

# Effectiveness of University-Provided Individual Counselling for Healthcare Students: A Systematic Review

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## Abstract

Medical, nursing, and other healthcare students undergo specific stressors. Their mental health represents a priority for universities and the entire community. This review aimed to gather evidence about the effectiveness of individual psychological counselling offered by universities to healthcare students. A systematic review was conducted by searching PubMed, Scopus, and APA PsycInfo. A total of 1906 records were identified. The selection resulted in six studies published between 1994 and 2014. The most common design was quasi-experimental. Half focused on medical students and often interventions comprised other elements. Outcomes were related to mental health issues, academic performance, or both. The results showed statistically significant improvements, with some exceptions. The present review highlighted some specific characteristics that must be considered in order to fill the existing gap in this field, such as widening the range of studied outcomes, improving the description of the intervention, and planning randomized controlled trials (RCT) to compare strategies.

**Keywords:** Healthcare students; systematic review; effectiveness; university counseling.

## Introduction

Higher education students have reported high levels of psychological distress and increasing rates of mental disorders. Specifically, major depression is the most common mental disorder among university students and it has long been observed that students within the healthcare field may experience great psychological distress (Auerbach et al., 2018; Sharp & Theiler, 2018). Further, graduate healthcare students (HCSs) have been found to have higher levels of burnout compared with same-aged peers and the general population (Bullock et al., 2017). HCSs may share some specific stressors, such as a rigorous educational process and exposure to suffering (Dutta et al., 2005; Stoffel & Cain, 2018). The clinical environment can contribute to fears of personal inadequacy and insecurity in medical-related actions, uncivil clinical interactions and forms of abuse, mental illness stigma, and poor help-seeking behaviour (Benbassat, 2013; Stubin, 2020). Furthermore, the COVID-19 pandemic has had a detrimental impact on the mental health of students, emphasizing the urgent necessity for tailored support systems to confront these mental health challenges. Particularly within the medical field, newcomers may experience heightened fear and apprehension due to the pandemic (Perissotto et al., 2021), and the reduction in communication and human interaction has left its mark on students' mental well-being (Hunt et al., 2023; Roman et al., 2023). The adoption of remote learning during the pandemic has been associated with increased levels of burnout, anxiety, depression, and stress, all of which have hindered students' overall quality of life and academic performance (Hunt et al., 2023; Kecojevic et al., 2020; Zhang et al., 2020). This issue should represent a priority for universities and the entire community. Beyond the burden of mental



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disorders (Sharp & Theiler, 2018), the poor mental health of healthcare staff has been associated with poor patient safety and augmented errors (Hall et al., 2016; Mata et al., 2015). Universities should commit to offering mental health services for students, as community-based care is not strictly designed to meet the needs of higher education students (Duffy et al., 2019). Psychological counselling is one of the services that a university can provide (Duffy et al., 2019) to empower students “to accomplish mental health, wellness, education, and career goals” (Kaplan et al., 2014). University psychological counselling is a long-time well-established university service in certain countries, such as the U.S.A. (Kraft, 2011), while being a relatively recent novelty in others, like Italy (Ghilardi et al., 2017). Generally, overviews of evidence on university counselling services tend to collect and present data without distinguishing between different courses of study, often reporting all the different services offered as a whole (Eisenberg et al., 2011; Francis & Horn, 2017; Locke et al., 2012).

This review aimed to gather evidence on the effectiveness of individual psychological counselling offered by universities to HCSs, who constitute a subgroup of students facing specific stressors and challenges. A secondary aim was to collect information on the effectiveness of this intervention in this specific subgroup compared with other students’ subgroups or alternative interventions and to identify some specific components of the intervention that may be more effective.

## Methods

### *Data Sources and Search Strategy*

A systematic review was conducted following the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) checklist (Page et al., 2021) by searching PubMed, Scopus, and APA PsycInfo databases for studies evaluating the effectiveness of psychological counselling interventions for medical students, nursing students, or other HCSs. Studies published up until the end of December 2019 were included. No restriction was imposed on the year of publication.

Search terms and keywords were matched with medical subject heading (MeSH) terms. Search terms for three different themes were linked with AND: student discipline AND psychological counselling AND program evaluation. A full list of search terms and keywords is provided in *Appendix A*. References from included studies were screened to identify additional articles not identified by the search. Duplicates were removed.

### *Study Selection*

Studies were included if they reported data related to any outcome about the effectiveness of mental health interventions that involved psychological counselling for medical, nursing, and other HCSs (exclusively higher education students). Studies written in English, Spanish, French, or Italian were considered eligible. Only studies where individual, face-to-face counselling was provided by the university were included. Studies were excluded if they evaluated group counselling interventions or if they did not consider any kind of control group. Studies that were published as reviews and studies for which full texts were unavailable were excluded. Two authors (Giuseppina Lo Moro and Costanza Vicentini) independently screened titles and abstracts to identify relevant studies, and three authors (Giuseppina Lo Moro, Costanza Vicentini and Noemi Marengo) independently applied the inclusion/exclusion criteria to the full texts. Disagreements were resolved by consensus and reasons for exclusion were documented.

### *Data Extraction and Data Synthesis*

All studies deemed eligible after full-text screening were included. The extracted data included the author’s name, year of publication and year the study was undertaken (if available), country of study, study design, sample size, participant characteristics and setting, criteria for inclusion in the study, description and duration of the intervention, outcome measures, and results.

### *Quality Assessment*

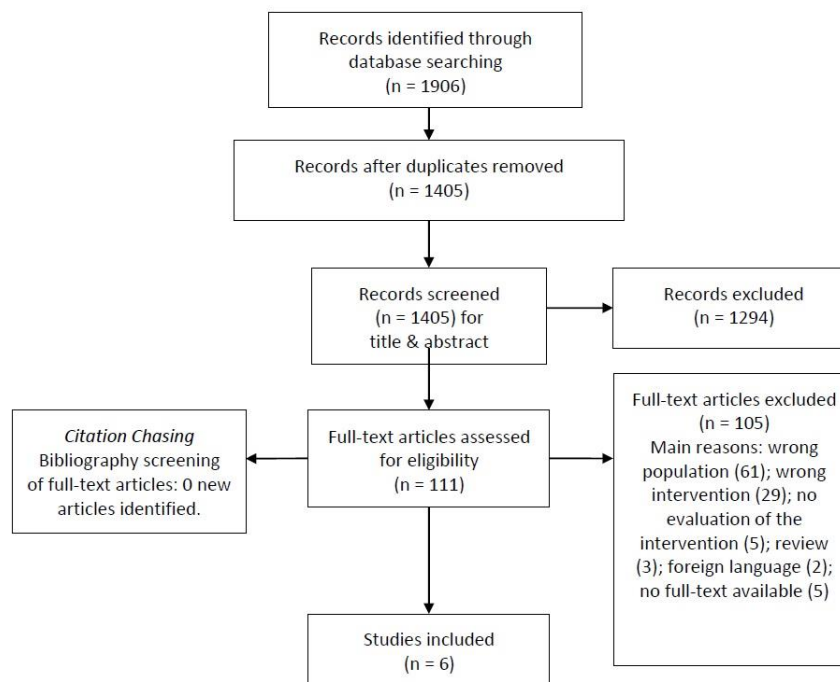
The revised version of the Cochrane tool for assessing the risk of bias in randomised trials (RoB 2 tool) (Sterne et al., 2019) and the ROBINS-I Cochrane risk of bias tool (Sterne et al., 2016) to assess non-randomized studies of interventions were used to evaluate the methodological quality of included studies. The assessment was performed by three reviewers (Giuseppina Lo Moro, Costanza Vicentini and Noemi Marengo).

## Results

A total of 1906 records were identified. The study selection is described in Figure 1. The first criterion used to exclude records during the assessment of full-text articles was the absence of a focus on medical, nursing, and other HCSs. Indeed, most articles considered college students without specifying the degree. The second criterion used was the absence of face-to-face individual counselling provided by the university. Lastly, the absence of any kind of evaluation of the intervention's effectiveness was considered. As a result, six studies were included in the review.

**Figure 1**

### Study Selection Process



The selected studies were published between 1994 (Godbey & Courage, 1994) and 2014 (Rajiah & Saravanan, 2014) and mostly originated from Asia (Mysorekar, 2012; Peyrovi et al., 2009; Rajiah & Saravanan, 2014; Velayudhan et al., 2010). All studies were published in English. The most common design was quasi-experimental (Godbey & Courage, 1994; Mysorekar, 2012; Velayudhan et al., 2010), with half of the studies specifically targeting medical students (Mysorekar, 2012; Thompson et al., 2010; Velayudhan et al., 2010). The duration of the interventions ranged from three weeks (Rajiah & Saravanan, 2014) to six months (Mysorekar, 2012). The majority of control groups did not receive any intervention (Godbey & Courage, 1994; Mysorekar, 2012; Thompson et al., 2010; Velayudhan et al., 2010). While all studies included face-to-face individual psychological counselling, the interventions frequently incorporated other components. The other components were the teaching of stress-management strategies (Godbey & Courage, 1994; Mysorekar, 2012), relaxation techniques (Rajiah & Saravanan, 2014; Velayudhan et al., 2010), a session on study skills (Mysorekar, 2012), faculty and students' education (Thompson et al., 2010). The outcomes were evaluated using specific tests and tools in different ways across the included studies, rendering them not directly comparable. The outcomes were related to mental health issues (Thompson et al., 2010; Velayudhan et al., 2010), academic performance (Mysorekar, 2012; Peyrovi et al., 2009), or both (Godbey & Courage, 1994; Rajiah & Saravanan, 2014). Overall, the results showed statistically significant improvements in mental health symptoms and academic performance, with some exceptions (Godbey & Courage, 1994; Peyrovi et al., 2009). Only two studies declared a funding source: the Deputy for Research and Technology, Iran University of Medical Sciences (Peyrovi et al., 2009) and the Queen Emma Research fund at the Queen's Medical Center (Thompson et al., 2010). In all other cases, no conflicts of interest and or funding were declared. Table 1 shows a detailed description of the main characteristics of these studies and Table 2 describes the main results of the studies.

**Table 1***Characteristics of Included Studies*

First author and year of publication	Country	Level of evidence and study design	Participants	Inclusion criteria	Sample size	Year and length of the study
<b>Godbey 1994</b>	USA	II Quasi experimental	Junior and senior year nursing students	Students that perceived anxiety was interfering with academic performance	19: 7 EG 12 CG	NA 3 years
<b>Peyrovi 2009</b>	Iran	I RCT	Nursing students	Students in the 2nd to 6th semesters with poor academic performance	43: 21 EG 21 CG	2006-2007 1 year
<b>Thompson 2010</b>	USA (Hawaii)	IV Cross-sectional	Third year medical students	All third-year students	102: 44 pre-INT (2002) 58 post-INT (2003)	2002-2003 2 years
<b>Velayudhan 2010</b>	India	II Quasi experimental	Medical students	Medical students randomly selected	120: 60 EG 60 CG	NA 1 month
<b>Mysorekar 2012</b>	India	II Quasi experimental	Students from 3 consecutive batches of 2 <sup>nd</sup> professional MBBS	Low performers in pathology test	83: 73 EG 10 CG	NA 3 batches
<b>Rajiah 2014</b>	Malaysia	I RCT	First-year undergraduate pharmacy students	Students who exhibited moderate and high test anxiety according to the Westside Test Anxiety Scale	42: 21 EG 21 CG	NA 1 semester

*Notes.* Abbreviations: CG control group; EG experimental group; INT intervention; MBBS Bachelor of Medicine and Bachelor of Surgery; NA information Not Available; sign. significant; RCT randomized controlled trial.

**Table 2***Main Results of Included Studies*

First author and year of publication	Length of the intervention	Intervention	Control group	Main outcomes measures*	Main results
<b>Godbey 1994</b>	6 weeks	Individual counselling; Stress-management strategies	No INT	Course grades: cumulative Grade Point Average  Self-esteem: Hudson's Inventory of Self-Esteem  Depression: Generalized Contentment Scale  State-Trait anxiety: Spielgerber's State-Trait Anxiety Inventory	Course grades: no significant change pre-post INT in EG. EG mean grade was lower than that of CG: pre-INT ( $p<0.001$ ), post-INT ( $p=0.01$ ), at the graduation ( $p=0.001$ )  Increase of self-esteem in EG: difference within groups ( $p=0.01$ ; $p=0.01$ ; $p=0.51$ ), between groups ( $p=0.03$ ; $p=0.02$ ; $p=0.41$ ) (pre-post INT, pre-INT/graduation, post-INT/graduation, respectively)  Decrease of depression in EG: difference within groups ( $p=0.01$ ; $p=0.01$ ; non-significant), between groups ( $p=NA$ ; $p=0.03$ ; $p=NA$ ) (pre-post INT, pre-INT/graduation, post-INT/graduation, respectively)  Decrease of State anxiety: significant difference between pre-INT and graduation within EG ( $p=NA$ ) Decrease of Trait anxiety: significant decrease pre-post INT ( $p=0.01$ ) and pre-INT/graduation ( $p=0.01$ ) for EG (non-significant post-INT/graduation). EG had a greater decrease than CG ( $p=0.01$ ) (post-INT/graduation)
<b>Peyrovi 2009</b>	1 semester	Supportive counselling (individual or group)	Ordinary counselling	Grade for the basic theoretical courses  Grade for the special theoretical courses	Mean difference in the grades of the two groups: basic theoretical courses ( $p=0.81$ ); special theoretical courses ( $p=0.26$ ); basic and special theoretical courses ( $p=0.12$ )  Stratifying by gender: a significant improvement was found only among males of EG in special theoretical courses ( $p=0.01$ ); basic and special theoretical courses ( $p=0.01$ )
<b>Thompson 2010</b>	NA	Individual counselling; Faculty education; Students education	No INT	Depression: Center for Epidemiologic Studies Depression Scale  Single question about suicidal ideation from the Primary Care Evaluation of Mental Disorders Patient Health Questionnaire	After INT: lower rates of depressive symptoms ( $p<0.01$ ) and suicidal ideation ( $p<0.001$ ) in the post-INT group

<b>Velayudhan 2010</b>	1 month	Individual counselling; Relaxation techniques and meditation	No INT	Anxiety: Beck Anxiety Inventory  Depression: Beck Depression Inventory	After INT: Between groups: significant differences in anxiety and depression  Within groups: significant differences in anxiety and depression both in boys and girls of EG; non-significant differences in boys and girls of CG (all significant results: significance at 0.01 level).
<b>Mysorekar 2012</b>	6 months	Individual counselling; Stress-management strategies; Session on study skills	No INT	Pathology test score	Improvement in performance of EG ( $p<0.001$ ), no difference in performance of CG ( $p=0.53$ )
<b>Rajiah 2014</b>	3 weeks	Individual counselling	Guidance and recommendations on time management and use effective study skills.	Anxiety: Westside Test Anxiety Scale  Psychological distress: Kessler Perceived Distress Scale  Motivation: Academic Motivation Scale  Grades: Grade Point Average	After INT: significant differences between EG and CG in anxiety ( $p<0.001$ ); psychological distress ( $p<0.001$ ); motivation ( $p<0.001$ ); grade point average ( $p=0.04$ )

*Notes.* Abbreviations: CG control group; EG experimental group; INT intervention; MBBS Bachelor of Medicine and Bachelor of Surgery; NA information Not Available; RCT randomized controlled trial

\*All measurements were performed pre-INT and post-INT, except by Godbey 1994: pre-INT, post-INT, at the graduation

First, in a study published in 1994, Godbey and Courage conducted a quasi-experimental longitudinal study over a three-year period to assess the effectiveness of an individualized stress-management program, targeted toward nursing students at a major state university in the south-eastern United States (Godbey & Courage, 1994). The experimental group consisted of seven students who sought stress-management counselling from a psychiatric-mental health faculty member due to anxiety impeding their academic performance. Twelve students from the same class and with comparable age, marital status, and ethnicity were chosen as controls. Students in the experimental group were invited to participate in the intervention voluntarily, which combined individual counselling and teaching about stress management over a period of six weeks. Students were individually counselled to identify stressors and personal reaction patterns and were taught multiple stress-management strategies. After a few weeks of applying all the proposed strategies, students identified the strategies they preferred and received further in-depth instruction on these strategies. The outcomes of interest were both academic performances (cumulative Grade Point Average, GPA) and self-perceived stress levels (measured through self-esteem, depression, and anxiety scales). All measures were collected before the intervention, at the end of the intervention, and at graduation. The most significant results showed a sustained increase in self-esteem and a decrease in depression and anxiety scores in the experimental group. The mean cumulative GPA of the experimental group was significantly lower in each phase, likely due to failing grades being included in the GPA despite passing exams.

A randomized controlled study, published in 2009 and conducted by Peyrovi et al. from September 2006 to September 2007, focused on the effects of a supportive counselling programme on Iranian Bachelor of Science nursing students experiencing academic failure (Peyrovi et al., 2009). Students with low mean grades in basic theoretical and special courses were identified and informed about the study. Poor academic performance was defined as a mean grade below 14 out of 20 in basic theoretical and special courses. Forty-two volunteers agreed to participate and were randomly allocated into the experimental and control groups by coin toss method. Students in the experimental group could choose to receive either an individual or a small group supportive counselling programme. A session, based on psychological support (encouraging feelings of self-worth and competence) and functional support (assisting students in reaching their goals), was performed every 2-3 weeks throughout the semester. Students in the control group received an ordinary support program (ordinary counselling: educational, research-related, and personal issues), which was introduced in all Iranian medical sciences universities in 2004. The outcomes of interest were the mean grades in basic and special theoretical courses after receiving supportive counselling. The researchers hypothesized that the experimental group would demonstrate better performance compared with the control group. A significant improvement in the mean grades of the experimental group was observed when exclusively assessing the academic performance of male students.

In the study by Thompson et al., the evaluation of an intervention targeting the reduction of depressive symptoms and suicidal ideation among medical students from the University of Hawaii was conducted using two anonymous surveys. These surveys were administered during mandatory meetings for all third-year students in 2002 and 2003, respectively (Thompson et al., 2010). The surveys consisted of a 20-question depression scale and a single question on suicidal ideation. The response rates were 75.9% in the pre-intervention group and 93.5% in the post-intervention group. The intervention consisted of enhancing individual counselling for students and implementing faculty and student education to improve their recognition of depression. Individual counselling was provided by both the university (free of charge, up to 12 sessions) and private community psychiatrists (with a fee). Faculty education mainly consisted of a didactic presentation on depression and suggestions for appropriate responses. Medical students' education was primarily delivered through a student well-being handbook, a list of coping strategies, and specialized lectures. The second survey revealed a significant reduction in the prevalence of depressive symptoms and suicidal ideation.

In 2010, Velayudhan and colleagues published a quasi-experimental study conducted in a private medical college affiliated with a foreign university in India (Velayudhan et al., 2010). The study aimed to evaluate the effect of counselling sessions by assessing anxiety and depressive symptoms. The sample was composed of 60 medical students in the experimental group and 60 in the control group (in both groups females accounted for 50% of participants). The intervention provided to the experimental group consisted of individual counselling and the teaching of relaxation techniques and meditation. The control group received no intervention. After the intervention, anxiety and depression levels were significantly different between the two groups, with lower levels among the experimental group. Considering a pre-post evaluation, anxiety and depression levels were significantly lower both in boys and girls of the experimental group, while no significant differences were reported in the control group.

In 2012, Mysorekar reported the data of another quasi-experimental study on medical students conducted in India. The participants were low performers in pathology tests from three consecutive batches of second professional MBBS (Bachelor of Medicine and Bachelor of Surgery) (Mysorekar, 2012). A low performance was defined by a score below 30% (the pass mark was 50%). Out of the 353 students who took the pathology test (including all three batches), 83 (23.5%) scored less than

30%. Among them, 73 students agreed to participate in the intervention, while 10 individuals refused and were used as the control group. The intervention consisted of a session on study skills and individual counselling. The session was carried out a month after the pathology test and included skills such as taking notes, time management, study practices, concentration, recall, test anxiety, and a method for answering questions. In the six months following the test, students received individual counselling regarding academic and non-academic problems and stress-coping strategies were taught. To evaluate the change in performance, another pathology test was organized six months after the test that was used to define low performers. The two tests had the same difficulty level and the examiner did not know which students belonged to the experimental group. Students of the experimental group presented a significant improvement in performance, whereas the control group showed no significant difference.

Lastly, in 2014 Rajiah and Saravanan published the results of a randomized controlled study conducted on first-year undergraduate pharmacy students from a private university in Malaysia (Rajiah & Saravanan, 2014). A total of 225 students were asked to complete questionnaires that measured the anxiety experienced during examinations. These questionnaires were administered between the 5th and 7th weeks of the first semester of their first year.

Then, 42 students experiencing moderate to high anxiety (without a history of mental health treatment) were included in the study and allocated by a random assignment method into an experimental and control group. A researcher administered pre-assessment tests evaluating anxiety, perceived distress, and academic motivations of each group during the first 5-7 weeks of the first semester, and performed a post-assessment evaluation with the same tests and the GPA score 2 weeks before the second-semester examinations. A different researcher conducted the intervention: 2 sessions of 1 hour-long psychological counselling each week for 3 weeks. The control group received only 1 session with recommendations and breathing techniques to manage anxiety before examinations. The intervention consisted of psychoeducation focusing on causes of anxiety, relaxation therapy through the short version of Progressive Muscular Relaxation Therapy (PMRT), and learning how to perform and practice systematic desensitization. Significant reductions in test anxiety scores, psychological distress, and amotivation, in addition to higher GPAs, were observed in the experimental group compared with the control group.

### **Quality Assessment**

The overall risk of bias for the six included studies resulted to be “moderate” in two studies (1 RCT and 1 non-RCT respectively) and to be “high” in the other four studies (1 RCT and 3 non-RCTs) (Tables 3 and 4). In 5 studies, the risk of bias for the participants’ selection was “low”, but all the studies were not blinded to the participants, although this is justifiable considering the intervention consisted of individual counselling.

**Table 3**

*Quality Assessment of Randomised Trials Using the Revised Version of the Cochrane Tool for Assessing Risk of Bias (RoB 2 Tool)*

Study	Bias due to the randomization process	Bias due to deviations from the intended interventions	Missing outcome data	Bias in measurement of the outcome	Bias in selection of the reported result	Overall risk of bias
<b>Peyrovi 2009</b>	Moderate - Some Concerns	Moderate - Some Concerns	Low	High	High	High
<b>Rajiah 2014</b>	Low	Moderate - Some Concerns	Low	Low	Moderate - Some Concerns	Moderate - Some Concerns



**Table 4**

*Quality Assessment of Non-Randomized Studies Using the ROBINS-I Cochrane Risk of Bias Tool*

Study	Bias due to confounding	Bias in selection of participants into the study	Bias in classification of interventions	Bias due to deviations from intended interventions	Bias due to missing data	Bias in measurement of outcomes	Bias in selection of the reported result	Overall bias
<b>Godbey 1994</b>	Moderate	Low	Low	Moderate	Moderate	Moderate	Low	Moderate
<b>Thompson 2010</b>	Serious	Low	Low	Serious	Low	Serious	Low	Serious
<b>Velayudhan 2010</b>	Serious	Low	Moderate	Moderate	Low	Moderate	Moderate	Serious
<b>Mysorekar 2012</b>	Serious	Low	Low	Moderate	Moderate	Low	Moderate	Serious

## Discussion

The present review primarily aimed to examine the evidence about the effectiveness of face-to-face individual psychological counselling provided by universities to HCSs.

Overall, our findings suggested that the considered intervention may lead to significant improvements among students in experimental groups regarding depression and anxiety symptoms (Godbey & Courage, 1994; Rajiah & Saravanan, 2014; Thompson et al., 2010; Velayudhan et al., 2010), suicidal ideation (Thompson et al., 2010), self-esteem (Godbey & Courage, 1994), psychological distress and academic motivation (Rajiah & Saravanan, 2014). Some studies also revealed an improvement in academic grades (Mysorekar, 2012; Rajiah & Saravanan, 2014). Conversely, other studies reported no significant improvement in cumulative GPA (Godbey & Courage, 1994) or revealed a significant improvement only among males (Peyrovi et al., 2009). However, the evidence gathered is not conclusive.

Although it was not possible to achieve the secondary aim of gathering information about the effectiveness of the intervention among HCSs compared with other subgroups or compared with other interventions and about the effectiveness of specific components, this review outlined some critical issues that must be considered for future research.

First, it was not possible to extract more complete and detailed descriptions of the interventions. Most studies included other components in their interventions, mostly the teaching of stress-management strategies (Godbey & Courage, 1994; Mysorekar, 2012) and relaxation techniques (Rajiah & Saravanan, 2014; Velayudhan et al., 2010), which were effective, together with individual counselling, in improving mental outcomes and academic performance. We cannot analyse the exact weight of each component and further studies are required to investigate what combination of strategies along with counselling might be more effective among HCSs. Moreover, the length of the interventions was very heterogeneous and investigations are needed to further examine this aspect.

In most studies, the control group did not receive any intervention, except in the works by Rajiah and Saravanan (2014), which found an improvement among students who received counselling compared with guidance and recommendations on time management and on the use of effective study skills, and Peyrovi et al. (2009), which found an improvement only among males. Interestingly, Peyrovi and colleagues compared supportive counselling, which focused on recovery, rehabilitation, and psychological supportive behaviours, with ordinary counselling, which included counselling for educational, research-related, and personal issues. Their results suggest that the new supportive counselling programme was not superior to the ordinary counselling programme.

Most studies evaluated depression and anxiety. While depressive symptoms are the most common symptoms among students (Auerbach et al., 2018), it would be advisable to employ multidimensional measurements to explore various areas of psychological concern that are commonly experienced by students (Locke et al., 2012). Moreover, our findings underlined the potential role that individual counselling could have in improving the HCSs' academic performance, suggesting that academic outcomes should be evaluated together with mental outcomes to have a complete overview of the effects of this kind of intervention. Indeed, psychological distress may start a vicious cycle with poor academic performance (Dyrbye et al., 2005). Last, this review did not find any study that measured outcomes specifically targeted to HCSs. However, we argue that the

distress caused by the clinical environment should be investigated when evaluating the counselling effectiveness among HCSs. For example, Roling and colleagues used ad hoc items to explore the perceived stress experienced dealing both with patients and with other contextual factors (Roling et al., 2020).

Overall, the quality assessment showed a high risk of bias. One of the main characteristics that influenced the assessment was the absence of double-blinded studies. This kind of intervention cannot be double-blinded, and some authors suggested using the term “partially-controlled clinical data” for results obtained from unblinded studies like these (Berger, 2016, p. 4). When evaluating psychotherapy research, it has been recommended to pay greater attention to selective outcomes reporting (e.g., publishing all expected outcomes) and treatment implementation (e.g., deviations from intended interventions) (Munder & Barth, 2018). Since most of the included studies presented a moderate risk of bias for such domains, we recommend that further research on counselling effectiveness should work on improving these aspects. Moreover, RCT design should be preferred to increase the level of evidence.

Although more methodologically sound studies are needed, our results support the effectiveness of individual psychological counselling for HCSs provided by universities. We believe it is essential to consider additional observations when strategizing the implementation of a psychological counselling service. Indeed, the implementation of this service should be advertised and promoted among students, as some studies on HCSs revealed a low willingness to use such services in case of need and low knowledge about their existence and location (Bert et al., 2020; Fischbein & Bonfine, 2019).

This review had some limitations. Above all, the amount of available work was greatly limited by the particular focus on HCSs, as well as the decision to include only studies with control groups. The scarcity of relevant research meeting our inclusion criteria may reflect the challenges of conducting such studies with students, particularly in smaller cohorts where anonymity or duty of care compliance may be difficult to maintain. Then, there was too much heterogeneity in the measures and insufficient details about the interventions to warrant a meta-analysis. The generalisability of our findings is limited by the low quality of studies, the geographical restriction, and the fact that mostly medical and nursing students were considered. The generalisability of the findings to other disciplines beyond healthcare is uncertain, as the review primarily focused on HCSs. The effectiveness of individual psychological counselling may vary depending on the unique characteristics and needs of students in different fields of study.

Nevertheless, this work presented an overview of the evidence on the effectiveness of counselling among HCSs that can be a starting point for future research. This review highlighted some specific characteristics that must be considered to fill the existing gap in this field, such as widening the range of studied outcomes (considering multidimensional instruments and academic performance), improving the description of the intervention (e.g., components, number of appointments) and designing RCTs to compare strategies that have demonstrated effectiveness in studies employing different methodologies. Moreover, future research should focus also on evidence from countries outside the United States and Asia, evaluate the long-term effect of counselling, and compare the effectiveness of counselling among different subpopulations of students.

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## Appendix A

### *Search Strings*

#### **PubMed**

("Students, Health Occupations"[Mesh] OR (student\* AND (health-profession\* OR health-car\* OR health-occupation\* OR medical OR medicine OR nurs\*))) AND ("Mental Health Services"[Mesh] OR (psychol\* AND (counseling OR counselling)) OR mental-health-service\*) AND ("Program Evaluation"[Mesh] OR effic\* OR effectiv\*)

#### **Scopus**

(student\*) AND ((TITLE-ABS-KEY(health-profession\*) OR (TITLE-ABS-KEY (health-car\*)) OR (TITLE-ABS-KEY (health-occupation\* )) OR (TITLE-ABS-KEY (medical)) OR (TITLE-ABS-KEY (medicine)) OR (TITLE-ABS-KEY (nurs\*)))) AND (((TITLE-ABS-KEY (psychol\*)) AND ((TITLE-ABS-KEY (counseling)) OR (TITLE-ABS-KEY (counselling)))) or (TITLE-ABS-KEY (mental-health-service\*))) AND ((TITLE-ABS-KEY (effic\*)) OR (TITLE-ABS-KEY (effectiv\*)))

#### **APA PsycInfo**

((DE "Nursing Students") OR (DE "Medical Students") OR (student\* AND (health-profession\* OR health-car\* OR health-occupation\* OR medical OR medicine OR nurs\*))) AND (DE "Mental Health Services" OR DE "Psychotherapeutic Counseling" OR (psychol\* AND (counseling OR counselling)) OR mental-health-service\*) AND (DE "Mental Health Program Evaluation" OR effic\* OR effectiv\*)