the earlier years of their training. The list continues with interventions with direct contact⁴¹ and experiential contact⁴², the inclusion of multiple forms of contact with people with lived experiences of mental illness (live and filmed)⁴³ and personal narratives with a focus on recovery, were significantly associated with better outcomes in knowledge related to mental illness and attitudes⁴⁴. On personal experiences or family members^{11,12} the studies shows that the contact with people who are not in the acute state of the illness is crucial for reduce the stigma. Attitudes regarding disclosure and help-seeking for mental illness among medical students are still more stigmatizing than attitudes towards people with mental illness, which opens a new area for necessary research, in it the role of self-stigma acquires great importance in the effectiveness of treatment, as observed in the unique case of role playing, intervention was the only one which did not show any benefits.

In only 3% of the cases, the strategy of "in vivo exposure"^{22,23} to patients with mental illness did not lead to an improvement in the attitudes of medical students towards mental illness and psychiatric conditions, and the only preconception that was corrected was the concept of the origin of the mental illness. The distribution of students was irregular.

One of the strengths of this review is the fact that the studies on the different approaches to stigma included here are sufficiently representative, because they come from five continents and 20 different countries, with a rather homogeneous distribution, which helps to modulate the cultural and socioeconomic differences from the different geographic areas.

With regard to the limitations of the review, there was a certain degree of heterogeneity in the interventions, with a limited number of methodologies. No meta-analysis could be calculated due to the large heterogeneity of intervention content, evaluation design and outcome measures.

These were local and cross-sectional studies^{12, 13, 23, 26, 29, 30, 31, 32, 33, 35, 37, 38, 42, 45, 46}, and they were mostly pilot experiences^{6, 12, 17, 20, 23, 26, 30, 31, 32, 35, 37, 42, 44} which means that the results should be interpreted with caution. Humanization was a non-specific factor against stigma.

CONCLUSIONS

Interventions to reduce mental illness-related stigma among medical students were almost universally effective⁴⁵.

Interventions to improve learner well-being should consider factors that improve resilience and support⁴⁶. However, there is a high degree of methodological heterogeneity, which accounts for the fact that the results are not always easily interpreted; from the available literature, it is difficult to draw conclusions on the most effective interventions. Over the last years, the number of published studies has increased, in most cases in Europe. The most effective long-term intervention strategies were teaching practices, and widespread application has shown to be necessary.

Collecting quantitative data based on stigma measurement instruments would be beneficial, will be necessary implementation of anti-stigma projects, such as retention of social integration, community based social support, an extended kinship or communal⁴⁷.

Recently, the healthcare field is stressing the need for humanization⁴⁸, which is an essential quality involving empathy, active listening, respect, and an ethical attitude. Communication campaigns to combat the stigma of psychiatric disorders and encourage students to consult, have psychologists and psychiatrists in the faculties accessible to students who feel the need and can also accommodate. All these factors are essential requirements that must be promoted among the future medical professionals. Together with a positive medical understanding, the search for help, the in vivo experiential contact and an education combining social contact are presented as strong strategies to combat stigmatizing attitudes.

Therefore, strategies for greater humanization can become an essential tool that breaks the cycle of stigma in medical culture, and that has a direct repercussion on the quality and robustness of patient care, in order to dignify patients with mental illness, so that they can receive the most adequate approach for their condition.

DECLARATION OF COMPETING INTEREST

None.

FUNDING

This research received specific grant with number FS/16-2020 from Samuel Solorzano funding of University of Salamanca.

REFERENCES

- Saxena S, Funk M, Chisholm D. World health assembly adopts comprehensive mental health action plan 2013-2020. *Lancet* [Internet]. 2013;381(9882):1970-1. Available from: [http://dx.doi.org/10.1016/S0140-6736\(13\)61139-3](http://dx.doi.org/10.1016/S0140-6736(13)61139-3)
- Roncero C, Rodríguez-Cintas L, Egido A, Barral C, Pérez-Pazos J, Collazos F, et al. The influence of medical student gender and drug use on the detection of addiction in patients. *J Addict Dis*. 2014;33(4):277-88.
- Thorncroft G, Rose D, Kassam A, Sartorius N. Stigma: Ignorance, prejudice or discrimination? *British Journal of Psychiatry*. Cambridge University Press; 2007; 190(3):192-3.
- Link BG, Phelan JC. Conceptualizing stigma [Internet]. 2001. Available from: www.annualreviews.org
- Griffiths KM, Carron-Arthur B, Parsons A, Reid R. Effectiveness of programs for reducing the stigma associated with mental disorders. A meta-analysis of randomized controlled trials. *World Psychiatry*. 2014;13(2):161-75.
- Suwalska J, Suwalska A, Neumann-Podczaska A, Łojko D. Studenci medycyny a stygmatyzacja z powodu depresji. Cz ść I. Stygmatyzacja pacjentów. *Psychiatr Pol*. 2017;51(3):495-502.
- Gervas R, Bueno G, Garcia-Ullan L, de La Mata R, Roncero C. Is There a Stigma towards Mental Illness among Medical Students? - A Systematic Review of the 1997-2018 Literature. *J Evol Med Dent Sci*. 2020;9(05):299-303.
- Muñoz, M., Pérez Santos, E., Crespo, M., Guillén, A. (2009). Stigma and mental illness: Analysis of the social rejection suffered by people with mental illness. Madrid: Editorial Complutense SA.
- Roncero C, Egido A, Rodríguez-Cintas L, Pérez-Pazos J, Collazos F, Casas M. Drug Use Among Medical Students: A Review of the Literature 1988-2013. *Actas Esp Psiquiatr*. 2015;43(3):109-21
- Urrútia G, Bonfill X. PRISMA declaration: A proposal to improve the publication of systematic reviews and meta-analyses. *Med Clin (Barc)*. 2010;135(11):507-11.
- Korszun A, Dinos S, Ahmed K, Bhui K. Medical Student Attitudes About Mental Illness: Does Medical-School Education Reduce Stigma? [Internet]. 2012. Available from: <http://ap.psychiatryonline.org>
- Papish A, Kassam A, Modgill G, Vaz G, Zanussi L, Patten S. Reducing the stigma of mental illness in undergraduate medical education: a randomized controlled trial. *BMC Med Educ*. 2013;13:141.

13. Sireesha SR, Lanka UVR, JMR, Kumar CS. A cross-sectional and comparative study of stigma in undergraduate medical students towards mentally ill patients. *J Evol Med Dent Sci.* 2015;4(94):15963-9.
14. Slavin SJ, Schindler DL, Chibnall JT. Medical student mental health 3.0: Improving student wellness through curricular changes. *Acad Med.* 2014;89(4):573-7.
15. Magliano L, Read J, Patalano M, Sagliocchi A, Oliviero N, D'Ambrosio A, et al. To counteract stigma towards people with schizophrenia in the health sector: A pilot experience in a sample of Italian students of medicine. *Psychol Soc Educ.* 2012;4(2):169-81.
16. Shen Y, Dong H, Fan X, Zhang Z, Li L, Lv H, et al. What can the medical education do for eliminating stigma and discrimination associated with mental illness among future doctors? Effect of clerkship training on Chinese students' attitudes. *Int J Psychiatry Med.* 2014;47(3):241-54.
17. Adriaensen K, Pieters G, De Lepeleire J. Stigmatisering van psychiatrische patiënten door huisartsen en studenten geneeskunde: Een literatuuronderzoek. *Tijdschr Psychiatr.* 2011;53(12):885-94.
18. Petkari E, Masedo Gutiérrez AI, Xavier M, Moreno Küstner B. The influence of clerkship on students' stigma towards mental illness: a meta-analysis. *Medical Education.* 2018;(52):694-704.
19. Silva RDDC, Albuquerque SG, Muniz ADV., Ribeiro S, Pinheiro PR, et al. Reducing the Schizophrenia Stigma: A New Approach Based on Augmented Reality. *Comput Intell Neurosci.* 2017. <https://doi.org/10.1155/2017/2721846>
20. Stubbs A. Reducing mental illness stigma in health care students and professionals: A review of the literature. *Australasian Psychiatry.* 2015; (22):579-84.
21. Yamaguchi S, Wu SI, Biswas M, Yate M, Aoki Y, Barley EA, et al. Effects of short-term interventions to reduce mental health-related stigma in university or college students: a systematic review. *J Nerv Ment Dis.* 2013;201(6):490-503.
22. Kassam A, Glozier N, Leese M, Loughran J, Thornicroft G. A controlled trial of mental illness related stigma training for medical students. *BMC Med Educ.* 2011;(29):11-51.
23. Patten SB, Remillard A, Phillips L, Modgill G, Szeto AC, Kassam A, et al. Effectiveness of contact-based education for reducing mental illness-related stigma in pharmacy students. *BMC Med Educ.* 2012;12:120.
24. Poreddi V, Thimmaiah R, Math SB. Attitudes toward people with mental illness among medical students. *J Neurosci Rural Pract.* 2015;6(3):349-54.
25. Davies EB, Beever E, Glazebrook C. A pilot randomised controlled study of the mental health first aid eLearning course with UK medical students. *BMC Med Educ.* 2018;18:45.
26. Fernando SM, Deane FP, McLeod HJ. Sri Lankan doctors' and medical undergraduates' attitudes towards mental illness. *Soc Psychiatry Psychiatr Epidemiol.* 2010;45(7):733-9.
27. Arbanas G. Adolescents' attitudes toward schizophrenia, depression, and PTSD. *J Psychosoc Nurs Ment Health Serv.* 2008;46(3):45-51.
28. Ozelie R, Panfil P, Swiderski N, Walz E. Hearing Voices Simulation: Impact on Occupational Therapy Students. *Open J Occup Ther.* 2018; 6(4).
29. Thompson AH, Stuart H, Bland RC, Arboleda-Florez J, Warner R, Dickson RA. Attitudes about schizophrenia from the pilot site of the WPA worldwide campaign against the stigma of schizophrenia. *Soc Psychiatry Psychiatr Epidemiol.* 2002;37(10):475-82.
30. Amarasuriya SD, Jorm AF, Reavley NJ, Mackinnon AJ. Stigmatising attitudes of undergraduates towards their peers with depression: A cross-sectional study in Sri Lanka. *BMC Psychiatry.* 2015;15(1):1-13.
31. De Witt C, Smit I, Jordaan E, Koen L, Niehaus DJH, Botha U. The impact of a psychiatry clinical rotation on the attitude of South African final year medical students towards mental illness. *BMC Med Educ.* 2019;19(1):114
32. Chang S, Ong HL, Seow E, Chua BY, Abdin E, Samari E, et al. Stigma towards mental illness among medical and nursing students in Singapore: A cross-sectional study. *BMJ Open.* 2017;7(12):1-11.
33. Ay P, Save D, Fidanoglu O. Does stigma concerning mental disorders differ through medical education? A survey among medical students in Istanbul. *Soc Psychiatry Psychiatr Epidemiol.* 2006;41(1):63-7.
34. Hankir AK, Northall A, Zaman R. Stigma and mental health challenges in medical students. *BMJ Case Rep.* 2014;doi:10.1136/bcr-2014-205226

35. Mukherjee R, Fialho A, Wijetunge A, Checinski K, Surgenor T. The stigmatisation of psychiatric illness: The attitudes of medical students and doctors in a London teaching hospital. *Psychiatr Bull.* 2002;26(5):178–81.
36. Anthony J, Ahmedani B, Mickus M, Kubiak S, Rios C. Willingness to treat drug dependence and depression: comparisons of future health professionals. *Subst Abuse Rehabil.* 2011;(2):43–51.
37. Poreddi V, Thimmaiah R, Math SB. Attitudes toward people with mental illness among medical students. *J Neurosci Rural Pract.* 2015;6(3):349–54.
38. Magliano L, Read J, Patalano M, Sagliocchi A, Oliviero N, D'Ambrosio A, et al. To counteract stigma towards people with schizophrenia in the health sector: A pilot experience in a sample of Italian students of medicine. *Psychology, Society and Education.* 2012; (4):169–81.
39. Shen Y, Dong H, Fan X, Zhang Z, Li L, Lv H, et al. What can the medical education do for eliminating stigma and discrimination associated with mental illness among future doctors? Effect of clerkship training on Chinese students' attitudes. *Int J Psychiatry Med.* 2014;47(3):241–54.
40. Gilaberte I, Failde I, Salazar A, Caballero L. Attitude of fifth-grade medical students towards mental health. *Educ Médica.* 2012;15(4):227–33.
41. Sandhu HS, Arora A, Brasch J, Streiner DL. Mental Health Stigma: Explicit and Implicit Attitudes of Canadian Undergraduate Students, Medical School Students, and Psychiatrists. *Can J Psychiatry.* 2019;64(3):209–17.
42. Arbanas G. Adolescents' attitudes toward schizophrenia, depression, and PTSD. *J Psychosoc Nurs Ment Health Serv.* 2008;46(3):45–51.
43. Koike S, Yamaguchi S, Ojio Y, Ohta K, Shimada T, Watanabe K, et al. A randomised controlled trial of repeated filmed social contact on reducing mental illness-related stigma in young adults. *Epidemiol Psychiatr Sci.* 2018;27(2):199–208.
44. Deb T, Lempp H, Bakolis I, Vince T, Waugh W, Henderson C. Responding to experienced and anticipated discrimination (READ): anti-stigma training for medical students towards patients with mental illness – study protocol for an international multisite non-randomised controlled study. *BMC Med Educ.* 2019; (19):1–41.
45. Wechsler D, Schomerus G, Mahlke C, Bock T. Effects of contact-based, short-term anti-stigma training for medical students: Results from a randomized controlled trial. *Neuropsychiatr.* 2020; 34(2):66–73.
46. Heim E, Henderson C, Kohrt BA, Koschorke M, Milenova M, Thornicroft G. Reducing mental health-related stigma among medical and nursing students in low- and middle-income countries: a systematic review. *Epidemiol Psychiatr Sci.* Cambridge University Press; 2020;29:e28.
47. Janoušková M, Formánek T, Zrne ková M, Alexová A, Hejzlar M, Chrtková D, et al. How to reduce stigmatization of people with mental illness in medical education: READ intervention. *Cas Lek Cesk.* 2019;158(3–4):151–155
48. Montes-Rodríguez JM, Reneses-Prieto B, Pérez-Corrales J, Del Álamo-Jiménez C, Blanco-Ballesteros N, Gómez-Olmeda D et al. Humanization of care in short psychiatric hospitalization units. Madrid, Ed. Spanish Psychiatry and Mental Health Foundation; 2019.