

Effect of a Psychoeducational Intervention on Mental Health Knowledge Among Undergraduate Medical Interns in a Hospital in Mexico

Efecto de una intervención psicoeducativa sobre el nivel de conocimientos en salud mental de médicos internos de pregrado en un hospital de México

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Summary

Objective: To evaluate the effect of a psychoeducational intervention on the level of mental health knowledge of undergraduate medical interns, and to know their opinion about this activity. **Methods:** randomized controlled trial with mixed approach. Seventy undergraduate medical interns participated, divided into two groups: intervention and control. The first group participated in theoretical sessions and cognitive-behavioral strategies. The level of knowledge about mental health before and after the intervention was evaluated, and the opinion of those who were intervened was obtained by means of open-ended questions. Means and comparison of means, Student's t-test and qualitative analysis of the open questions were obtained. **Results:** in the first evaluation the mean score of the intervention group was 4.6, and that of the control group was 5.0 (mean difference: -0.48, $p=0.09$), after the educational intervention the mean of the intervention group was 8.17, and that of the control group was 5.10 (mean difference: 3.077, $p=0.00$). In the qualitative analysis it was identified that the students improved important aspects of their mental health and consider this type of strategies necessary during their education. **Conclusion:** the students who participated in the psychoeducational intervention showed improvement in the level of knowledge about mental health issues and improved the perception of their emotional state.

Key words: Mental Health; Medical Education; Clinical Clerkship; Cognitive Behavioral Therapy.

Received: 05/22/2024

Accepted: 02/07/2025

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Suggested citation: Joanico-Morales B, Romero-Reynoso YV, Manrique-Godoy E, Salgado-Jiménez MA, Villalobos-Aguayo P. Effect of a Psychoeducational Intervention on Mental Health Knowledge Among Undergraduate Medical Interns in a Hospital in Mexico. *Aten Fam.* 2025;32(2):109-117. <http://dx.doi.org/10.22201/fm.14058871p.2025.2.91027>

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Resumen

Objetivo: evaluar el efecto de una intervención psicoeducativa sobre el nivel de conocimiento en salud mental de médicos internos de pregrado y conocer su opinión acerca de esta actividad. **Métodos:** ensayo controlado aleatorizado con enfoque mixto. Participaron 70 médicos internos de pregrado divididos en dos grupos: intervención y control, el primero participó en sesiones teóricas y estrategias cognitivo-conductuales. Se evaluó el nivel de conocimiento sobre salud mental antes y después de la intervención y mediante preguntas abiertas se conoció la opinión de quienes fueron intervenidos. Se obtuvieron medias y comparación de medias, prueba t de Student y se realizó análisis cualitativo de las preguntas abiertas. **Resultados:** en la primera evaluación la media de calificación del grupo de intervención fue de 4.6 y la del grupo de control de 5.0 (diferencia de medias: -0.48, $p=0.09$), posterior a la intervención educativa la media del grupo de intervención fue 8.17 y del grupo control 5.10 (diferencia de medias: 3.077, $p=0.00$). En el análisis cualitativo se identificó que los alumnos mejoraron aspectos importantes de su salud mental y consideran necesarias este tipo de estrategias durante su formación. **Conclusión:** los alumnos que participaron en la intervención psicoeducativa presentaron mejoría en el nivel de conocimiento sobre temas de salud mental y mejoraron la percepción sobre su estado emocional.

Palabras clave: salud mental, educación médica, pasantía clínica, terapia cognitivo conductual.

Introduction

Mental health is defined as a state of psychological well-being that allows people to cope with life's stressful moments, develop all their abilities, learn, work well, and contribute to the betterment of their community.¹ In 2019, one in eight people in the world suffered from a mental disorder,² and these are the leading causes of years lived with disability in America.³

In Mexico, in 2017 about 50% of people reported the presence of feelings of worry or nervousness,⁴ while the prevalence of mental disorders and addictions was 19.9%⁵ reported in 2022. Fuentes et al.⁶ reported conditions during medical internship such as poor nutrition, little rest, and sleep and teaching hours, in addition to high workload, very long hours, and in some cases harassment and bullying, which may increase the risk of presenting mental disorders.

In 2015, a prevalence of 28.8% of depressive symptoms was reported in medical students in training, interns, and residents in the United States, Asia, Europe, South America, and Africa.⁷ In Mexico, high rates of mental disorders have been found in medical interns (MIPs). At the National Autonomous University of Mexico, 22% of potential cases of mental disorders were found.⁸ Depression has a prevalence between 20.8%, and 30%,⁹⁻¹² anxiety between 54% and 80%,^{10,11,13} while burnout syndrome between 16%, and 70%.¹⁴⁻¹⁶ These disorders may increase during undergraduate internship.^{16,17}

Psychoeducation is the process by which the person has the opportunity to develop his or her own potential based on the discovery of his or her strengths. This process leads to being able to analyze and face everyday situations in a more

adaptive way than before.¹⁸ It is one of the tools mentioned in the Early Detection and Mental Health Care Program for Undergraduate Medical Interns and Medical Social Service Interns of the Ministry of Health.¹⁹

Evidence shows that psychoeducation benefits the mental health of physicians-in-training. Psychoeducational and cognitive-behavioral interventions have reduced stress, improved coping skills, and decreased anxiety and depressive symptoms. In addition, mental health clinics for residents have been established, focusing on suicide prevention and timely care.²⁰⁻²² However, the aforementioned strategies are scarce and not routinely implemented, so we set the following objective: to evaluate the effect of a psychoeducational intervention on the level of mental health knowledge of medical residents, and to know their opinion about this activity.

Methods

A mixed methods randomized controlled trial was conducted in the Undergraduate Medical Internship of General Regional Hospital No. 1 Vicente Guerrero (HGR-1VG) of the Mexican Institute of Social Security (IMSS) in Acapulco, Guerrero, during April 2022. All students who responded to the invitation to participate in the study were included; those who were not in the hospital due to vacation or disability were excluded. A total of 70 undergraduate medical interns participated, divided into two groups: 27 in the intervention group and 43 in the control group. Group assignment was randomized, stratified by rotation service; for this purpose, each participant was assigned a sheet of paper, which was entered into a raffle, from which 27 students were blindly selected for the intervention group.

After an explanation and the signing of the informed consent by the participants, an initial assessment test was administered. At the end of the initial evaluation, members of the intervention group were invited to participate in a mental health course-workshop; the objectives, content to be reviewed, duration, and didactic techniques were explained to them. Constructivist and meaningful learning theories were considered.^{23,24} The control group was informed that another evaluation would take place at a later date.

The course-workshop took place over nine hours across five days; of which five hours were theoretical, and the remaining hours were experiential activities based on cognitive-behavioral strategies. The second evaluation of both groups was conducted the following week.

The teaching strategies employed during the intervention were: presentations of mental health topics by a resident family medicine doctor, with each theoretical session complemented by cognitive-behavioral techniques experienced and performed by the students, coordinated by the clinical psychologist, specialist in cognitive-behavioral therapy and master's degree in humanistic psychotherapy, affiliated with the Health Worker Prevention and Promotion Services for IMSS Workers (SPPSTIMSS) of the HGRVG (Table 1).

The activities were conducted in the hospital's education classrooms and were supervised by an attending physician specialized in family medicine, who was responsible for the project, as well as by the Clinical Coordination of Education and Health Research at the hospital.

A 35-item multiple-choice questionnaire was developed to assess knowledge of mental health, covering topics such as anxiety, depression, stress, addictions, intimate partner violence, coping techniques, burnout, resilience, and grief. The questionnaire was validated by experts and reviewed by three medical specialists trained in teaching and research methodology, who were also involved in clinical practice, teaching, and research. An initial review was conducted during which feedback was received, and revisions were made. A second round followed to approve the corrections. After this, a pilot test was conducted with ten eighth-semester medical students to confirm question clarity and comprehension.

The following scale was used to classify the students' level of knowledge according to the percentage of questions answered correctly: 80-100: high, 60-79: medium, and 59 or less: low. In the second evaluation, the intervention group was given a written interview consisting of five open-ended questions to gather their opinions about the psychoeducational strategy.

Data analysis was conducted using SPSS v. 23, including frequencies, means, means comparison, and Student's t-test for two independent samples. A qualitative analysis of the open-ended responses was performed through manual categorization of analytical units, starting with transcription, organization, and text reduction.

The research protocol was reviewed by the local health research committee and the local health research ethics committee of the IMSS, approved under registration number R-2021-1102-012. Participation was voluntary; participants

Table 1. Content and Didactic Strategies Used in the Psychoeducational Intervention on Mental Health for Undergraduate Medical Interns

Content		Didactic and Cognitive-Behavioral Strategies
Session 1:	Anxiety Depression	• PowerPoint presentation of the topic • Discussion with Q&A
Session 2:	Stress Addictions	• Physical relaxation techniques • Breathing control techniques
Session 3:	Intimate Partner Violence Coping Techniques	• Mental relaxation and meditation techniques • Hand Fan Breathing Exercise
Session 4:	Burnout Resilience	• Mandala drawing • Bio-dance
Session 5:	Grief	• Blind walking • Dance in pairs

signed the informed consent form and were informed that they could withdraw from the study at any time.

Results

A total of 70 undergraduate medical interns participated, with an average age of 23.6 years (range: 22 to 29 years). Women comprised 55.7% (n = 39) of the participants. The intervention group included 38.5% (n = 27) of the interns. Due to their rotation service activities, 11.1% (n = 3) attended 2 sessions, 37% (n = 10) attended 3 sessions, 29.6% (n = 8) attended 4 sessions, and 22.2% (n = 6) attended all 5 sessions.

Before the psychoeducational intervention, 88.9% (n = 24) of the intervention group and 72.4% (n = 32) of the control group presented a low level of knowledge about mental health. After the intervention, 69.8% (n = 30) of the control group remained at a low level of knowledge. In contrast, the majority of the intervention group participants (96.3%) reached a medium or high level of knowledge (Table 2).

The mean scores of the intervention and control group showed no differences in the first evaluation. However, after the psychoeducational intervention, the group that received the intervention presented a higher mean score, with a statistically significant difference with respect to the control group (Table 3).

Students who participated in the educational intervention found it useful in recognizing the importance of mental health, the need for help, and the application of knowledge to themselves and their patients. In addition, it enabled them to improve their well-being, cope with difficult situations, and make better decisions (Table 4).

Table 2. Knowledge Level Before and After a Psychoeducational Intervention in Undergraduate Medical Interns n= 70

Group	Knowledge Level Before the Intervention			Knowledge Level After the Intervention		
	Low n (%)	Medium n (%)	High n (%)	Low n (%)	Medium n (%)	High n (%)
Intervention (n= 27)	24 (88.9)	2 (7.4)	1 (3.7)	1 (3.7)	12 (44.4)	14 (51.9)
Control (n= 43)	32 (72.4)	11 (25.6)	0	30 (69.8)	12 (27.9)	1 (2.3)
Total (n= 70)	56 (80)	13 (18.6)	1 (1.4)	31(44.3)	24 (34.3)	15 (21.4)

Low knowledge level: score under 6

Medium knowledge level: score between 6 and 7.9

High level knowledge: score equal to or greater than 8

Table 3. Comparison of Mean Scores Between the Intervention and Control Groups in the First and Second Evaluation of the Educational Intervention

Evaluation	Groups	Mean	SD	t	p	Mean Difference	95% CI
First	Intervention (27)	4.600	.9556	-1.696	0.09	-.4814	-1.04 a 0.08
	Control (43)	5.081	1.2638				
Second	Intervention (27)	8.178	.9386	10.1	0.00	3.0778	2.47-3.68
	Control (43)	5.100	1.3863				

SD: Standard Deviation, CI 95%: Confidence interval 95% of the mean difference, df: Degrees of freedom, Levene: Significance of Levene's test for equality of variances.

They were asked about the most beneficial aspects of the course and the following response categories were identified: improvement of emotional state through living together, relaxation and stress management; methodology of theoretical presentations and activities with the psychologist; and knowledge acquired, including living together and stress reduction (Table 5).

The medical interns who participated in the psychoeducational intervention said that three actions should be taken to improve their mental health during the undergraduate internship: improving the general conditions of the internship, guaranteeing access to psychological care, and implementing frequent psychoeducational strategies such as the one used in this study (Table 6).

Table 4. Identified Categories in the Responses of Undergraduate Medical Interns to the Psychoeducation Intervention Question: Do you Consider What You Have Learned to Be Useful for Your Personal or Professional Life? Why?

Categories	Responses
Identify the importance of mental health	"I realize the emotional balance I need to maintain between my personal and professional life." "Yes, mental health is important because when there is no balance in that aspect of our lives, we cannot be well in anything we do." "Because mental health must be a priority in order to provide better service." "Yes, because our own mental health is essential."
Knowledge of mental health and its practical application for themselves and their patients	"It is necessary to know about mental health, aspects such as depression, anxiety, how to identify them, and the type of intervention we should carry out." "It is essential to understand the field of mental health, including depression, anxiety, stress, burnout, as well as to identify symptoms early and determine the appropriate intervention." "Because we can identify symptoms of the topics we learned, both in ourselves and in our patients, in a timely manner." "These are valuable tools to apply in everyday life." "I used to be skeptical about these topics; I didn't consider them important. However, through this, I realized that it is necessary to understand them to detect pathologies in my patients and also to become a better doctor." "I think I will be more empathetic with my patients because sometimes they just need to be heard and helped beyond medications." "It is important to understand these topics because we can apply them with our patients."
Feeling better, managing difficult situations, and making better decisions	"It is a very useful way of teaching us; during the course, I felt heard and understood." "Because I feel better." "Because it helped me relax and keep my mind at ease." "To better cope with difficult situations." "Yes, because I now feel that I will be able to manage and face my problems and those of my patients more effectively." "Because it helps you think things through more clearly." "These exercises and activities support you in reassessing your situations and making better decisions to resolve them." "Understanding the natural processes we all go through in certain critical situations in life helps us know how to act in future situations." "Because now I understand different processes I have been through and the correct ways to handle them if I face them again." "Very useful because I realized that I need more tools to face certain situations in my life." "To understand how we should navigate our natural life processes." "Yes, because I now know techniques, I can use to improve my stress and anxiety levels." "Yes, because in the rotations we go through, we often experience a lot of stress and anxiety, and the techniques we learned will help us improve in that regards."
Recognizing the need for help	"Because I am accepting that I need help, and now I know how to seek it." "Because I have now realized that I do need help, as I had not given it enough importance before." "We could all use a Little help, and I think many of us in this field are affected."

Discussion

During medical school and especially during the undergraduate medical internship, students experience stressful situations that can trigger or exacerbate mental health problems.^{6,16,17,20} Knowledge of these problems can provide physicians-in-training with tools to better manage these situations and thus prevent these problems in themselves

and in the population they will serve. However, in the results of this study, it was found that most students had a low level of knowledge at the first assessment. No previous studies were found that assess the knowledge of medical internship students (MIP) on mental health topics. In contrast, studies conducted during this period have evaluated knowledge in other areas, yielding similar results

to those identified in the present study, reporting superficial, low, or very low levels of knowledge.²⁵⁻³¹

Several situations may explain the low level of knowledge at the initial assessment. It has been reported in previous studies that the activities performed during the undergraduate medical internship are not adequate for learning.^{32,33} In addition, probably little

importance is given to mental health during medical education and especially during the undergraduate medical internship; finally, the time elapsed since these topics were reviewed in college without reinforcement or subsequent experiences may explain these results.

After the intervention, medical internship students who received psychoeducation scored higher than the control

group. Additionally, qualitative analysis revealed that students who received psychoeducation reported finding it useful for recognizing the importance of mental health, acquiring knowledge on the subject, and applying it both to themselves and their patients. This shows that implementing educational strategies on mental health can be beneficial in enhancing students' knowledge.

No previous interventions have been found that evaluate the impact on knowledge of this specific topic. However, there are educational interventions aimed at improving knowledge in other aspects that have shown positive results, aligning with the findings of the present study. These strategies include an intervention on respiratory system semiology,³⁰ cardiovascular risk,³¹ the

Table 5. Identified Categories in the Responses of Undergraduate Medical Interns from HGR I Vicente Guerrero Who Participated in a Psychoeducational Intervention to the Question: "Please Write Three Things That Benefited You the Most from the Course."

Category	Response
Improvement in Emotional State Through Social Interaction, Relaxation, and Stress Management	"The social interaction, relaxation, and stress relief." "Patience, relaxation, and not getting stressed." "I improved social interactions, relaxed, and reduced tension." "Not getting stressed and learning how to relieve stress." "Greater interaction with colleagues, stress management, and relaxation techniques." "Keeping calm in stressful situations and learning how to maintain better mental health." "Self-criticism, learning how to relax, and understanding more about stress stages." "My self-esteem improved, along with my learning and social interactions." "It helped me better manage stress and understand that I am not alone." "Knowing how to channel stress better, the music we listened to, and being allowed to express ourselves." "I learned more about myself, how to work with emotions, and how to manage distress." "Keeping calm in stressful situations and learning how to maintain better mental health."
The way theoretical presentations and activities with the psychologist were conducted	"Relaxation exercises, social interaction, and a very clear lecture." "Anxiety, depression, and resilience." "Relaxation activities, presentations on stress and violence, and the games we played." "The dance activity, presentations on stress, burnout, and depression." "The activities, the music, and the burnout topic." "Presentations on anxiety, depression, and grief, as well as relaxation activities with the psychologist." "The presentations, relaxation activities, and the dance activity we did." "Group dynamics, workshops, and self-evaluations." "The way the topics were clearly presented, the moments when I was allowed to express myself, and the social interaction."
Knowledge about the topics, social interaction, and emotional release	"Recognizing symptoms of depression, identifying early signs of violence, and understanding burnout syndrome." "Understanding the natural course of problems and their resolution." "Knowledge, social interaction, and emotional release." "The knowledge I gained, the interactions with colleagues, and the opportunity to express my emotions." "I feel satisfied, I gained more knowledge, and I feel more at peace."

“academic day” for medical internship students,³³ a case-resolution workshop on diabetes mellitus,³⁴ and a study assessing the effect of six didactic techniques on priority health topics.³⁵

Qualitative analysis of open-ended questions showed that the psychoeducational intervention contributed to improvements in emotional well-being, stress and difficult situation

management, decision making, and the recognition of the need for help. These results are consistent with findings reported in other psychoeducational interventions in the literature.²⁰⁻²²

Few studies were identified on psychoeducation in medical trainees, with only one found in medical interns in Cuba in 2013. In that study, a psychoeducational intervention redu-

ced stress levels and improved coping strategies focused on problem-solving and academic stress management. The intervention lasted two months and employed strategies similar to those used in our study; however, the difference is that it was carried out with first-year medical students in a different context.²⁰

In 2019, a hospital in Mexico City conducted an intervention for

Table 6. Identified Categories in the Responses of Undergraduate Medical Interns Who Participated in a Psychoeducational Intervention to the Question: “What Actions Do You Think Could Be Implemented During the Internship to Improve Your Mental Health?”

Participants	Response
Improving general conditions in the Internship	“More personnel” “To hire more personnel, or more Medical Interns.” “Reduce the workload for the interns, provide exact times for breakfast and meals.” “Establish better meal schedules, clean bathrooms, allow rest after shifts, provide classes taught by senior staff, and ensure access to residences.” “Leave at the established time.” “Avoiding having too many pending tasks, as it causes a lot of stress.” “Always listen to the interns’ demands, we don’t feel heard.” “Offer courses, but not right after shifts. I wanted to pay attention, but I was feeling asleep.” “Establish respectful relationships among all staff, provide incentives for interns such as classes, workshops, etc.”
Psychological Care	“A psychologist for the interns and residents.” “Provide psychological help to the interns, offer personal counseling.” “Diagnostic assessment at the beginning and follow-up during the internship, appointments with the psychologist periodically.” “Psychological care from the start of the internship.” “Monthly intervention to evaluate any necessary treatment.” “Conduct a psychological diagnostic assessment for everyone so that we can follow up on these issues with the psychologist.”
Frequent psychoeducational strategies	“Conduct these activities at least once per rotation.” “More psychological courses and talks, I felt really good.” “Have two sessions per service to learn how to manage depression, anxiety, and especially stress.” “Continue to conduct activities and courses like this regularly to detect symptoms of any condition early.” “More courses like this, with personalized attention from the psychologist when needed.” “More frequent courses like this.” “Keep offering courses like this.” “At least once a week, have interventions like this that help you vent and de-stress.” “Prepare us with workshops like this when we start the internship, so we feel comfortable seeking help from a psychologist when needed.” “Use coping techniques more often, because it helped me relax.” “More courses like this, from the start of the internship.” “We need more courses on mental health, I truly realized how necessary they are.”

undergraduate medical interns aimed at promoting self-care, reducing stress, and developing skills to manage emotional disturbances and dysfunctional behaviors. The pre- and post-intervention assessments showed a significant reduction in anxiety and depressive symptoms.²¹ This study used similar strategies and a comparable population to the present study but employed a different evaluation methodology. Nonetheless, both studies highlight the usefulness of these strategies in medical training.

In this study, to improve mental health during internship medical residents considered three actions: enhancing overall internship conditions, receiving psychological care, and implementing frequent psychoeducational strategies such as the one used in this study.

In this context, a publication was identified describing the characteristics of a mental health clinic for medical residents in a hospital in Mexico City. This clinic achieved its objectives of reducing deaths from preventable suicide deaths, identifying vulnerable residents, and providing timely treatment.²² Although the Ministry of Health has published a Mental Health Program for Undergraduate Medical Interns,¹⁹ well-structured programs are not implemented in all hospitals across the country. Therefore, this clinic could serve as a reference for developing similar strategies for undergraduate medical interns.

There is literature indicating that mental health issues are common at all stages of medical training; however, few studies have showed strategies to prevent this problem. The present work provides relevant information on a psychoeducational strategy undergraduate medical interns, which could be routinely im-

plemented in all hospitals with medical trainees and potentially have a positive impact students' mental health, ultimately improving patient care.

The study's limitations include the sample size, as it was conducted in a single hospital center, and the assessment tool used, whose number of items could be insufficient, despite following recommended guidelines for its development. Nevertheless, the study provides valuable and applicable information.

Conclusion

Students who participated in the psychoeducational intervention demonstrated an improvement in their knowledge of mental health topics and a better perception of their emotional well-being. These strategies are well accepted by undergraduate medical interns, making their regular implementation and replication throughout medical training highly advisable.

Authors' Contribution:

B J-M: Original idea, conceptualization, fieldwork supervision, data analysis, development and writing of the article. Y B-R: conceptualization, application of surveys, presentation of topics during the intervention. E M-G: conceptualization, development of cognitive-behavioral activities during the intervention. MA S-J: data analysis, review of results. P V-A: review and analysis of results, discussion and writing.

Funding:

The present study received no external funding.

Conflict of interest:

All authors declare no conflicts of interest.

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