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The Outcomes of A Multifaceted Educational Intervention to Reduce Moral Distress Among Critical Care Nurses

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ABSTRACT

Aim: To measure the outcome of the implementation of a multifaceted educational intervention on the impact of moral distress among critical care nurses.

Background: The complex nature of critical care settings exaggerates different morally distressing situations that require ongoing development of interventions to mitigate the impact of moral distress. Despite the availability of research that has addressed moral distress among nurses in the literature, there is a debate about the effectiveness of the applied interventions in reducing moral distress.

Design: A quasi-experimental pretest-posttest control group study design.

Methods: Critical care nurses in two public hospitals in the Emirate of Abu Dhabi, UAE enrolled in a study that extended over 6 months. Hospital A was assigned as an experimental group ($n = 76$) and received four educational sessions and three booster sessions. Hospital B was assigned as a control group ($n = 82$) and didn't receive any moral distress-related education. The Measure of Moral Distress for Health Care Professionals questionnaire and the Moral Distress Thermometer were utilised to measure the participants' moral distress frequency, intensity, and composite scores pre- and post-intervention and identify the outcomes.

Results: The multifaceted educational intervention exhibited statistically significant reductions in the experimental group frequency, intensity, and composite moral distress scores post-test. Conversely, moral distress scores were increased among the control group. Moreover, the intervention significantly reduced the number of nurses who intended to leave their positions from 58 nurses to 47 nurses in the experimental group.

Conclusion: The multifaceted educational intervention exerts positive outcomes in reducing moral distress across all the dimensions and improving the nurses' retention.

Relevance to Clinical Practice: The intervention provides materials that could enhance the nurses' moral knowledge and skills. It provides different tools, techniques, and strategies to help the nurses address and manage their moral distress.

1 | Introduction

Critical care settings constantly expose nurses to morally distressing situations that include, for example, lack of end-of-life discussions, ideal pain management, and arguments with physicians regarding optimal patient treatments (Henrich et al. 2016; Qalawa and Hassan 2017; Amos and Epstein 2022). The magnitude of experienced moral distress was higher

Summary

- What does this paper contribute to the wider global clinical community?
  - The effectiveness of the multifaceted educational intervention in mitigating the moral distress of critical care nurses in a diverse setting like the United Arab Emirates makes it suitable to be adopted and implemented in other countries with diverse healthcare settings.
  - The developed intervention could be adopted by hospitals to be a part of their continuous education to enhance the moral knowledge and skills among nurses in other disciplines.
  - The developed moral distress self-reflection form provides an alternative method to act against a morally distressing situation. The form can be adopted by healthcare institutions and added to their portal to facilitate anonymous reporting and solving of morally distressing situations.
  - The developed self-screening Moral Distress Pathway guides the nurses in the field step-by-step to promptly recognise their moral distress, take proactive measures to seek proper support, and determine the appropriate action to take.

among Critical Care Nurses (CCNs) compared to other nurses or other healthcare providers (Atashzadeh-Shoorideh et al. 2021; Giannetta et al. 2022). The complex nature of critical care settings exaggerates different morally distressing situations that require ongoing development of interventions to mitigate the impact of moral distress (Morley et al. 2021). A systematic review of interventions to reduce moral distress conducted by Morley et al. 2021 reported that developing an intervention to reduce moral distress is a challenging task, as the intervention should be sensitive and flexible to individuals' needs and cultural differences.

2 | Background

Since 1984 when the phenomenon of moral distress was defined for the first time by Andrew Jameton, the concept of moral distress has been extensively reviewed and studied in different contexts (Browning and Cruz 2018; Morley et al. 2020; Grammatis et al. 2024; Fantus et al. 2024). In the beginning, the concept was linked to the presence of institutional constraints that restrained the nurses' ability to take the right course of action (Jameton 1984). The constraints were further defined to include external and internal constraints instead of limiting them to institutional constraints (Hamric et al. 2012). Then moral distress became an umbrella term that covers the experience of emotional, physiological, and psychological suffering that resulted from working against one's ethical principles and values (McCarthy and Monteverde 2018). Furthermore, the definition of moral distress was broadened to include other situations such as moral uncertainty, moral dilemma, moral tension, moral conflict, and emotional distress (Campbell et al. 2016; Fourie 2017; Morley, Bradbury-Jones, and Ives 2021). Moral distress is a complex phenomenon in nature and broadening its definition will make it difficult to address and mitigate moral distress (Browning and Cruz 2018).

Several components of moral distress were identified in the literature. Firstly, knowing the right ethical action (moral judgement), moral distress arises when the nurses' ethical knowledge that is relevant to the situation is not heard or taken seriously (Epstein et al. 2019). Secondly, constraints, the presence of internal and external constraints that hinder the nurses' ability to take the right course of action (Hamric et al. 2012; Rushton 2006; Nurses, AAOCC 2021). Thirdly, moral wrongdoing occurs when the nurses are forced to act against their professional ethical beliefs (Epstein et al. 2019, 2). Finally, as a response to moral distress, nurses may experience a range of symptoms and feelings that impact their physical, emotional, and psychological well-being (McCarthy and Monteverde 2018; Burton et al. 2020; Afoko et al. 2022).

Among the different applied interventions, ethically based educational interventions reported a significantly better result in reducing moral distress compared to other interventions (Morley et al. 2021: 12, Abbasi et al. 2019, Monteverde 2016, Robinson et al. 2014). In a randomised controlled trial conducted by Molazem et al. (2013), the educational interventions reported a significant decrease in moral distress scores among the experimental group compared to the control group. In addition, Fantus et al. (2024) mentioned that ethics education is the facilitating key to the decision-making process and provides the best aid to understand moral distress.

Despite research that addresses the phenomena of moral distress among nurses, there is debate about the effectiveness of interventions in reducing moral distress. Morley et al. (2021) systematic review concluded that most single interventions produced weak evidence about their effectiveness in reducing moral distress among healthcare providers. Therefore, Imbulana, Davis, and Prentice (2021) suggested that a multifaceted intervention that covers the components of moral distress is recommended. Accordingly, the current study developed and implemented a Multifaceted Educational Intervention (MFEI) that addressed the major components of moral distress to reduce its impact on CCNs.

3 | Aim

This study aimed to measure the outcome of the implementation of the developed multifaceted educational intervention on moral distress among CCNs.

4 | Method

4.1 | Design

A quasi-experimental pretest-posttest control group design guided this study following three consecutive phases, involving two groups of CCNs: experimental and control groups. The study was conducted between November 2023 and June 2024.

Phase one administered the pretest to measure the baseline moral distress score among both groups in week one. Phase two involved the development and implementation of the MFEI (week 3–24) for the experimental group and nothing was implemented for the control group. Phase three administered the post-test to the experimental and control groups 2 weeks after the completion of phase two (week 26). This phase aimed to evaluate the outcomes of the developed and implemented MFEI. The two chosen hospitals were assigned to the experimental and control groups according to the moral distress score. Hospital A scored a higher moral distress score compared to hospital B. Accordingly, hospital A was selected to constitute the experimental group while hospital B represented the control group. Transparent Reporting of Evaluations with Nonrandomised Designs (TREND) guided this study (Des Jarlais et al. 2004) (See Files S1–S3).

4.2 | Ethical Considerations

This study was approved by the institutional review board at the University of Pretoria (Ethics Reference No. 121.2023) and the ethics committee of the two chosen hospitals SEHA Research Ethics Committee (SEHA-IRB-350). The ethical considerations of the current study followed the Belmont report, considering the three essential ethical principles: beneficence, justice, and human dignity and respect (Polit and Beck, 2021). The study utilised the Self Generated Identification Code (SGIC) to maintain the participants' anonymity. There was no direct communication between the research team and the participants; all the communications were conducted through the key person of each hospital. The participants were informed that they had the right to terminate participation at any time with no consequences. The participants who agreed to participate provided electronic consent by clicking the agree button at the bottom of the electronic information sheet and informed consent.

4.3 | Settings

The study was conducted in two tertiary public hospitals in the Emirate of Abu Dhabi, the capital of the United Arab Emirates (UAE) including all the critical care units (Adult, Paediatric, and Neonatal) with a bed capacity of approximately 1379 beds. These hospitals were selected because they share similar geographical, demographical, and clinical characteristics. Both hospitals were located in the central region of Abu Dhabi Emirate, both hospitals manage acute cases, both hospitals have approximately similar bed capacity, and both hospitals are considered referral and academic hospitals.

4.4 | Participants

A convenience sample of registered nurses holding a bachelor's degree in nursing, who were permanent staff and working in critical care units for at least 6 months in the same hospital was used. The G* Power Software 3.1 was used to calculate the sample size (Faul et al. 2009). Considering the statistical tests utilised in this study (Independent t-test) assuming a power of 80%, alpha (α) of 0.05, and a medium effect size of 0.5, a total of 102 CCNs was considered sufficient to find any statistically significant variation in the moral distress score. Anticipating a 20% attrition rate, a sample of 62 CCNs from each group (experimental and control) is required.

A total of 218 CCNs (110 experimental group and 108 control group) responded to the pre-test. Among the experimental group, 80 CCNs attended all the sessions; among them, 76 responded to the post-test. Among the control group, 82 responded to the post-test. A total of 158 CCNs (76 experimental and 82 control) constituted the sample of this study (See Figure 1).

4.5 | Measures

The data were collected across the three phases of the study utilising a sociodemographic questionnaire and two assessment tools. The permission to utilise the tools was obtained from the authors via email.

5 | The Measure of Moral Distress-Healthcare Professionals

The Measure of Moral Distress-Healthcare Professional (MMD-HP) is 27 items based on a five-Likert-like scale ranging from never (0) to very frequent/distressing (4). The tool produced

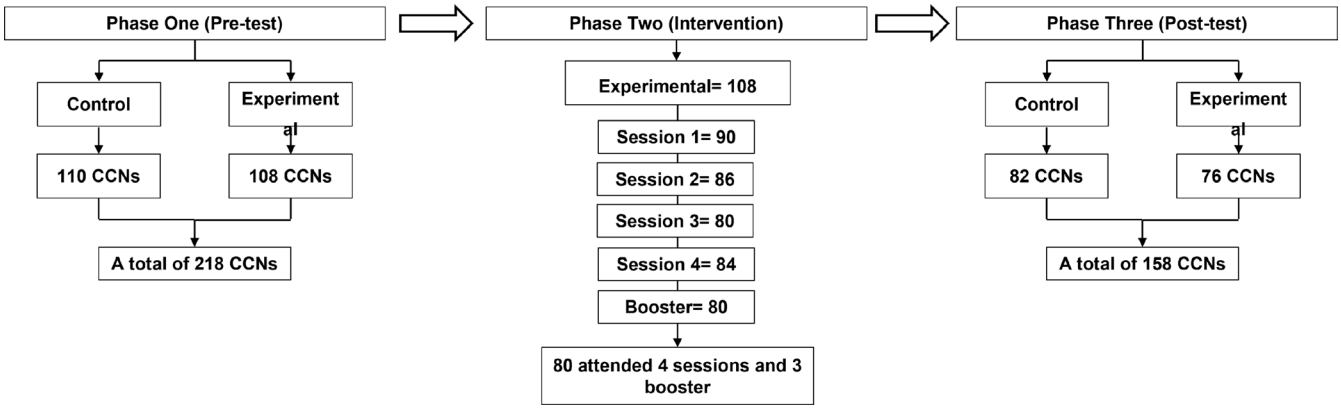

FIGURE 1 | Enrollment process of the CCNs over the three phases of the study.

three scores; the intensity score (how distressing the situation was) ranged from 0 to 108; the frequency score (how often the situation arises) ranged from 0 to 108; and the composite score, which is the multiplication of the intensity and frequency scores, ranges from 0 to 423. The higher the calculated scores, the higher the experienced moral distress. Furthermore, the tool examines the participants' intention to leave their current clinical position (Epstein et al. 2019). The two multiple-choice questions linked the participants' intention to leave with the moral distress experience, proposing that participants with higher moral distress most likely intended to leave their positions (Epstein et al. 2019). The MMD-HP is a valid and reliable tool with a Cronbach's alpha coefficient ranging from 0.93 (Epstein et al. 2019) to 0.95 (Plouffe et al. 2021). In this study, the measured Cronbach's alpha is 0.95.

6 | The Moral Distress Thermometer

The Moral Distress Thermometer (MDT) measured the moral distress intensity using a visual analogue scale that ranges from 0 to 10, where 0 means no distress and 10 represents the worst experienced moral distress. This tool was used to capture the acute phase of moral distress with the ability to track any changes over time (Wocial and Weaver 2013).

6.1 | Data Collection

The pre-test and post-test data were collected via online-based surveys using Microsoft Forms. The managing director of each hospital was assigned as the key person to access and communicate with the participants in each hospital. The research team forwarded a link that included the invitation, information sheet, informed consent, the MMD-HP, and the MDT to key persons via email. The key persons forwarded the email to the CCNs in their hospitals, inviting them to participate. The survey links were set in a manner not to collect any personal information like the participants' names, email, or IP addresses. The participants' identities were coded using the SGIC to ensure confidentiality.

6.2 | Intervention

6.2.1 | Development of the Multifaceted Educational Intervention

The researcher developed a multifaceted educational intervention that consists of four educational sessions and three booster follow-up sessions (Figure 2). The development process followed the integration of "*Corley's Moral distress theory*" (Corley 2002) with "*electronic learning and constructivism: A model for nursing education*" (Kala et al. 2010) (Figure 2).

6.2.2 | Session One: Moral Awareness

The first session was developed based on the latest American Association of Critical-Care Nursing (AACN) updated tool for recognising and addressing moral distress (Nurses, AAOCC 2021). The open-access tool consisted of four components: recognising moral distress, identifying constraints and related causes, gauging the moral distress severity, and taking action. The session aimed to increase awareness of moral distress, including its perceived

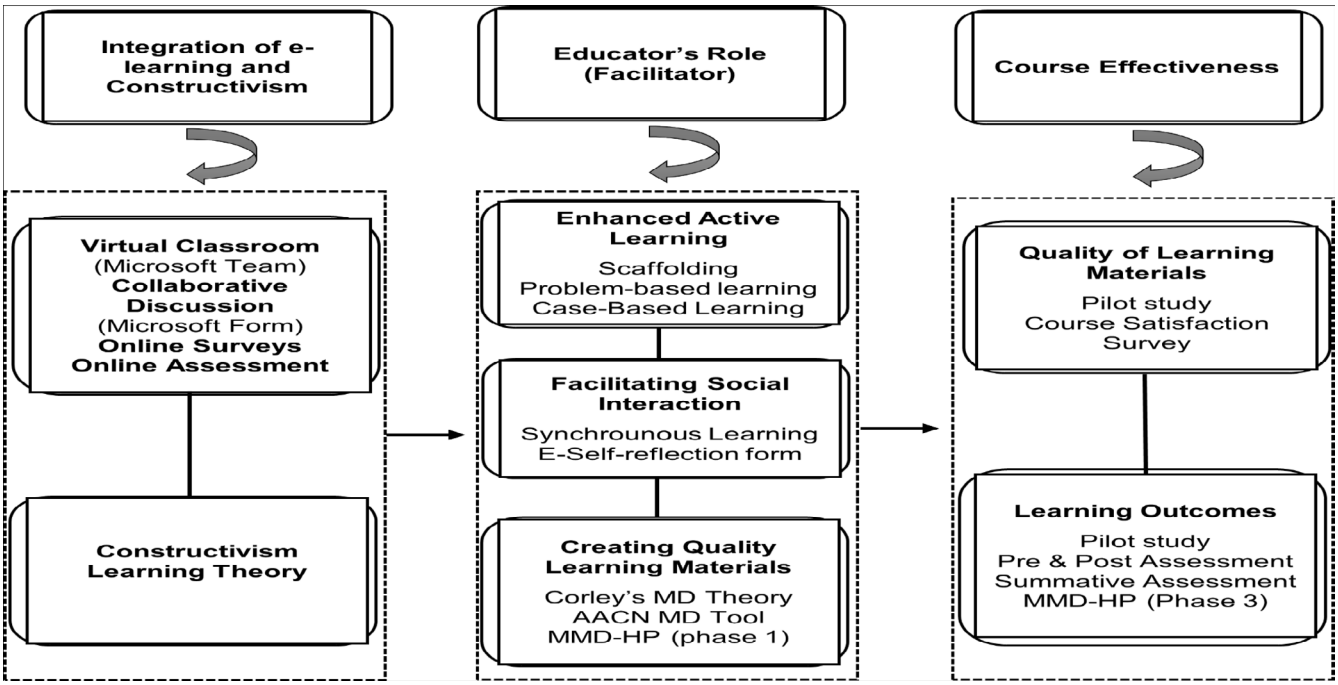

FIGURE 2 | Multifaceted Educational Intervention Development & Implementation Model (phase 2).

constraints, associated symptoms, and potential consequences. The session covered the definition of moral distress, the defining characteristics, different types of moral distress constraints, associated signs and symptoms, the impact of moral distress, and the consequences of not addressing moral distress.

The session incorporated scaffolding learning as an activity to avoid knowledge overlap and build on the participants' pre-existing knowledge.

6.2.3 | Session Two: Moral Judgement

The second session was developed based on Corley's nurse moral distress theory (Corley 2002). The session aimed to address moral judgement and enhance moral competency. The content of this session covered; the definition of moral sensitivity, moral competency, and moral judgement; identifying the relationship between these terms and their contribution to the moral decision-making process; and, the application of different methods and strategies (e.g., moral commitment, self-esteem, and moral assessment) to enhance the participants' moral assessment, moral competency, and moral judgement capacity. Scaffolding and problem-based learning were the learning and practice activities guiding this session.

6.2.4 | Session Three: Action Plan

The third session introduced the action plan to mitigate moral distress. The outcome of the session was to empower the participants' ability to take action and enhance their coping mechanisms. This session empowered the participants with different strategies to act against moral distress, introduced the newly developed form to act anonymously, and enhanced ethical communication skills.

The researcher developed a Moral Distress Self-reflection Form (MD-SRF) (Figure 3) to help the participants act anonymously against morally distressing situations when they are unable to voice out, enhance their coping, and improve their communication skills (Browning and Cruz 2018, 22; Dudzinski 2016). The form was developed based on relevant studies that had been successfully utilised to reduce moral distress and facilitate reflection (Nurses, AAOCC 2021; Epstein et al. 2019; Dudzinski 2016; Wocial and Weaver 2013; Johns 2011).

The researcher utilised case-based learning to guide the practice and application of this form. The researcher introduced a morally distressing situation with a moral dilemma that simulates the most frequent distressing situation extracted from Phase 1 data. At the end of the session, the research team, including the researcher and

Moral Distress Self-Reflection Tool (MD-SRF)

Situation	Provide a brief description of the morally distressing situation that you have experienced
Conflict	What is your concern with the situation?
Source of conflict	Can you identify the source of your conflict? Or barriers that constrained your action?
Feeling	How does that situation make you feel? (Detailed)
Shared feeling	**Do others share the same feeling or concern with the situation as you?** If yes, are they from the same nursing discipline or other healthcare disciplines?
Related symptoms	Can you write down the impact of the situation on your well-being state using the below domains? (In words)

Physical	Emotional	Psychological	Other

Distress severity*	Using the below moral distress thermometer, how severe is your moral distress? On a scale from 0 to 10 (where 0 is no distress and 10 indicates the most severe), how do you rate the severity of your moral distress?

None	Mild			Uncomfortable		Distressing		Intense		Worst Possible
☐0	☐1	☐2	☐3	☐4	☐5	☐6	☐7	☐8	☐9	☐10

Conflict justification	If you were on the opposite side, how would you justify the action causing the conflict?
Action plan	What is your action plan to solve that situation?

Advantages	Disadvantages
What are the advantages of your action plan?	What are the disadvantages of your action plan?

Evidence	Is your action plan supported by an evidence-based or clinical-based experience or both? If both, which is greater in percentage?

FIGURE 3 | Moral distress Self-Reflection Form. *Distress severity scale adapted with permission from (Wocial and Weaver 2013). [Colour figure can be viewed at wileyonlinelibrary.com]

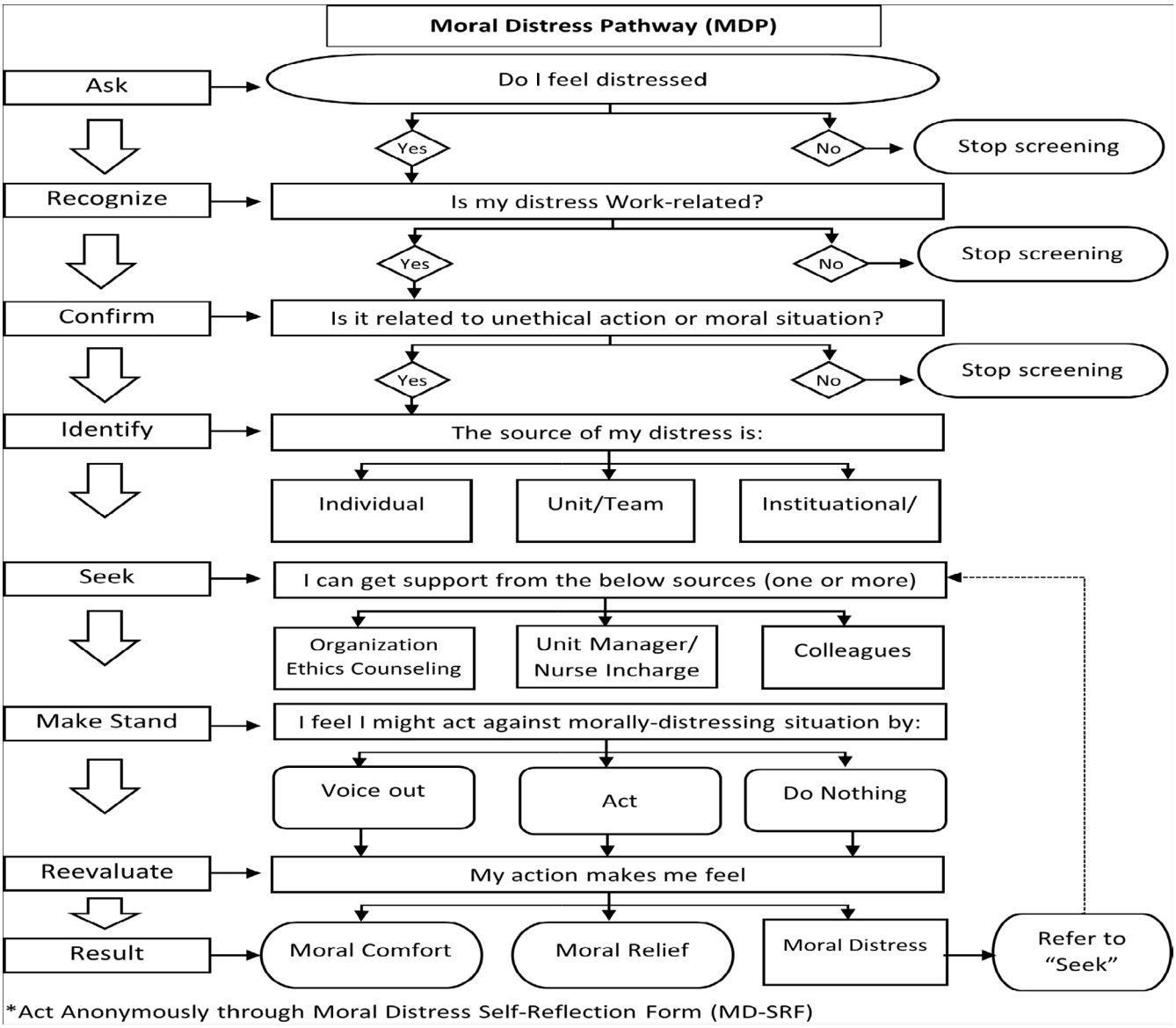

FIGURE 4 | Moral Distress Self-Screening and Mitigating: Moral Distress Pathway (MDP).

the research assistants, asked the participants to write about morally distressing situations from what they experienced using the online version of MD-SRF as a home assignment.

6.2.5 | Session Four: Empowerment

Session four introduced the developed Moral Distress Pathway (MDP) (Figure 4). The MDP guided the CCNs through a series of questions to self-screen and address moral distress. The MDP empowered nurses to promptly recognise moral distress, take proactive measures to seek proper support, and determine the appropriate action to take. In addition, the session enhanced the nurses' competency in utilising the MD-SRF. The researcher used some scenarios posted by the participants in the third session (home assignment). The participants demonstrated how to use the moral distress self-reflection form. Role-playing, self-reflection, and group presentation were utilised to enhance and summarise the learned knowledge and skills.

6.2.6 | Booster Sessions

The forgetting curve or Ebbinghaus curve theorised that knowledge retention is reduced over time. It suggested that learned knowledge would be lost if there was no retention plan (Shail 2019). Reintroducing the knowledge and skills to the participants over time using spaced intervals resulted in more effective retention and storage compared to a single time (Versteeg et al. 2020). Accordingly, the researcher provided booster sessions over 3 months to enhance the participants' retention of the acquired knowledge and skills from the educational sessions. The booster sessions included flashcards that summarised the learned moral knowledge and morally distressing case reflections and discussions with the application of The MD-SRF and the MDP.

6.2.7 | Implementation of the Multifaceted Educational Intervention

The implementation of the MFEI extended over six months. The study implemented a weekly two-hour synchronous online session over four weeks for the experimental group via Microsoft Team. An email that included the invitation letter, information sheet, informed consent, and the four-session links was sent to the key person of the experimental hospital. The key person forwarded the link to the CCNs inviting them to attend the intervention. To increase the enrolment rate, each session was repeated in the same week, giving the participants flexibility to attend either the primary or repeated session. The date and time of each session were scheduled after discussion with the key persons, considering the participants' duty rota. Which significantly increased the enrolment and resulted in a high enrolment rate. After that, a monthly booster session for three months was offered to boost the participants' acquired moral knowledge and skills.

The research team utilised the MDT pre- and post-session for the four implemented sessions to track the acute changes in moral distress among the participants.

Finally, The post-test utilising the MMD-HP and the MDT was administered in week 30 for both the experimental and control groups (phase three).

6.3 | Pilot Study

A pilot study was undertaken, involving CCNs working in another hospital that was not included in the main study plan. The inclusion and exclusion criteria were applied. A convenience sampling approach was utilised to enrol the participants. The pilot study sample size was estimated based on the stepped rule of thumb according to the main study's proposed effect size of medium effect 0.5 and power of 80%. Accordingly, 10 participants per group were estimated as the pilot study sample size (total of 20 participants) (Whitehead et al. 2016). A total of 43 CCNs (23 experimental group and 20 control group) responded to the pre-test. Among the experimental group, 21 CCNs attended all the sessions; among them, 19 responded to the post-test. Among the control group, 17 responded to the post-test. A total of 36 CCNs (19 experimental and 17 control) constituted the sample of the pilot study.

The researcher collected the data using the socio-demographic, MMD-HP, and MDT pre- and post-intervention and then implemented the four educational sessions and the three booster sessions. Ethical considerations were applied and followed throughout the pilot study. The date and time were identified according to a convenient time for the participants and the hospital regulations. The pilot study informed the feasibility and acceptability of the study for the target population, determined the need for any refinement, and identified the potential benefits and outcomes of the study. The researcher interviewed the participants utilising a structured questionnaire to collect their feedback.

The pilot study indicated that the MMD-HP and MDT instruments are useful and appropriate tools for CCNs in Abu Dhabi to measure the frequency, intensity, and total moral distress. The measured Cronbach's alpha for the MMD-HP was 0.95. The MFEI showed the capacity to reduce the moral distress scores (frequency, intensity, and total), improve participants' moral knowledge and skills, enhance their moral judgement capacity, and empower them to address their moral distress. Based on feedback from participants, adjustments were made to the intervention. These modifications included adding communication techniques for courageous behaviour, addressing the root causes contributing to moral distress, and using scenarios to differentiate between moral conflict and moral dilemma. Notably, CCNs in the pilot study ($n = 36$) were thereafter excluded from the final analysis of this study.

6.4 | Data Analysis

The collected data were cleaned and entered into the Statistical Package for Social Science (SPSS) version 24 for analysis (IBM Corp, 2016). Descriptive statistics: frequency, percentages, mean, and standard deviations were used to describe the participants' demographic characteristics, and Pre-Post moral distress frequency, intensity, and composite score. Inferential statistics: An independent sample t-test was used to compare the post-test moral distress scores between the experimental and control groups. A paired sample t-test was used to evaluate the outcomes of the intervention; it identified any statistically significant differences between the pre-test and post-test MMD-HP and MDT main scores within the experimental and control groups. A repeated measure one-way ANOVA was used to track the changes in experimental group MDT scores.

7 | Result

7.1 | Participants' Demographic and Professional Characteristics

As illustrated in Table 1, out of the 158 CCNs participated in this study, 107 (67.7%) were female, 68.4% (108) were married, most of them (75.9%) were bachelor's degree holders, and the participants' age ranged between 22 and 56, with an average of 36 years ($SD = 7.45$). The participants' overall nursing experience ranged between 1 and 33 years (mean: 13.3 ± 7.01), overall experience in critical care units ranged from 1 to 30 years (mean: 11.02 ± 6.34), were 69% of them working in adult critical care units and the remaining were working in paediatric and neonatal critical care units. By asking the participants to rate their knowledge about moral distress, 61.4% rated it between poor and fair, 30.4% rated it as good, and only 8.2% rated their knowledge between very good and excellent.

7.2 | Moral Distress Baseline Status (Pre-Test)

As shown in Table 2, the independent t-test revealed statistically significant differences in moral distress scores between the control and the experimental groups in the pre-test. The MMD-HP frequency, intensity, composite scores, and MDT scores were higher among the experimental groups versus the control group (mean 61.68 [11.59] v.s. 50.5 [15.06], $t = 5.252$, $p < 0.001$), (mean

TABLE 1 | Sociodemographic and professional characteristics of the sample ($n = 218$).

Character	Experimental group	Control group	Total
Participants		*n* (%)	
	76 (48.1)	82 (51.9)	158 (100)
Gender			
Male	25 (32.9)	26 (31.7)	51 (32.3)
Female	51 (67.1)	56 (68.3)	107 (67.7)
Marital status			
Single	13 (17.1)	37 (45.1)	50 (31.6)
Married	63 (82.9)	45 (54.9)	108 (68.4)
Education			
Bachelor	57 (75)	63 (76.8)	120 (75.9)
Post-graduate	19 (25)	19 (23.2)	38 (24.1)
Critical Care Unit			
Adult	58 (76.3)	51 (62.2)	109 (69)
Paediatric/Neonatal	18 (23.7)	31 (37.8)	49 (31)
Moral Distress Knowledge*			
Poor	17 (22.4)	15 (18.3)	32 (20.3)
Fair	25 (32.9)	40 (48.8)	65 (41.1)
Good	29 (38.2)	19 (23.2)	48 (30.4)
Very good	2 (2.6)	8 (9.8)	10 (6.3)
Excellent	3 (3.9)	0 (0)	3 (1.9)
Mean ± SD** (Range)			
Age	36.2 ± 6.88 (22–56)	35.8 ± 7.98 (22–54)	36 ± 7.45 (22–56)
Total nursing experience	13.7 ± 6.12 (1–30)	12.9 ± 7.76 (1–33)	13.3 ± 7.01 (1–33)
Total CCNs experience	11.7 ± 5.63 (1–29)	10.4 ± 6.91 (1–30)	11.02 ± 6.34 (1–30)

Note: * Moral Distress Knowledge: Participants' self-perception of their moral distress knowledge. ** Standard deviation.

TABLE 2 | Pre-test (Phase 1) Independent t-test to identify significant differences in MMD-HP scores between the experimental and control groups at baseline.

	Pre-test (Phase 1) ($n = 158$)			
	Experimental group ($n = 76$)	Control group ($n = 82$)	*t*	
Scale	Mean ± SD		*p*	Cohen's *d*
Frequency	61.68 ± 11.59	50.5 ± 15.06	5.252 < 0.001*	0.83
Intensity	63.89 ± 12.93	54.55 ± 18.45	3.708 < 0.001*	0.59
Composite	153.47 ± 62.26	127.32 ± 61.01	2.666 < 0.01	0.22
MDT	6.3 ± 2.2	4.94 ± 2.16	3.930 < 0.001	0.32

Abbreviations: MDT: Moral Distress Thermometer (Visual analog scale ranged from minimum (0) and Maximum (10)), MMD-HP: Measure of Moral Distress-Healthcare Providers Frequency, Intensity, and Composite scale, SD: standard deviation.
*Equal variances not assumed.

63.89 [12.93] v.s. 54.55 [18.45], t = 3.708, $p < 0.001$), (mean 153.47 [62.26] v.s. 127.32 [61.01], t = 2.666, $p < 0.01$), and (mean 6.3 [2.2] v.s. 4.94 [2.16], t = 3.930, $p < 0.001$) respectively.

7.3 | Multifaceted Educational Intervention Outcomes (Post-Test)

The paired sample t-test presented a statistically significant reduction in post-test moral distress MMD-HP frequency, intensity, composite, and MDT scores among the experimental group after 6 months of interventions (mean 61.68 [11.59] v.s. 55.97 [10.36], t = 10.008, $p < 0.001$), (mean 63.89 [12.93] v.s. 54.21 [17.25], t = 12.451, $p < 0.001$), (mean 153.47 [62.26] v.s. 123.82 [59.45], t = 29.66, $p < 0.01$), and (mean 6.3 [2.2] v.s. 2.82 [0.482], t = 13.487, $p < 0.001$) respectively. In contrast, the control group showed a statistically significant increase in the post-test moral distress MMD-HP frequency, intensity, composite, and MDT scores (mean 50.5 [15.06] v.s. 52.45 [16.11], t = −5.075, $p < 0.001$), (mean 54.55 [18.46] v.s. 61.07 [18.66], t = −7.415, $p < 0.001$), (mean 127.32 [61.01] v.s. 145.84 [64.58], t = −8.594, $p < 0.001$), and (mean 4.94 [2.16] v.s. 5.22 [1.2], t = −5.619, $p < 0.001$) respectively (Table 3).

Moreover, repeated measures ANOVA was conducted to track the changes in MDT score across the four educational sessions 1 week apart over 4 weeks. Tables 4–6 showed a statistically significant reduction in MDT scores across the four sessions: Wilks' Lambda = 0.083, F (3, 73) = 269.48, $p < 0.001$, partial eta squared = 0.9.

7.4 | Moral Distress and Intention to Leave Position

The MMD-HP assessed the participants' intention to leave by asking the question "Are you considering leaving your position now due to moral distress?", the pre-test and post-test revealed that among the experimental group, 58 (76.3%) participants intended to leave pre-intervention while the count reduced to 47 (61.8%) after attending the intervention. Compared to the control group, the number of participants who intended to leave increased from 44 pre-test to 49 post-test (Table 6).

8 | Discussion

This study aimed to develop and implement an MFEI to mitigate moral distress among CCNs. It is the first study conducted in the UAE and among the very few international studies that address the major components of moral distress (Hickey 2022). The outcomes of this study revealed that the MFEI is an effective intervention that reduced the moral distress scores among the experimental group over six-month periods.

At the baseline, the moral distress scores were higher among the experimental group compared to the control group. The MMD-HP composite score was 153.47 (SD = 62.26) suggesting that the higher the score, the higher the experience of moral distress (Epstein et al. 2019). In addition, the moral distress intensity score was higher than the frequency score. This finding

TABLE 3 | Within and between group Moral Distress scores comparisons pre-test (phase 1) and post-test (phase 3) intervention.

	Experimental group ($n = 76$)					Control group ($n = 82$)				
	Pre-test	Post-test	t	Mean		Pre-test	Post-test	t	Mean	
Scale	Mean ± SD	Mean ± SD	p	differences[a]	Cohen's d	Mean ± SD	Mean ± SD	p	differences[a]	Cohen's d
Frequency	61.68 ± 11.59	55.97 ± 10.36	10.008 < 0.001	5.71	1.15	50.5 ± 15.06	52.45 ± 16.11	−5.075 < 0.001	−1.95	−0.560
Intensity	63.89 ± 12.93	54.21 ± 17.25	12.451 < 0.001	9.68	1.43	54.55 ± 18.46	61.07 ± 18.66	−7.415 < 0.001	−6.52	−0.819
Composite	153.47 ± 62.26	123.82 ± 59.45	21.643 < 0.001	29.66	2.48	127.32 ± 61.01	145.84 ± 64.58	−8.594 < 0.001	−18.52	−0.949
MDT	6.3 ± 2.2	2.82 ± 0.482	13.487 < 0.001	3.49	1.55	4.94 ± 2.16	5.22 ± 1.2	−5.619 < 0.001	−0.28	−0.621

[a]Mean differences at confidence value 95%.

TABLE 4 | The result of the repeated measure one-way ANOVA for the changes in the MDT Score after each educational session (Phase 2).

	MDT[a]*	Wilks' Lambda		
Intervention	**Mean ± SD**	***p***	***F***	**Partial Eta squared**
Session 1	7 ± 0.88	0.083	269.48	0.917
Session 2	6.3 ± 0.633	< 0.001		
Session 3	4.38 ± 0.73			
Session 4	3.11 ± 0.76			

[a]Moral Distress Thermometer.

TABLE 5 | Post Hoc comparisons of the MDT score after each educational session (phase 2).

Sessions		**Mean Difference**	**SE**	***t***	**Cohen's *d***
Session 1	Session 2	0.697*	0.121	5.768	0.923
	Session 3	2.618*	0.121	21.658	3.467
	Session 4	3.895*	0.121	32.215	5.157
Session 2	Session 3	1.921*	0.121	15.890	2.544
	Session 4	3.197*	0.121	26.446	4.233
Session 3	Session 4	1.276*	0.121	10.557	1.690

Note: p-value adjusted for comparing a family of 6 (significant at $p < 0.001$).

was in line with other international studies (Kovanci and Atli Özbaş 2023; Malliarou et al. 2021; Bleicher et al. 2021) and inconsistent with another study (Harorani et al. 2019). The MDT score (6.3 out of 10) also was high, consistent with the higher composite MMD-HP score. The differences between the experimental and control groups could be attributed to a variation in the work environment or personal perception of the morally distressing situations. Despite that, both groups demonstrated increased moral distress scores, similar to other studies that reported higher moral distress scores in the context of critical care (Prompahakul et al. 2021; Grammatis et al. 2024; Hally et al. 2021). This reflected the urgency for a targeted interventions to address the moral distress in critical care settings.

Among the experimental group, the MFEI led to a significant reduction in their moral distress scores across all the measured dimensions. The MDT scale, which is used to capture and track acute changes in moral distress scores, continuously decreased with the sessions' progress over time. The one-week gap between each session gave the participants extra time to process and practice what they learned and acquired in the sessions. This finding was in line with another study conducted by (Leggett et al. 2013).

In addition, the reduction in MMD-HP composite score is reflected by the reduction in frequency and intensity scores, with more reduction observed in the intensity score. Nurses might have false moral distress when they perceive their moral judgement as the right action when it's not. Or they might have moral distress when others perceive their judgement as valid while it's not (Ulrich and Grady 2018). The MFEI incorporated techniques and strategies to enhance moral sensitivity, competency, intention, and moral judgement capacity. The MFEI introduced several tools that guided CCNs through the ethical decision-making process to make the right moral judgement. A morally competent nurse perceives the ethical issue from a reasonable perspective, develops moral judgement capacity, and demonstrates effective problem-solving techniques (Wilson 2018; Johnstone and Hutchinson 2015). Moreover, the less significant reduction in the moral distress frequency score compared to the intensity score could be attributed and linked to the improvement of CCNs' moral sensitivity. Enhancing nurses' moral sensitivity will help construct meaningful input in the ethical decision-making process, develop their moral competency, and less exposure to moral distress (Corley 2002). On the other hand, Moral sensitivity Is the ability to recognise a moral conflict; it is a lens that enables nurses to see and discover the moral challenges in the work site (Khodaveisi et al. 2021), which may improve the CCNs' ability to recognise other morally distressing situations.

The significant reduction in moral distress intensity score (Mean difference 9.68) in addition to what was mentioned above, could be linked to the MFEI focus on empowering the participants with different action plans to act against moral distress. The MFEI introduced different communication skills and techniques to support the nurses to act courageously and safely against morally distressing situations. Nursing courageous behaviour creates and maintains a safe environment that promotes the quality of patient care and patient safety (Pajakoski et al. 2021). Overcoming fear and acting against an unethical situation brought an inner feeling of self-satisfaction and self-worth (Numminen et al. 2017) which in turn reduced moral distress.

We cannot ignore that some workplaces lack a safe moral reflective space. They may lack ethics counselling, effective

TABLE 6 | Differences in intention to leave their position pre- and post-intervention.

Intention to leave position[a]	Experimental group ($n=76$)						Control group ($n=82$)					
	Yes			No			Yes			No		
	n (%)	Compisite Score	MDT Score	*n* (%)	Compisite Score	MDT Score	*n* (%)	Compisite Score	MDT Score	*n* (%)	Compisite Score	MDT Score
Pre-Intervention	58 (76.3)	167 ± 64.13	7.26 ± 1.43	18 (23.7)	107 ± 19.52	3.22 ± 1.11	44 (53.7)	163.84 ± 57.6	6.57 ± 1.21	38 (46.3)	85.03 ± 29.51	3.05 ± 1.31
Post-intervention	47 (61.8)	149.28 ± 62.52	3.28 ± 0.85	29 (38.2)	82.55 ± 13.91	2.83 ± 0.47	49 (59.8)	164.25 ± 52.51	6.47 ± 1.14	33 (40.2)	79.3 ± 18.56	3.36 ± 1.34

[a]Intention to leave the current position due to moral distress.

communication, or effective team collaboration as well (Donkers Moniek et al. 2021), which maximises the consequences of voicing out or making a stand against morally conflicting situations (Morley et al. 2022). In these environments, nurses will be more reluctant to act and risk their jobs (Dudzinski 2016; Giannetta et al. 2021). Accordingly, the MFEI addresses these concerns by offering two alternative methods. Firstly, for healthcare settings that lack ethical counselling, the MFEI introduced to the participants the newly developed MDP.

The MDP is a pathway that enables the nurses to do self-screening for the presence of moral distress. It guided the CCNs on how to seek proper support and choose the proper action through a series of questions. Secondly, the MFEI developed the MD-SRF to be used in healthcare settings that lack ethical counselling services or lack safe ethical reflective spaces. The MD-SRF enables CCNs to act anonymously against morally distressing situations. Within the implementation of the MFEI, the participants practised how to utilise the MDP and the MD-SRF, and they were able to apply them to address previously distressing situations. According to the collected feedback from the participants, both the MDP and the MD-SRF helped them to overcome morally distressing situations effectively and safely with no fear. More specifically, the MD-SRF allowed them to express their feelings, address the moral conflict, identify the perceived constraints, and propose an action plan to address these situations.

Conversely, the control group displayed an elevation in moral distress scores over the same period, which may reflect the intensifying pressures and challenges within critical care settings. Epstein and Hamric 2009, introduced the concept of the crescendo effect, which is defined as damage caused by multiple or prolonged exposures to moral distress situations. When the CCNs fail to address moral distress situations, these situations will build up, forming a moral residue, making the reaction to the new morally distressing situation more devastating (Epstein and Hamric 2009). These findings were supported by other studies utilising an educational-based intervention to reduce moral distress (Abbasi et al. 2019; Monteverde 2016; Molazem et al. 2013; Robinson et al. 2014).

Finally, the reduction in the number of CCNs considering leaving their positions due to moral distress in the experimental group is another positive outcome of the MFEI. On the other hand, the control group demonstrated an increase in intention to leave, further highlighting the MFEI's effectiveness. Retaining CCNs is vital for upholding high standards of patient care, and interventions that reduce turnover intention can have comprehensive benefits for healthcare services (Alsubhi et al. 2020).

8.1 | Study Strengths and Limitations

Despite these promising outcomes, several limitations must be acknowledged. The quasi-experimental design, while robust, cannot disregard possible confounding variables. Future studies could validate these findings utilising randomised controlled trials. In addition, long-term follow-up is suggested to examine the retention of the intervention's impact on moral distress over time. Finally, the current study focused on CCNs; further studies

are recommended to assess the effectiveness of the MFEI on other populations or a multidisciplinary team.

The strength of this study could be related to the unique features of the UAE context. As a high-income country, the UAE attracts people from across the world, forming a diverse community (Global Media Insight 2023). Implementing an intervention to reduce moral distress among CCNs in the UAE has the potential to provide significant benefits locally and worldwide. The UAE, with its diverse population, serves as a small sample that represents the international health dynamics with a diverse healthcare workforce and patients. That exposed the CCNs in the UAE to managing patients or working with a healthcare team from different ethical beliefs and cultural backgrounds, making it an ideal setting for testing an intervention aimed at mitigating moral distress. with the current effectiveness of the MFEI in mitigating the moral distress of CCNs in such a diverse setting, the intervention can be adopted and implemented in other countries with diverse healthcare environments.

9 | Conclusions

In conclusion, this study provides persuasive evidence that a multifaceted educational intervention can significantly address and reduce moral distress. The findings underline the importance of providing continuous education and support for healthcare professionals working in complex settings like critical care areas. The MDT is a valid tool that could track and detect acute changes in moral distress status within 1 week. The MMD-HP is a valid tool that could be used to measure the effectiveness of the intervention pre- and post-implementation. Future studies should continue to examine and enhance these interventions to ensure the well-being and retention of CCNs, eventually enhancing patient care and outcomes.

10 | Relevance to Clinical Practice

The developed MFEI provides ready-to-use educational materials that could enhance the nurses' moral knowledge and skills. The intervention provides different tools, techniques, and strategies to help the nurses in the field to address their moral distress. The developed sessions could be used as a bundle or separately according to the needs of the nurses. The MD-SRF can be adopted by the hospitals to encourage the nurses to address any conflicting or morally distressing situations anonymously and propose an action plan. The MDP is a self-screening pathway that guides the nurses in the field step-by-step to empower nurses to promptly recognise moral distress, take proactive measures to seek proper support and determine the appropriate action to take.

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Ethics Statement

This study was approved by the Research Ethics Committee, University of Pretoria (Ethics Reference No. 121.2023) and the SEHA Research Ethics Committee (SEHA-IRB-350). The goals of the study were explained to the participants.

Consent

Electronic informed consent was obtained from each participant. Participants were assured that the information they provided would be kept anonymous and confidential. They were also assured that they had the right to end their participation at any time.

Conflicts of Interest

The authors declared no conflicts of interest.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Materials Reproduction

The permission to utilise "the Measure of Moral Distress-Healthcare Professionals (MMD-HP)" was obtained from Associate Professor Beth Epstein the author of the MMD-HP and Professor Lucia D. Wocial the author of Moral Distress Thermometer.

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Supporting Information

Additional supporting information can be found online in the Supporting Information section.