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THE EFFECT OF A MINDFULNESS TRAINING PROGRAM ON PERCEIVED STRESS AND EMOTIONAL INTELLIGENCE AMONG NURSING STUDENTS IN MOROCCO: AN EXPERIMENTAL PILOT STUDY

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SUMMARY

Background:

Mindfulness-based stress reduction has been shown to be effective in reducing stress levels and developing emotional competencies in nursing students, however, in some countries such as Morocco, this practice remains unexplored. The purpose of this study is to examine the effect of a mindfulness-based stress reduction program on nursing students.

Material/ Methods:

The study used a quasi-experimental design in a single pre-test-post-test group with 20 nursing students from the Higher Institute of Nursing Professions and Health Techniques of Tetouan. Data were collected using a personal information form, the Perceived Stress Scale in Clinical Practicum (PSS-CP), and the Emotional Intelligence Scale (EIS).

Results:

The results of the study indicate that the students' mean score on the PSS-CP scale was 2.19 ± 1.35 in the pretest, but decreased to 1.89 ± 1.28 in the posttest ($p < .05$). While the students' mean EIS score was 3.44 ± 1.26 in the pretest, it increased to 3.76 ± 1.19 in the posttest ($p < 0.05$). A statistically significant relationship was found between perceived stress and EIS scores ($r = 0.864$, $p < 0.05$).

Conclusions:

Mindfulness-based stress reduction program training can improve psychological health by developing emotional competence and reducing stress in nursing students.

Key words: emotional intelligence, mindfulness, nursing students, perceived stress.

INTRODUCTION

Stress is a psychosocial phenomenon that affects more and more people, regardless of age or social class. The fact that we live in a society increasingly focused on performance, competitiveness and perfectionism only increases the extent of the stress phenomenon. Individuals in training are not immune to stress. According to Dugué et al. (2018), nursing students have higher levels of stress than students in other educational settings. They also add that their tolerance to stressful situations is lower. Al-zayyat and Al-Gamal (2014) confirm these findings, They state that the perceived stress of these students would be more intense.

It was noted that there are many sources of stress for nursing students as stressors related to the academic environment such as the revision period, exam invitations or assessment deadlines to be met, but there are also stressors related to clinical practice such as the gap between theory and practice, lack of experience and knowledge, placement assignment, fear of making mistakes or stress related to relationships with faculty and nurses (Zhu et al, 2019 ; Barraza et al, 2015 ; Pulido-Martos et al, 2012).

Some sources of stress that nursing students face during their internship are similar to those encountered by graduate nurses in the field, such as difficulties imposed by the patient/nursing relationship, intense workload, difficult relationships with peers, or confrontation with the suffering and death of others (Al-Gamal et al., 2018; Edwards et al., 2010; Gibbons, 2010; Swartz & Collins, 2019; Abuatiq et al., 2020 ; Shaban et al., 2012). Based on the results of Edwards et al. (2010), during the second and third year students have higher levels of stress than first year students. They would be under more intense pressure (Lamaurt et al., 2011).

Indeed, high levels of stress and burnout among nursing students can lead to physical (e.g. somatic complaints) and psychological (e.g. anxiety, depression) consequences detrimental to their health, it would also promote the development of inappropriate health behaviours such as addiction to smoking, alcohol and other substances (Enns et al., 2018; Lamaurt et al., 2011). Furthermore, stress can have an impact on the nursing shortage. Indeed, students who are ill-prepared for their future career would be more likely to leave their profession (Enns et al., 2018). It is therefore relevant to consider strategies to reduce these negative impacts both personally and professionally in order to improve their overall well-being (Enns et al., 2018; Zhang et al., 2017).

However, the perception of stressful situations differs from one individual to another. Rather, there are some psychological determinants that have significant influence on the stress management of nursing students, notably emotional intelligence (Chan et al., 2014; Watson et al., 2008). Indeed, lower levels of perceived stress in the nursing context have been associated with higher emotional intelligence scores (Birks et al., 2009; Foster et al., 2018; Ko, 2015; Montes-Berges & Augusto, 2007).

Emotional intelligence is a psychological concept introduced by Salovey and Mayer (1989) in the field of education and developed by Goleman (1995) and

Bar-On (1997) with important theoretical and practical implications in different fields of psychology (organisational, educational, health). For example, Bar-On defined emotional intelligence as a variety of non-cognitive skills, competencies and abilities that influence a person's ability to succeed in the face of daily demands and pressures. Emotional intelligence involves the ability to address, understand and feel one's own and others' emotions, and to be able to react and act accordingly (intrapersonal, interpersonal, stress management, adaptability and general mood).

The detailed study by Codier et al. (2010) found a strong link between emotional intelligence and core nursing concepts such as empathy, problem solving, interpersonal relationships, self-awareness and clinical stress. Other studies have found a positive correlation between emotional intelligence, stress management and feelings of personal satisfaction in nursing students (Heffernan, 2010; Littlejohn, 2012; Codier et al., 2013; Kadda, 2014).

According to the existing literature, emotional intelligence plays a key role in the development of a successful and competent nursing student in professional practice. However, the risk of stress, psychological exhaustion and physical health problems is generally higher in those with low emotional intelligence (Ara-dilla-Herrero et al., 2013; Görgens-Ekermans & Brand, 2012).

For these reasons, it is urgent for nursing students to learn to control their stress and emotions. Some authors argue that emotional intelligence is a trainable skill (de Loeff et al., 2018). Indeed, the implementation of a mindfulness-type programme for developing self-management skills for emotions and stress is now a priority and can bring significant benefits to students during their training. (de Loeff et al., 2018).

The mindfulness-based stress reduction (MBSR) programme is a psycho-educational intervention with a therapeutic aim, derived from Buddhist philosophy, which was developed 25 years ago at the University of Massachusetts Stress Reduction Clinic by Jon Kabat-Zinn (Kabat-Zinn, 1990). The practice is now used in more than 200 health organisations (hospitals, psychotherapy centres) in the United States and has started to emerge in Europe in recent years. The MBSR programme and the approach to mindfulness through meditation and other exercises has gained international recognition and interest from the scientific community in the area of stress management and the development of emotional skills (Shapiro et al., 2005).

Extensive studies have been conducted on MBSR programmes and scientific evidence has shown that they can have a profoundly beneficial effect on the mind-body connection. The practice of mindfulness leads to greater awareness, attention to the present moment and the unfolding of experiences without judgement in each moment (Kabat-Zinn, 2003).

Incidentally, the spread of mindfulness is spreading widely in the Western educational world. the majority of research on nursing students shows positive effects on student stress management, valuing self-compassion, the ability to pay attention to one's own needs, the development of intrapersonal and inter-

personal skills, as well as an increased acceptance of emotions as MBSR progresses (Song et al., 2015; Walker & Mann, 2016; van der Riet et al., 2018; Sears, et al., 2011).

In controlled studies, Shapiro (2008) evaluates the effects of MBSR on stress, quality of life and well-being in health professionals, and finds potential benefits of the intervention based on quantitative data and additional benefits based on responses to open-ended questions at the end of the programme. Specifically, compared to the control group, the effects of an MBSR practice show a significant reduction in perceived stress and an increase in compassion. In addition, the author reports more favourable positive changes in the MBSR condition on all the variables examined. Participants in the MBSR condition report increased life satisfaction, decreased burnout and distress.

In practice, the MBSR programme consists of an intervention of eight 2.5 hour sessions, one session per week over eight weeks. It is a group intervention of 15 to 20 people with a full day seminar in the middle of the protocol.

The psychotherapist implements a therapeutic process based on sitting meditation exercises, body scanning visualisation, walking meditation and deep breathing exercises, accompanied by discussion and sharing. Originating from the protocol developed by Jon Kabat-Zinn in the 1980s, it has undergone many variations over the years and is flexible in time and practice and highly dependent on how the psychotherapist deploys this training, as are many psychotherapeutic interventions. Conceptually, the mindfulness approach applied in MBSR can be defined as a natural state of mindfulness that consists of living each moment fully with a view to acceptance and non-judgement. In short, mindfulness is defined as:

- a state in which the subject is highly aware of the present moment, recognising and accepting it;
- a state in which the subject's mind is not hung up or parasitized by thoughts, sensations or emotions about present or past experiences or future expectations that arise ;
- a state in which the subject pays attention (observation) to the present experience in a vigilant manner or to the continuous flow of internal and external stimuli as they arise in a non-judgmental and non-evaluative way;
- a state of mind that emphasises awareness, attention and the ability to free oneself from non-adaptive thought patterns that make the individual vulnerable to stress and other pathological states. (Kabat-Zinn, 2015).

In Morocco, at present and within the limits of our literature review, no study has examined the effect of mindfulness practice on perceived stress and emotional intelligence in undergraduate nursing students. Therefore, determining stress levels and emotional intelligence during clinical training and implementing a practical mindfulness programme may help Moroccan nursing students develop emotional skills to cope with clinical stress and facilitate their adjustment and satisfaction in their training. The present study therefore aims to explore the effects of mindfulness practice on perceived stress and emotional intelligence in undergraduate nursing students.

MATERIALS AND METHODS

Conception

This study used a quasi-experimental, single-group, pretest-posttest design.

Ethical statement

The study was conducted in accordance with the 1964 Declaration of Helsinki and its amendments. The ethics committee of the Higher Institute of Nursing and Health Techniques in Tetouan gave its approval for the study to be conducted.

Intervention Participants and Procedure

We recruited 20 nursing students. The recruitment methods included E-mail invitations, face-to-face meetings with the students during their clinical placement. Inclusion criteria consisted of being a 2nd or 3rd year student enrolled in the nursing program, with no major health problems and not undergoing psychotherapeutic treatment, registered for clinical training practicums, willing to assist in all training sessions, agreeing to practice a mindfulness-related activity for 10 to 20 minutes per day, and agreeing to complete 02 times a 15- to 20-minute questionnaire. The study coordinator conducted screening telephone interviews with volunteers who expressed interest. Eligible individuals were enrolled upon receipt of a signed consent form.

All study participants received an 08-week MBSR program training between the beginning of January 2022 and the end of June 2022, by a psychiatry expert experimented in MBSR, at the Higher Institute of Nursing Professions and Health Techniques of Tetouan (ISPITS-T) in Morocco. The administration of the questionnaires in this training included pre-test and post-test steps. The pre-test was administered at the beginning of the 1st MBSR training session and the post-test was given at the end of the 8th week. Students were informed that the questionnaires would be matched to assess the effect of the training and each student was coded with a pre-selected number to identify them in the pre- and post-intervention questionnaires.

The training is organized as a 2.5 hour session per week, following the standard MBSR protocol delivered by Jon Kabat-Zinn, based on mindfulness exercises through sitting meditation, body scan and deep breathing exercises, with discussions and exchange of experiences. Participants were encouraged to practice the mindfulness skills learned in the formal sessions on their own for 20 minutes per day.

Measures

The personal data form

A researcher-designed questionnaire was used to collect participants' demographic information, including age, gender, education level, specialty, and clinical training setting, and students' motivations for training in MBSR.

The Perceived Stress Scale in Clinical Practice (PSS-CP)

The Perceived Stress Scale (PSS) was originally developed by Sheu et al. (2002) to assess the level and type of perceived stress among nursing students in Taiwanese universities. In this study, the Arabic version translated and validated by ksiksou et al. (2022) in the Moroccan context was used to measure the types of perceived stressful events and the degree of stressors occurring during clinical practice on a 5-point Likert scale, with responses ranging from 0 (never) to 5 (very often). The total score ranges from 0 to 116. A higher score indicates a greater degree of stress. The scale is composed of 29 items grouped into 02 factors related to the sources of stress as follows: The first factor is composed of 14 items, assessing stress related to lack of nursing skills and the second factor is composed of 15 items assessing stress related to lack of nursing skills. A higher score indicates a higher level of stress. Based on the students' mean scores, their perceived stress level was classified as low (0-1.33), moderate (>1.33-2.66), and high (>2.66-4). Cronbach's alpha of 0.986 and 10-day test-retest reliability of 0.942 ($p < 0.01$) demonstrated the reliability of this instrument, while the content validity index of 0.92 proved its validity. In addition, 76.948% of the total variance was explained by the 02 factors, which confirmed the construct validity of this instrument.

The Wong and Law Emotional Intelligence Scale (WLEIS)

The Moroccan Arabic version of the WLEIS scale was used to assess the level of EI. This scale is considered a short instrument composed of 16 items, grouped into four factors (four items per factor) : Self-Emotional Appraisal (SEA); Others' Emotional Appraisal (OEA); Use of Emotions (UOE); Regulation of Emotions (ROE). Responses to the WLEIS scale are presented as 04-point Likert-type questions, ranging from 1 (strongly disagree) to 4 (strongly agree). Total EI scores could range from 16 to 64, with the following groupings: low = 16-32, moderate = 32-48, and high = 48-64. The Moroccan Arabic version of the WLEIS showed good psychometric properties in the sample of students in Morocco (Ghoudani et al., 2018). In this study, the Cronbach's alpha value of the scale was found to be 0.96.

Data analysis

The IBM SPSS 22.0 software package was used to analyze the data. We used descriptive statistics, Pearson correlation, and Wilcoxon test to analyze the data. The level of significance was accepted as $p \leq 0.05$.

RESULTS

The mean age of participants was 20.02 ± 1.12 years; 52% were female and 52% were in the specialty of MHNs. Of the participants, 54% were in their second year of study and 58% were doing the irinternship in a hospital setting.

Students' primary motivations for training in MBSR were a desire for change (20%), stress management (24%), and developing pleasant emotions (54%) [Table 1].

Table 1. Sociodemographic characteristics of the participants (n =42)

Variable	n	(%)	
Age (Mean±SD) = 20.02±1.12			
Gender	Male	8	48%
	Female	12	52%
Specialty	MHNs	12	52%
	MPNs	4	24%
	FCHNs	4	24%
Education level	2nd year	14	54%
	3rd year	6	46%
Clinical practice setting	Hospital	16	58%
	Health Center	4	42%
Motivations for MBSR training	Desire for change		20%
	Managing stress		24%
	Development of pleasant emotions		54%

Abréviations: Mental Health Nursing students (MHNs), Multi-Purpose Nursing student (MPNs), Family and Community Health Nursing students (FCHNs),(MBSR) mindfulness-based stress reduction

Table 2. Mean and standard deviation (SD) of factors and PSS-CP total score pretest and posttest (n = 42)

Domaines	pretest (mean± SD)	posttest (mean ± SD)	Significant test Z, p
Interpersonal and workload stress	2,24 ± 1,55	1,86 ± 1,26	Z = -3.290 p = 0.001*
Lack of nursing skills stress	2,14 ± 1,16	1,92 ±1,31	Z = -4.420 p = 0.001*
Total Mean Scores for PSS-CP	2,19 ± 1,35	1,89 ± 1,28	Z = -3.291 p = 0.001*

Note: Z = Wilcoxon-rank test.

Abréviations: PSS-CP: Perceived stress scale in clinical practice.

*p = 0.05.

Table 3. Mean and standard deviation (SD) of factors and EIS total score pretest and posttest (n = 42)

Domaines	pretest (mean± SD)	posttest (mean ± SD)	Significant test Z, p
Self-Emotional Appraisal	3.61 ± 1.51	3.89 ± 1.00	Z = -3.638 p = 0.001*
Others' Emotional Appraisal	3.65 ± 1.12	3.93 ± 0.86	Z = -3.773 p = 0.001*
Use of Emotions	3.38 ± 1.22	3.74 ± 1.34	Z = -3.244 p = 0.001*
Regulation of Emotions	3.13 ± 0.86	3.48 ± 0.97	Z = -3.592 p = 0.001*
Total Mean Scores for EIS	3.44 ± 1.26	3.76 ± 1.19	Z = -3.881 p = 0.001*

Note: Z = Wilcoxon-rank test.

*p = 0.05.

Abreviation: EIS: Emotional intelligence scale.

Table 4. The correlation between the scores of the students from the PSS-CP and the EIS scores (N = 42)

	PSS-CP	Self-Emotional Appraisal	Others' Emotional Appraisal	Use of Emotions	Regulation of Emotions
Self-Emotional Appraisal	0.871*	1			
Others' Emotional Appraisal	0.886*	0.771*	1		
Use of Emotions	0.796*	0.702*	0.826*	1	
Regulation of Emotions	0.718*	0.712*	0.717*	0.712*	1
EIS	0.864*	0.849*	0.833*	0.789*	0.726*

Abbreviations: PSS-CP: Perceived stress scale in clinical practice; EIS: Emotional intelligence scale.
*p < 0.05.

A statistically significant difference was found between the pre-test and post-test results for the PSS-CP ($Z = -3.291$; $p = 0.001^*$) (see: Table 2).

There was a statistically significant difference between the pre- and post-test mean scores of the EIS factors: Self-Emotional Appraisal ($Z = -3.638$; $p = 0.001^*$), Others' Emotional Appraisal ($Z = -3.773$; $p = 0.001^*$), Use of Emotions ($Z = -3.244$; $p = 0.001^*$), and Regulation of Emotions ($Z = -3.592$; $p = 0.001^*$) (Table 3). There was also a statistically significant difference between the pre-test and post-test mean total EIS scores ($Z = -3.881$; $p = 0.001^*$) (see: Table 3).

We found a strong statistically significant correlation between the PSS-CP and EIS factors. At the same time, the total scores of the two scales were highly correlated ($r = 0.864$, $p < 0.05$). As the total score of the EIS scale increased, the total score of the PSS-CP scale decreased (see: Table 4).

DISCUSSIONS

During the last years, MBSR has attracted the interest of several researchers in the health field, especially as a method for preserving human capital and as a tool for developing optimal conditions for well-being (Miller et al et al., 2020). In our research, we intend to evaluate the effects of the mindfulness training program on stress reduction and EI development in students enrolled in a nursing curriculum. According to our research, participants' motivations for choosing the MBSR training program were mainly the desire for change (20%), stress management (24%), and developing agreeable emotions (54%). In another similar study, participants reported that MBSR training was applied for reasons such as relaxation, personal development and developing a sense of happiness (Gur & Yilmaz, 2020). Furthermore, mindfulness offers an easy opportunity to find oneself in all sorts of solutions to reduce suffering and move toward constructive personal development (Kabat-Zinn, 2015).

Psychological morbidity in nursing students is often quite pronounced. On the other hand, participation in mindfulness training workshops can help improve the psychological health of these students (Mathad et al., 2017; Noble et al., 2019). In the case of the present research, nursing students' participation in MBSR sessions resulted in a decrease in their stress level and an improvement in their

emotional intelligence at the end of the training (PSS-CP = 1.89; EIS = 3.76) compared to the beginning of the MBSR training (PSS-CP = 2.19; EIS = 3.44 ± 1.26). As the total EIS score increased, the total PSS-CP score decreased. This result is consistent with previous findings in a variety of settings working with healthcare professionals (McConville et al., 2017; Ofei-Dodoo et al., 2020).

The present study demonstrates that students who underwent MBSR training experienced a change in their perception of workload, interpersonal relationships, and lack of nursing skills, which was confirmed by a significant reduction in stress levels in these two factors at the end of training (Interpersonal and workload stress = 1.86; Lack of nursing skills stress EIS = 1.92) compared to the beginning of MBSR training (Interpersonal and workload stress = 2.24; Lack of nursing skills stress = 2.14). A review of the literature concluded and recommended that mindfulness programs, including sitting meditation, walking meditation, and deep breathing exercises, accompanied by discussion and sharing, are appropriate for undergraduate nursing students (Riet et al., 2018). Another study showed that nursing students perceived clinical practicum periods positively after MBSR training (Chase-Cantarini et al., 2019).

The significant positive improvement in emotional skills such as the ability to self-assess, assess others' emotions, use emotions, and regulate emotions is important for developing and strengthening the therapeutic caregiver-patient alliance and establishing good relationships between the nurse and the health care team (Wasson et al., 2020). In this regard our results confirm that this 08-week intervention was able to increase the scores of the 04 factors of EIS including Self-Emotional Assessment, Emotional Assessment of Others, Use of Emotions, and Emotion Regulation. A similar study reported that nursing students' scores of the IST factors were developed after an MBSR program (Xie et al., 2021). Additionally the study by Ireland et al. (2017) reported that improving emotional competencies are key pillars to improving students' experiences and outcomes in their clinical training (Ireland et al., 2017).

Furthermore, stress negatively affects the quality of health care delivery to the extent that caregivers themselves report an increase in medical errors, a decrease in positive emotions, and a loss of work motivation (Galantino et al., 2005). In contrast, increased emotional intelligence is associated with decreased stress, increased job satisfaction, and increased patient satisfaction (Galantino et al., 2005). In the present study, the PSS-CP and EIS factors show a strong statistically significant correlation. At the same time, the total scores of the two scales are highly correlated ($r = .864, p < .05$). As a result, the mindfulness program reduced nursing students' perceived stress levels and developed their EIS levels. In this regard, our study is not only consistent with the literature, but also based on the principles of modern medicine (cf. Pachalska, 2019).

It would also be desirable to conduct the same mindfulness intervention, including different specialties, in multiple health education programs to test the comparability of results within and across specialties.

CONCLUSION

Based on this study, we can conclude that using a mindfulness program, consisting of weekly 2.30-hour sessions spread over 8 weeks, can be used to reduce levels of anxiety and stress in nursing students during clinical training, and improve levels of EI . Further studies are needed to confirm and extend these findings.

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