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Assessment of Mental Health First Aid Training and Simulated Psychosis Role-Play Exercises in Pharmacy Education

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Abstract

This research aimed to determine how participation in Mental Health First Aid (MHFA) training and structured psychosis simulation exercises influences pharmacy students' attitudes, confidence, and practical engagement when supporting individuals experiencing mental health challenges or crises. Final-year pharmacy students undertook MHFA training. Subsequently, a subset participated in psychosis simulation exercises co-developed with mental health stakeholders and validated for accuracy. Trained actors enacted patient scenarios while peers, tutors, and mental health consumer educators (MHCEs) observed. Students then completed immediate self-evaluations, received structured feedback, and joined reflective debrief sessions with observers. Quantitative evaluation, including ANOVA and chi-square analyses, was applied to scores from self, tutor, and MHCE ratings across three scenarios. Additionally, a 15-item survey assessing mental health stigma and confidence was administered at three timepoints: before MHFA training, after training, and post-simulation, with paired t-tests used to analyze changes.

Out of 209 students trained in MHFA, 86 took part in simulations. Self-ratings were consistently lower than evaluations from MHCEs, which were the highest. After MHFA training, 14 survey items showed statistically significant improvement, reflecting reduced stigma and increased confidence in providing psychosis care. Following the simulation exercises, improvements were observed in 12 items. Psychosis-focused simulation exercises appear to enhance short-term confidence and reduce stigma among pharmacy students after MHFA training, with self-perceived performance lower than ratings from tutors and MHCEs. Future research should combine observed behaviors with self-reported data and explore longitudinal MHFA outcomes using simulated patients in clinical contexts.

Keywords: Patient simulation, Psychotic disorders, Self-assessment, Feedback, Pharmacy education

Introduction

Mental Health First Aid (MHFA) training [1] has been incorporated into various health professional programs, including pharmacy [2, 3], and is associated with improved mental health knowledge [4], confidence in responding to mental health issues [5–7], reductions in

stigmatizing attitudes [8, 9], and increased readiness to perform MHFA interventions [10]. However, most evaluations rely on self-reported data, which may not always correspond with actual competence [6]; integrating observational assessments can provide a more robust understanding of MHFA impact [10–12].

Simulated or standardized patient (SP) role-plays [13], aligned with Miller's pyramid of clinical competence [14], offer students the opportunity to demonstrate practical application of knowledge in controlled scenarios, moving beyond self-reporting to observable behavior [6, 7]. These exercises help overcome challenges inherent in evaluating MHFA in real clinical settings, such as ethical issues and the unpredictability of

mental health crises [15]. When combined with feedback and reflective discussions, SP exercises encourage students to critically appraise their communication and clinical skills before encountering real patients [16].

Despite this, few pharmacy programs in countries such as Australia, the United States, and the United Kingdom offer structured opportunities to practice MHFA skills [2, 3], and studies examining observed behavior following training are scarce [17]. Prior research has focused predominantly on depression, including cases with suicidal ideation [6], with limited attention to psychosis [14]. Evidence indicates that healthcare professionals often demonstrate lower knowledge, confidence, and positive attitudes when managing psychosis compared with depression [18, 19], which may be influenced by interpersonal stigma [20] and implicit biases [21]. Moreover, SPs in previous studies were often familiar to students; using trained actors unknown to participants can enhance realism and ensure standardized learning experiences [15, 16, 22–24].

This study therefore sought to evaluate the effects of MHFA training and simulated psychosis scenarios on pharmacy students' stigma and confidence in supporting individuals with mental health difficulties, as well as to examine their MHFA-related behaviors post-training.

Materials and Methods

Ethics approval
The Human Research Ethics Committee at The University of Sydney granted approval for this research (Project Number 2021/507). Every participant gave their written informed consent.

Research design
The investigation employed a single-group design with assessments before and after the intervention, reported in line with the TREND statement for nonrandomized evaluations [25].

Location and study population
The research took place within the School of Pharmacy at The University of Sydney. Participant recruitment and data gathering occurred between February and November 2022. Final-year students in the Master of Pharmacy (MPharm) program taking a unit on mental health and neurology, along with final-year Bachelor of Pharmacy (BPharm) students in a professional practice unit (having previously completed the mental health and neurology

unit), were required to complete Mental Health First Aid (MHFA) training followed by simulated patient (SP) workshops integrated into their coursework. Before starting MHFA training, all students received an invitation to take part in one or more components of the research. Sample size was fixed by the total number of students in these cohorts.

Interventions
A 12-hour MHFA course was provided to 209 final-year students (62 in MPharm and 147 in BPharm) by four accredited MHFA instructors, in 11 sessions of about 20 participants each. Following the training, every group participated in a mandatory 90-minute session where students could volunteer for a single SP role-play to apply their new MHFA abilities. Three pre-developed and validated simulated scenarios related to psychosis care—covering initial psychosis episode with suicidal ideation, a caregiver for someone with schizophrenia, and medication non-adherence with antipsychotics—were utilized, along with corresponding scoring rubrics [26]. Groups divided into three smaller subsets to cover all scenarios, with each delivered by a team of an actor, a tutor, and a mental health consumer educator (MHCE)—an individual with lived experience of mental illness who contributes to education—in a rotating format, yielding 99 role-plays overall. The participating student interacted with the actor under observation by classmates, a tutor (MHFA-trained), and an MHCE. Right after the role-play, the student performed a self-evaluation using the rubric, then received feedback and debriefing from peers, the MHCE, and the tutor.

Actors received 30–60 minutes of preparation with two research team members (TU, an MHFA-trained pharmacist, and SE, an accredited MHFA instructor) to practice their scenario. MHCEs were sourced from the non-profit groups One Door Mental Health [27] and Bipolar Australia [28].

Assessment tools
A 15-item questionnaire, modified from earlier studies[6, 29, 30], was used to evaluate students' self-confidence and stigmatizing attitudes toward assisting individuals with mental health issues or crises. It included eight items on confidence in delivering MHFA and the validated 7-item Social Distance Scale (SDS). The survey was administered before MHFA (T0), immediately after MHFA (T1), and after the role-plays (T2). Confidence responses used a 5-point Likert scale (1 = strongly agree

to 5 = strongly disagree), while SDS items used a 4-point scale (1 = definitely willing to 4 = definitely unwilling). Students filled out the surveys privately in the training venue. Responses remained anonymous, with data handled via REDCap, hosted by The University of Sydney[31].

Performance in applying MHFA during role-plays was evaluated using the pre-developed validated rubrics[26]. Passing a scenario required >50% score plus fulfillment of specific mandatory pass/fail elements, based on tutor ratings. Rubrics were anonymized prior to analysis.

Collected variables included participant characteristics, survey item responses across time points, and role-play ratings from self, tutor, and MHCE.

Statistical approach

Analyses were carried out with IBM SPSS version 28.0 (IBM Corp., Armonk, NY, USA). Summary statistics were produced for those completing surveys at every time point. Matched-pair t-tests compared survey data between T0-T1, T1-T2, and T0-T2. Individual unique codes allowed matching of responses. One-way ANOVA with follow-up tests examined rating differences among assessors and across scenarios for score variations and difficulty. Chi-square analysis with post-hoc comparisons assessed associations between scenario type and pass/fail results. Cases with missing values were removed via listwise deletion. Statistical significance was defined as $p < .05$.

Results and Discussion

Participant characteristics

Among the 209 students who received MHFA training, survey completion rates were 133 (64%) at T0, 148 (71%) at T1, and 128 (61%) at T2, with fully matched responses from 70 participants (33%). These matched respondents had an average age of 24.4 years (SD 4.6), were predominantly female (50, 71.4%), and mostly BPharm students (52, 74.3%), compared to 18 (25.7%) in MPharm. Among them, 13 (18.6%) disclosed a personal mental health diagnosis, and 29 (41%) had a close relative or friend with mental illness. The majority (56, 80%) were currently working in pharmacy.

Due to absences of actors or MHCEs in two groups, only six role-plays were performed instead of nine, and seven students who did multiple role-plays had later performances omitted to avoid bias, leading to 86 role-plays included in the analysis.

Findings from surveys

Preliminary analyses on unpaired data showed comparable patterns of change with little impact on significance levels. **Table 1** displays shifts in specific item scores and overall SDS means for the matched sample. From T0 to T2, significant improvements occurred in mean scores for 14 of the 15 items.

Table 1. Confidence and stigma scores across 3 survey timepoints using matched data (n = 70)

Survey Item	T2 Mean (SD)	T1 Mean (SD)	T0 Mean (SD)
Confidence items: "I feel confident that I can…"			
Approach someone who may be developing a mental health problem or experiencing a mental health crisis	1.6 (0.6)[bc]	1.8 (0.5)[a]	3.2 (0.8)
Recognize the signs that indicate that someone may be developing a mental health problem or experiencing a mental health crisis	1.6 (0.5)[c]	1.6 (0.5)[a]	2.7 (0.8)
Ask a person whether they are having thoughts of suicide	1.8 (0.7)[c]	1.7 (0.6)[a]	3.1 (0.9)
Encourage a person to seek appropriate professional help	1.5 (0.6)[c]	1.5 (0.5)[a]	2.3 (0.8)
Encourage a person to access other support	1.6 (0.6)[c]	1.5 (0.5)[a]	2.3 (0.8)
Listen to and interact with a person without expressing judgement about their situation	1.4 (0.5)[c]	1.5 (0.5)[a]	2.1 (0.8)
Offer a person information and support about mental health problems	1.7 (0.6)[c]	1.7 (0.5)[a]	2.8 (0.82)
Recognize and correct other people's misconceptions about mental health problems	1.63 (0.62)[c]	1.7 (0.6)[a]	2.7 (0.7)
Stigma items: "In relation to a person who has previously been hospitalized for severe and persistent mental illness, such as schizophrenia, how willing would you be to…"			
Share a flat with that person	2.3 (0.8)[c]	2.5 (0.7)[a]	2.8 (0.7)

Have that person as a babysitter for your child	2.6 (0.8)[bc]	2.8 (0.7)[a]	3.3 (0.7)
Have one of your children marry that person	2.3 (0.8)[bc]	2.4 (0.8)[a]	2.7 (0.8)
Introduce that person to a single friend as a potential relationship partner	2.2 (0.8)[c]	2.3 (0.8)[a]	2.6 (0.7)
Work alongside that person	1.6 (0.6)[c]	1.6 (0.6)[a]	2.0 (0.7)
Recommend that person for a job	1.7 (0.7)[c]	1.8 (0.6)[a]	2.1 (0.6)
Have that person as a neighbor	1.8 (0.7)	1.8 (0.7)	1.9 (0.7)
Total social distance scale (SDS) score	**14.5 (4.1)[bc]**	**15.2 (3.8)[a]**	**17.5 (3.7)**

Abbreviation: SD = standard deviation. Statistically significant differences are indicated in bold. ap < .05 for comparison between baseline (T0) and post-training (T1). bp < .05 for comparison between post-training (T1) and post-simulation (T2). cp < .05 for comparison between baseline (T0) and post-simulation (T2).

Following the MHFA training (at T1), significant improvements were observed in the average scores for every confidence-related item. Specifically, the average score for the confidence item regarding approaching an individual potentially facing a mental health issue or crisis showed statistically significant enhancement from baseline (T0) to both post-training (T1) and post-simulation (T2). Overall, there was a pattern of further mean score gains from T1 to T2, though two items exhibited slight reductions in reported confidence; these changes were not statistically significant.

At T1, average scores on nearly all stigma-related items demonstrated improvement, with the sole exception being the item about willingness to have the person as a neighbor. The average scores for the stigma items concerning having the person babysit one's child, having a child marry the person, and the overall SDS total score displayed significant reductions (indicating lower stigma) from T0 to both T1 and T2.

Performance in simulated role-plays
Analysis included a total of 238 completed scoring rubrics, broken down by assessor type across all performances (n = 84 from student self-evaluations, n = 83 from tutors, n = 71 from mental health consumer educators). All scores were normalized to a percentage out of 100 for easier comparison **(Table 2)**. Results from one-way ANOVA indicated a statistically significant variation in average scores among the different raters across the three scenarios combined (F [2,235] = 17.3, p < .001). Post-hoc Tukey testing showed that tutors awarded significantly higher marks to participating students than the students gave themselves, with an average difference of 6.7 (2.1) (p = .004). Mental health consumer educators also gave markedly higher scores than self-assessments, with a mean difference of 12.5 (2.1) (p < .001). Additionally, MHCEs assigned higher scores than tutors, with a mean difference of 5.8 (2.1) (p = .02).

Table 2. Role-play performance scores provided by different assessors across the three scenarios

Assessor Type (n)	Average Score (/100)	95% Confidence Interval	Standard Deviation	Standard Error	Highest Score	Lowest Score
Mental Health Consumer Educator (MHCE) (n = 71)	77.4	74.2–80.6	13.5	1.6	100.0	35
Tutor (n = 83)	71.6	68.6–74.6	13.8	1.5	100.0	40
Student self-assessment (n = 84)	64.9	62.2–67.6	12.4	1.4	90.9	30

Individual one-way ANOVA tests, applied to the ratings from the three assessor groups for each scenario separately **(Table 3)**, highlighted distinct patterns across the simulations.

In the initial scenario (first-episode psychosis with suicidal thoughts), a notable overall variation in scores was identified among the raters (F [2,70] = 9.5, p < .001). Follow-up Tukey comparisons showed that tutors rated students' performances considerably higher than the students rated themselves, with an average difference of

8.2 points (SE 3.4, p = .05), while mental health consumer educators (MHCEs) provided even higher ratings than self-assessments, differing by 15.8 points on average (SE 3.6, p < .001).

The middle scenario (carer of a person with schizophrenia) displayed no meaningful differences in average scores across the rater types.

For the final scenario (non-adherence to antipsychotic medication), another significant rater effect was evident (F [2,73] = 8.9, p < .001). Post-hoc Tukey analysis

indicated that MHCEs assigned substantially elevated scores relative to both the students' own evaluations

(mean difference 13.8, SE 3.4, p < .001) and the tutors' scores (mean difference 10.2, SE 3.4, p = .01).

Table 3. Average performance scores in role-plays by assessor type for each scenario

Scenario	Assessor Type (n)	Average Score (/100)	95% Confidence Interval	Standard Error	Standard Deviation	Highest Score	Lowest Score
1 (First-episode psychosis with suicidal thoughts)	Mental Health Consumer Educator (MHCE) (n = 21)	80.3	75.1–85.5	2.5	11.3	95.5	59.1
	Tutor (n = 26)	72.7	67.2–78.2	2.7	13.6	95.5	45.5
	Student self-assessment (n = 26)	64.5	59.7–69.3	2.3	11.9	90.9	45.5
2 (Carer of a person living with schizophrenia)	Mental Health Consumer Educator (MHCE) (n = 27)	73.9	67.3–80.5	3.2	16.6	100.0	35.0
	Tutor (n = 31)	73.1	67.3–78.8	2.8	15.6	100.0	40.0
	Student self-assessment (n = 31)	65.0	60.3–69.7	2.3	12.9	85.0	30.0
3 (Non-adherence to antipsychotic medication)	Mental Health Consumer Educator (MHCE) (n = 23)	79.0	74.4–83.6	2.2	10.7	100.0	61.1
	Tutor (n = 26)	68.8	64.1–73.6	2.3	11.8	100.0	44.4
	Student self-assessment (n = 27)	65.2	60.2–70.3	2.5	12.8	83.3	38.9

A chi-square analysis revealed a significant association between the type of scenario and the pass/fail result ($\chi^2(2)$ = 19.3, p < .001, Cramer's V = 0.5). Follow-up z-tests on independent proportions, adjusted with Bonferroni correction, showed that 55.2% of failures occurred in scenario 1, while 46.3% of passes were in scenario 3 For the first time, this research utilized professional actors to perform psychosis-related care situations following Mental Health First Aid (MHFA) training, in order to assess pharmacy students' demonstrated abilities along with their reported levels of stigma and confidence in assisting individuals with mental health issues or crises. The MHFA program led to notable enhancements in confidence and decreases in stigma across 14 of the 15 questionnaire items, and 12 of these showed further gains after the role-play sessions. Analysis of ratings from three assessor groups revealed that mental health consumer educators (MHCEs) and tutors assigned markedly higher scores to students than the students did in their own evaluations. Results for pass/fail demonstrated superior student performance in the medication non-adherence case relative to the one

involving initial psychosis episode accompanied by suicidal ideation.
Student self-ratings were considerably lower than those from tutors and MHCEs, and none of the participants gave themselves perfect scores in any scenario. This tendency toward strict self-evaluation has been highlighted in student discussions [15] and could stem from heightened personal expectations following the training. Moreover, scenario 1 had the greatest failure proportion (55.2%) among all cases. This likely relates to its focus on delivering MHFA to someone in a first psychotic episode with suicidal ideation—a situation students have called "challenging" [15] and one that highlights a need for additional focus in psychosis-related training and education [18]. In contrast, the medication adherence topic (scenario 3) aligns more closely with routine pharmacy activities and involves less acute urgency, whereas assisting a caregiver (scenario 2) involves indirect involvement with the crisis, making it potentially less daunting and contributing to better outcomes in those cases.
Findings from the questionnaires align with prior work: confidence levels [5–7] and social distance scale (SDS)

measures [8, 9] rose substantially after MHFA training, with similar patterns evident following role-plays. Before training, consistent with earlier investigations of stigma in pharmacists [32], two items concerning intimate social proximity (e.g., childcare or marriage) exhibited elevated stigma initially. These improved markedly after both the training and role-plays. Just one item—"having such a person as a neighbor"—failed to show significant change over the study period, as it started with minimal stigma, pointing to a possible ceiling effect [33]. Notably, for the confidence questions on inquiring about suicidal thoughts and promoting additional support seeking, average ratings rose slightly (though not significantly) from post-training to post-role-play, suggesting reduced confidence afterward. This pattern might correspond to the "conscious incompetence" phase in Burch's model of competence development [34], where learners acknowledge skill acquisition but, upon practical application in simulations and feedback receipt, become aware of gaps in real-world implementation. Such experiences suggest that observer and instructor debriefing serves as a key motivator for advancing to "conscious competence" [35]. Further repetitive simulation practice boosts clinical proficiency [35], facilitating progression to "unconscious competence." This framework has served as a means for interprofessional learners to gauge their assurance in handling tough patient dialogues pre- and post-simulation [36]. Additionally, pre- and post-training simulations have proven useful in assessing educational programs for dietitians' physical assessment abilities [37]. Training via scenarios (simulations) has outperformed lecture-based methods in building asthma first aid proficiency and skills [33]. Participants here expressed in discussions a desire for greater simulation exposure and cross-professional involvement to boost future confidence and capability [15].

Strengths and limitations
One key advantage was the use of diverse, realistic psychosis scenarios in role-plays, enabling students to practice MHFA techniques and obtain feedback in a protected educational setting. Although tailored to community pharmacy contexts, these cases could be readily adapted for other healthcare programs. Logistical constraints prevented uniform involvement of the same instructors, actors, tutors, and MHCEs across all 11 sessions, but standardized preparation and rehearsals led by the same investigators (TU and/or SE) aimed to ensure

uniformity. Scoring involved various evaluators, yet relied on established, validated assessment tools [38]. The study-specific rubrics underwent content validation beforehand [26], though upcoming work on inter-rater consistency could be beneficial [38]. Without pre-training role-plays, direct effects of MHFA on behavioral competence remained unobserved. Generalizability to broader pharmacy student populations may be limited by the modest participant numbers and absence of sample size powering. As anticipated, Bachelor of Pharmacy students outnumbered Master of Pharmacy ones (reflecting cohort sizes, with final-year BPharm up to four times larger), leading to combined analysis for increased power. Voluntary participation might have attracted more extroverted, high-achieving, or mental health-interested individuals. Ethical and privacy rules prohibited linking personal survey data to performance scores, restricting deeper examination of training and simulation influences on individual confidence and stigma. Although post-intervention improvements occurred in self-reports, no follow-up assessed durability. Collecting matched responses over three phases was difficult, yielding only 33% complete data.

Future directions
Evidence on MHFA's influence on real-world actions remains scarce. Upcoming evaluations should incorporate pre- and post-training simulations [37] to better examine behavioral and skill impacts. Nurse-focused simulation training has demonstrated strong links to practice confidence [39]. With MHFA now common in medical, pharmacy, and nursing education [2], further assessments of its effects and skill transfer to professional settings are needed [40]. Here, participants completed standard MHFA; as tailored pharmacy versions emerge [41, 42], comparisons between general and specialized training could prove valuable. Multiple simulation sessions have improved nursing interns' clinical skills [35]; thus, this innovative actor-based method, including coaching and feedback, should be applied to investigate long-term effects of repeated standardized patient role-plays on pharmacists' MHFA performance.

Conclusion

MHFA training combined with realistic psychosis role-plays performed by professional actors—rated by students themselves, tutors, and MHCEs—can markedly

enhance pharmacy students' confidence and lower stigma regarding aid for those in mental health crises. Across raters, self-evaluations proved stricter than those from MHCEs and tutors. Longitudinal research employing standardized patient techniques with actors is required to track skill application from training to actual practice.

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