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Original Research Article

EFFECTS OF REFLECTIVE WRITING ON MEDICAL STUDENT WELL-BEING AND PROFESSIONAL IDENTITY FORMATION

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ABSTRACT

Background: Medical students face significant academic, emotional and clinical stressors which can have a negative impact on their psychological health and career development. Reflective writing allows students to explore difficult situations, to identify their emotional reactions and to link personal values and professional roles. The objective is to determine the effects of structured reflective writing on medical students' well-being and professional identity formation. **Materials and Methods:** The study was a quasi-experimental pre-test and post-test comparative study conducted at Women Medical and Dental College, January 2025 to June 2025. There were 82 medical students, half of which composed 41 reflective-writing group and 41 control group. The intervention group had eight sessions of structured reflective-writing, and the control group had the usual curriculum. Well-being, professional identity and perceived stress, as well as emotional exhaustion and empathy and reflective capacity were evaluated before and after the intervention. The paired and independent-samples t-tests, correlation analysis and multiple linear regression were used. A p value of <0.05 was deemed to be statistically significant. **Result:** Baseline well-being and professional identity scores were comparable between the groups. After the intervention, the mean well-being score increased from 52.8 ± 10.4 to 64.7 ± 9.6 in the reflective-writing group, compared with an increase from 53.6 ± 10.1 to 55.2 ± 10.3 in the control group ($p < 0.001$). Professional identity scores increased from 61.4 ± 8.7 to 72.9 ± 8.3 in the intervention group, while the control group showed only a limited improvement from 62.1 ± 8.9 to 64.0 ± 9.1 ($p < 0.001$). Reflective writing was also associated with reduced stress and emotional exhaustion and improved empathy, emotional awareness and reflective capacity. **Conclusion:** Structured reflective writing significantly improved medical students' psychological well-being and professional identity formation. Its integration into undergraduate medical curricula may support emotional coping, self-awareness and professional development.

INTRODUCTION

Emotionally and academically challenging, medical education involves a high volume of work and assessments, as well as clinical duties, and contact with illness, suffering and death. These pressures can add to psychological stress, emotional burnout, and lack of wellbeing. Students' psychological wellbeing can have an adverse impact on their learning, relationships, understanding of empathy and being able to offer compassionate care to patients. Thus, medical schools are increasingly taking note of the significance of learning strategies that promote academic achievement and emotional health.

Reflective writing is an educational task which encourages a systematic description and critical analysis of experience, thoughts, emotions and responses. Reflective writing, as opposed to merely

reporting an event, prompts students to consider the significance of the event, its impact on beliefs, and what they might change in their approach next time. It offers a learning framework to reflect on challenging clinical situations, to identify strengths and weaknesses, and to extract learning from the experience. Medical students see reflection as useful for learning about their experiences and for personal and professional growth and development, though this may be dependent on the instructional skills of the reflection facilitator, confidentiality and a supportive learning environment.[1-4]

Reflective writing can also be used as a means to developing students' emotional awareness, expression and regulation for improving their psychological health. Writing about difficult and challenging experiences can foster emotional awareness and cognitive organization and meaning making. It may allow students to experience uncertainty, anxiety and vulnerability while not suppressing those experiences. Guided reflections have also been suggested as a way of learning to be resilient, and of learning to cope with the emotions of clinical learning.[5-7]

Professional identity formation is a process in which medical students gradually acquire values, attitudes, behaviours and sense of responsibility of being a physician. It has to do with integration of personal identity and professional expectations and is shaped by clinical experiences, role models, institutional culture, patient interaction and membership in professional communities. Reflective writing can aid in this process – asking students to reflect on what kind of doctor they want to be and how their experiences impact their ethical values, empathy, accountability and sense of belonging to the profession. Research looking at students' written reflections has led to the identification of themes of compassion, respect, teamwork, self-regulation, and professional responsibility and developing professional identity.[8-10]

Although reflective writing is increasingly included in medical education, evidence regarding its measurable effects on both student well-being and professional identity remains variable. Many previous studies have relied on qualitative analysis of reflective narratives, small samples or single educational activities, while fewer have compared pre- and post-intervention outcomes with a control group. There is also limited evidence from local undergraduate medical education settings. Therefore, the present study was conducted to evaluate the effects of a structured reflective-writing intervention on psychological well-being and professional identity formation among medical students at Women Medical and Dental College. The study also assessed changes in perceived stress, emotional exhaustion, empathy and reflective capacity following the intervention.

MATERIALS AND METHODS

This quasi-experimental pre-test and post-test comparative study was conducted at Women Medical and Dental College from January 2025 to June 2025. The study aimed to evaluate the effects of structured reflective writing on medical students' psychological well-being and professional identity formation. A total of 82 undergraduate medical students were enrolled and divided equally into an intervention group and a control group, with 41 students in each group. The intervention group participated in a structured reflective-writing program, whereas the control group continued with the routine academic curriculum without receiving any formal reflective-writing activity during the study period.

Female undergraduate medical students enrolled in the second, third and fourth professional years at Women Medical and Dental College were recruited through non-probability consecutive sampling. Students who were regularly enrolled, willing to participate and available throughout the intervention period were included. Students with previous formal reflective writing training over the last six months were excluded as well as those missing from more than 25% of the planned sessions and those that did not complete the baseline or post-intervention questionnaires. Given the number of participants (82) and with some allowances for non-response and loss to follow-up, the sample size was judged to be sufficient to identify a meaningful difference in the scores of well-being and professional identity between the two groups.

The survey was conducted with a structured questionnaire containing demographic data, academic characteristics, well-being assessment, professional professional identity, perceived stress, emotional exhaustion, empathy and reflective capacity. The psychological well-being scale was validated and used to assess psychological well-being before and after the intervention; the professional identity questionnaire, which included professional values, sense of belonging, confidence, accountability, ethical awareness, and understanding of the physician's role, was used to assess professional identity formation. Other validated scoring instruments were used to assess perceived stress and emotional exhaustion. The two scales were given in the same classroom environment and were presented so that the respondent was not allowed to discuss answers with other students.

Reflective-writing intervention provided across eight structured sessions during the study period. All sessions were supervised by a trained faculty facilitator and were approximately 30-40 minutes long, and held once a week. Students were requested to write about clinical experiences, communication problems, ethical issues, emotional responses, working in teams, professional duties, and learning from them. Prompts were created to help students describe the experience, identify thoughts and

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feelings that may have occurred, discuss meaning of the experience, and reflect on how the experience may impact future professional practice. Facilitator gave general feedback and did not grade reflections. Confidentiality was assured and students were told that their writings would only be utilized for educational and research purposes. Reflective writing attendance, session completion, engagement and perceived usefulness were documented during the intervention period.

IBM SPSS Statistics was used to enter and analyze data. All continuous variables (age, well-being score, professional identity score, stress score, emotional exhaustion score, empathy score and reflective capacity score) were summarised as mean and SD. Categorical variables were reported in both frequencies and percentages. The independent-samples t-test was used for continuous variables and the Fisher's exact test or chi-square test of independence was used for categorical variables for baseline characteristics of both groups. The changes between the within groups baseline scores and post-intervention scores were evaluated with the paired-samples t-test, and the difference between the post-intervention scores and mean score change between groups were evaluated with the independent-samples t-test. Pearson's correlation was employed to explore the correlation between session completion and the changes of outcome scores. Multiple linear regression analysis was performed to identify independent predictors of improvement after adjustment for age, year of study, baseline outcome score, residence status and previous reflective-writing experience. The p value of <0.05 was deemed as statistically significant.

RESULTS

The study included 82 female medical students, 41 of whom were randomly selected for the reflective-writing group and 41 for the control group. Overall mean age of the subjects was 21.8 ± 1.6 years. 46 students (56.1%) were living in the hostel and 36 students (43.9%) were day scholars. nineteen (23.2%) participants reported that they had prior experience in reflective writing. No differences between the groups was found in terms of age, year of study, residence status, or previous experience of reflective writing or initial academic performance, which suggests that the two groups were comparable before the intervention.

Table 1: Baseline demographic and academic characteristics

Variable	Reflective-writing group (n = 41)	Control group (n = 41)	p-value
Age, years, mean ± SD	21.9 ± 1.5	21.7 ± 1.7	0.574
Female students	41 (100%)	41 (100%)	—
Year of study			0.781
Second year	14 (34.1%)	13 (31.7%)	
Third year	15 (36.6%)	17 (41.5%)	
Fourth year	12 (29.3%)	11 (26.8%)	
Hostel resident	24 (58.5%)	22 (53.7%)	0.658
Day scholar	17 (41.5%)	19 (46.3%)	
Previous reflective-writing experience	10 (24.4%)	9 (22.0%)	0.796
Baseline academic score, mean ± SD	72.6 ± 7.8	71.9 ± 8.1	0.691

Students in the intervention group completed structured reflective-writing during the period of the study. Of the 41 students in this group 35 (85.4%) attended all of the scheduled sessions and 6 (14.6%) attended for at least 3/4. The mean number of sessions completed was 7.4 ± 0.9. The majority of participants indicated that reflective writing enabled them to: understand their feelings; reflect on clinical practice; and identify areas for further personal and professional development.

Table 2: Participation and perceptions of reflective writing among the intervention group

Variable	Frequency (%) or mean ± SD
Completed all reflective-writing sessions	35 (85.4%)
Completed 75–99% of sessions	6 (14.6%)
Number of sessions completed	7.4 ± 0.9
Found reflective writing useful	34 (82.9%)
Reported improved emotional awareness	32 (78.0%)
Reported better understanding of clinical experiences	35 (85.4%)
Reported improved ability to manage stress	30 (73.2%)
Would recommend reflective writing to other students	33 (80.5%)

The mean well-being score at baseline was not significantly different between groups (reflective-writing vs. control). The well-being score for the reflective-writing group rose from 52.8 ± 10.4 to 64.7 ± 9.6, which is a mean increase of 11.9 ± 7.8 points. The control group, on the other hand, had a slight improvement from 53.6 ± 10.1 to 55.2 ± 10.3 points. The difference in the well-being scores between the two groups was statistically significant (p<0.001) in the post-intervention scores.

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Table 3: Comparison of well-being scores before and after the intervention

Well-being measure	Reflective-writing group (n = 41)	Control group (n = 41)	p-value
Baseline well-being score	52.8 ± 10.4	53.6 ± 10.1	0.725
Post-intervention well-being score	64.7 ± 9.6	55.2 ± 10.3	<0.001
Mean change in score	11.9 ± 7.8	1.6 ± 5.9	<0.001
Participants with improved well-being	34 (82.9%)	19 (46.3%)	0.001

The within group analysis showed that a significant improvement in well-being for students who completed reflective writing ($p < 0.001$). There was no significant difference ($p = 0.084$) between the change in the control group. Between groups the effect size was 1.49 for the mean change difference which represented a large intervention effect. However, professional identity formation also showed improvement post intervention. In the reflective-writing group, the professional identity score rose, from 61.4 ± 8.7 to 72.9 ± 8.3 after the intervention. The increase was less in the control group of 62.1 ± 8.9 to 64.0 ± 9.1. The difference between the two groups in post intervention scores was found to be significant ($p < 0.001$).

Table 4: Comparison of professional identity formation scores

Professional identity measure	Reflective-writing group (n = 41)	Control group (n = 41)	p-value
Baseline professional identity score	61.4 ± 8.7	62.1 ± 8.9	0.721
Post-intervention professional identity score	72.9 ± 8.3	64.0 ± 9.1	<0.001
Mean change in score	11.5 ± 6.9	1.9 ± 5.4	<0.001
Meaningful improvement in identity score	33 (80.5%)	18 (43.9%)	0.001

The individual professional identity domains revealed that students in the reflective-writing group had significantly improved their sense of belonging to the medical profession; their professional confidence, their understanding of the doctor's role, their ethical awareness, their sense of responsibility, and their integration of personal and professional values. Professional responsibilities and self-awareness and understanding showed the greatest improvement.

Table 5: Changes in well-being and professional identity-related domains

Outcome domain	Reflective-writing group, mean change ± SD	Control group, mean change ± SD	p-value
Self-awareness	3.8 ± 1.9	0.9 ± 1.6	<0.001
Emotional regulation	3.4 ± 2.0	0.8 ± 1.7	<0.001
Stress-management ability	3.2 ± 2.1	0.6 ± 1.8	<0.001
Professional confidence	3.1 ± 1.8	0.7 ± 1.5	<0.001
Ethical awareness	2.9 ± 1.7	0.8 ± 1.4	<0.001
Sense of professional belonging	3.3 ± 1.9	0.9 ± 1.6	<0.001
Empathy toward patients	2.7 ± 1.8	0.8 ± 1.5	<0.001
Responsibility and accountability	2.8 ± 1.6	0.7 ± 1.4	<0.001

The reflective-writing group had a significant reduction in their mean perceived stress score (24.7 ± 5.8 at baseline, 18.9 ± 5.1 after the intervention). A small decrease was seen in the control group, however. Likewise, among students engaging in reflective writing, there was a greater reduction in emotional exhaustion. Reflective-capacity and empathy scores in the intervention group after the intervention were also higher than those of the control group.

Table 6: Secondary psychological and educational outcomes

Outcome	Reflective-writing group (n = 41)	Control group (n = 41)	p-value
Baseline perceived stress score	24.7 ± 5.8	24.2 ± 5.6	0.693
Post-intervention perceived stress score	18.9 ± 5.1	23.1 ± 5.7	0.001
Baseline emotional exhaustion score	21.8 ± 6.3	21.4 ± 6.1	0.770
Post-intervention emotional exhaustion score	16.2 ± 5.7	20.5 ± 6.0	0.001
Post-intervention empathy score	78.6 ± 8.9	72.3 ± 9.4	0.003
Post-intervention reflective-capacity score	74.1 ± 8.5	63.8 ± 9.1	<0.001

The results of the correlation analysis revealed a positive correlation between the number of reflective-writing sessions completed and improvement in positive well-being scores ($r = 0.48$, $p = 0.002$) and professional identity scores ($p < 0.001$, $r = 0.52$). There was also a negative correlation between greater engagement with reflective writing and lower stress levels at post intervention ($r = -0.41$, $p = 0.008$). Multiple linear regression was used to determine factors independently associated with improvement in student well-being and professional identity. After controlling for age, year of study, residence status, baseline score and prior experience with reflective writing, participation in reflective writing remained a significant predictor of improvement. Factors that were independently correlated with better outcomes were higher

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completion rates and higher engagement rates in sessions.

Table 7: Predictors of improvement in well-being and professional identity

Predictor	Adjusted β coefficient	95% CI	p-value
Participation in reflective writing	8.62	5.71 to 11.53	<0.001
Completion of all sessions	3.41	1.02 to 5.80	0.006
Higher engagement score	1.26	0.51 to 2.01	0.001
Higher baseline stress score	0.38	0.09 to 0.67	0.011
Previous reflective-writing experience	1.07	−1.18 to 3.32	0.347
Senior year of study	1.14	−0.72 to 3.00	0.226
Hostel residence	0.76	−1.31 to 2.83	0.467

Overall, the findings indicated that structured reflective writing produced substantial improvements in medical students' psychological well-being, stress management, emotional awareness, reflective capacity, and professional identity formation. Students who attended more sessions and demonstrated greater engagement achieved the largest improvements.

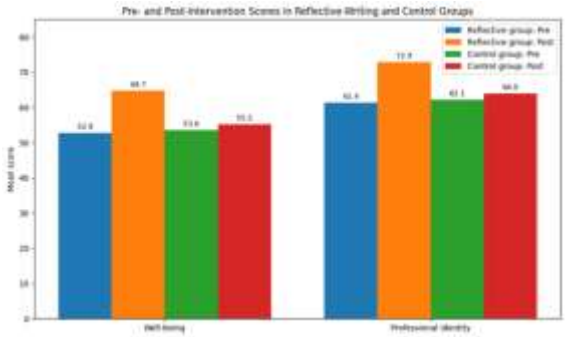

Figure 1: Comparison of pre- and post-intervention well-being and professional identity scores between the reflective-writing and control groups. The reflective-writing group demonstrated substantially greater improvement in both outcomes than the control group.

DISCUSSION

The present study demonstrated that structured reflective writing had a positive effect on medical students' psychological well-being and professional identity formation. Students who participated in the reflective-writing intervention experienced a significantly greater increase in well-being scores than those in the control group. The mean well-being score increased from 52.8 ± 10.4 to 64.7 ± 9.6 in the reflective-writing group, whereas only a limited change was observed among controls. Participants receiving the intervention also reported reduced perceived stress and emotional exhaustion, suggesting that reflective writing provided a constructive method for processing demanding academic and clinical experiences. By writing about their thoughts, emotional reactions and challenges, students may have gained greater insight into stressful situations and developed healthier approaches to coping with them.[11-13]

The present study reinforces the broader literature on the healing benefits of reflective writing, as a means by which medical students can reflect on their emotions, experiences, and reactions to difficult circumstances. Reflective writing has been reported to have benefits for personal development, emotional awareness, learning and professional development, but there is considerable variation in the design of the interventions and in how outcome was measured. Reflective activities can provide a psychologically safe environment for students to embrace uncertainty, frustration, fear and vulnerability, rather than being overwhelmed by the clinical demands. There is therefore a significant reduction in stress and emotional exhaustion in the intervention group that may be attributed to the increased emotional recognition, cognitive processing and meaning making of the situation and not to the removal of the underlying academic stressors.[14-16]

Professional identity formation also significantly increased after the intervention. There was a higher professional identity score gain in the reflective-writing group (61.4 ± 8.7 to 72.9 ± 8.3) than in the control group. The professional confidence, ethical awareness, accountability, and feelings of the role of the physician and belonging to the medical profession were most improved. The process of professional identity formation is a complex one that involves the assimilation of the professional attitudes, values, responsibilities and expectations necessary for a medical professional with the attitudes, values and responsibilities of the student. It is influenced by personal beliefs, education and role models and the clinical setting. The same, a longitudinal undergraduate course with written reflections and workshops and mentoring, demonstrated that there was an increase in students' self-awareness of their developing professional identity. The results suggest that reflection should be a conscious part of learning and education, and not just a by-product of being in clinical environments.[17,18]

Self-awareness, empathy, emotional regulation and reflective capacity were also better in the reflective-writing group. The findings suggest that benefits of reflective writing go beyond personal well-being to attributes that impact patient-centred care and professional practice. The higher empathy scores noted after the intervention may be due to reflective writing where students explore a clinical encounter from the patient's, families and healthcare worker's lens. A recent study of how medical students' thought about reflection revealed that students overall perceived reflection as useful in comprehending their

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experience and aiding professional development. However, reflection must be carefully facilitated so that students do not produce socially desirable responses instead of reflection due to compulsory well graded or poorly confidential writing. Student engagement and authenticity are therefore important and supported by faculty guidance, appropriate prompts, confidentiality and constructive feedback.[19,20]

The findings should be interpreted in view of several limitations. The study was carried out at a single medical college with relatively small sample size of 82 students; however, this could limit the generalizability of findings to other medical colleges and student body. Quasi-experimental design and non-probability sampling method could have caused selection bias, and self-reported questionnaires could have caused recall and social-desirability bias. The short follow-up period also did not allow for measurement of the sustainability of well-being and professional identity change over time or the extent to which these changes could be seen in the observable clinical behaviours. Large multicentre studies with longer follow-up periods and a mixed methodology involving interviews, portfolio analysis and faculty observations, with randomized allocation, should be conducted in the future. There is also a need for further research to compare various writing frequencies, facilitation techniques and feedback strategies in order to evaluate how best and most readily reflective writing can be integrated into the undergraduate medical curriculum.

CONCLUSION

Structured reflective writing was associated with significant improvements in medical students' psychological well-being, professional identity formation, self-awareness, emotional regulation, empathy and stress-management ability. Students who completed more sessions and demonstrated greater engagement achieved the largest improvements. Reflective writing appears to be a practical and low-cost educational strategy that can help students process emotionally demanding experiences while developing a clearer understanding of their professional roles and responsibilities. Medical colleges should consider integrating confidential, guided and non-punitive reflective-writing activities into the undergraduate curriculum alongside appropriate faculty facilitation and student-support services.

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