Featured Article

Improving Interprofessional Approaches to Physical and Psychiatric Comorbidities Through Simulation

Asanga Fernando, MRCPsych[a,c], **Chris Attoe, BSc**[a,*], **Peter Jaye, BSc, MRCP, FCEM**[b], **Sean Cross, MRCPsych**[a,c], **James Pathan**[a], **Simon Wessely, MA, BM, BCh, MSc, MD, FRCP, FRCPsych, FMedSci, FKC**[c]

[a]Maudsley Simulation, South London & Maudsley NHS Foundation Trust, Lambeth Hospital, London SW9 9NT, UK
[b]Simulation and Interactive Learning Centre, Guy's and St Thomas' NHS Foundation Trust, St Thomas' Hospital, London SE1 7EH, UK
[c]Institute of Psychiatry, Psychology & Neuroscience, King's College London, London SE5 8AF, UK

Abstract
Background: Forty-six percent of individuals with mental health conditions have long-term physical illness, while 30% of individuals with long-term physical conditions have a mental illness. Physical and psychiatric comorbidities are of significant concern to medical, psychiatry, and primary care services, with policy, strategy, and literature highlighting the need to better address this interface. Simulation training has been proposed as a tool to improve clinicians' management of physical and psychiatric comorbidities. This study is the first to evaluate interprofessional simulation in improving management of such comorbidity.
Method: Participants (n = 63) were doctors and nurses from emergency, medical, psychiatric, and community services across primary and secondary care in South London. Quantitative and qualitative measures were completed before and after a one-day interprofessional simulation course addressing clinical care for physical and psychiatric comorbidities.
Results: Knowledge, confidence, and attitudes scores showed statistically significant improvements post-course with large effect sizes. Thematic analyses highlighted the development of interprofessional working, clinical skills, reflective practice, leadership and teamwork, and communication skills.
Conclusion: Simulation training has the potential to improve professional development and clinical practice, with participants reporting increased abilities to provide better care to patients with physical and psychiatric comorbidities, exemplifying the case for increased simulation training in health care education.

Cite this article:
Fernando, A., Attoe, C., Jaye, P., Cross, S., Pathan, J., & Wessely, S. (2017, April). Improving interprofessional approaches to physical and psychiatric comorbidities through simulation. *Clinical Simulation in Nursing, 13*(4), 186-193. http://dx.doi.org/10.1016/j.ecns.2016.12.004.
© 2016 International Nursing Association for Clinical Simulation and Learning. Published by Elsevier Inc. All rights reserved.

Introduction

Physical and psychiatric comorbidities, referred to as the mental−physical interface, is a significant concern in medical, community, primary care, and psychiatry services. Policy, strategy, and literature highlight the interconnected nature of mental and physical health and the need to better address this interface (Doherty & Gaughran, 2014; Naylor et al., 2012; UK Department of Health, 2011). Individuals with mental health conditions are at increased risk of physical comorbidities, with delayed diagnoses and elevated mortality, whereas individuals with physical health conditions are at increased risk of psychiatric comorbidities (British Medical Association, 2014). In the UK, 46% of individuals with a mental illness have a long-term physical illness, whereas 30% of individuals with long-term physical conditions have a mental illness, equating to 4.6 million people with poorer quality of life and increased morbidity and health care utilisation (British Medical Association, 2014).

The prevalence of mental illness in general hospital inpatients may be over 40% (Rothenhausler, 2006), whereas symptoms of depression are associated with higher risk of hospitalisation, readmission, and increased length of stay (Prina et al., 2015). Half the cases of depression in general hospitals go unrecognised, and up to 30% of all primary care presentations relate to medically unexplained symptoms (Cepoiu et al., 2008; Kirmayer, Groleau, Looper, & Dao, 2004). Depression prevalence in specific patient groups, such as chronic pain, has been found to be as high at 61% (Rayner et al., 2014), whereas people with schizophrenia die up to 18 years earlier than the general population, with 60% excess mortality attributable to physical illnesses (Chang et al., 2011; Tiihonen et al., 2009). Health care professionals in primary care, general hospitals, and mental health services may lack knowledge, confidence, and skills in addressing mental and physical health needs concurrently (Hatcher & Arroll, 2008; Kulkarni, Huddlestone, Taylor, Sayal, & Ratschen, 2014; Parsonage & Fossey, 2011; Salmon et al., 2007). In the UK, the economic cost of treating patients with chronic mental and physical comorbidities is estimated at £8 to 13 billion annually (Naylor et al., 2012).

Literature and policy have stressed the importance of interprofessional education (IPE) in health care to facilitate high-quality, safe care through interprofessional collaboration in practice (Centre for the Advancement of Interprofessional Education (CAIPE), 2013; Frenk et al., 2010; World Health Organisation, 2010). In no area is IPE and collaboration more important than at the mental−physical interface, where several professions often interact. Integrated models of interprofessional collaboration have been suggested and implemented, demonstrating improved patient outcomes in physical and psychiatric comorbidities, including psychology services in diabetes care (Doherty & Gaughran, 2014; Katon et al., 2004; Parsonage, Fossey, & Tutty, 2012). However, increased IPE is still required across health care services.

Mental health simulation training may help to bridge the mental−physical interface due to its experiential nature, relevance to nontechnical skills and potential to involve multiple professions (Attoe, Kowalski, Fernando, & Cross, 2016; Brown, 2009; McNaughton, Ravitz, Wadell, & Hodges, 2008). Mental health simulation refers to the recreation of real-life scenarios in safe environments using actors and audiovisual technology, followed by a structured debrief, aiming to foster professional development and improve care quality (Attoe et al., 2016). Research has demonstrated benefits to health care professionals, including improvements to knowledge, clinical understanding, and recognition of psychopathology (Bennett, Arnold, & Welge, 2006; Lehr & Kaplan, 2013; Zigman, Young, & Chalk, 2013). Nursing and psychiatry trainees' confidence in providing better clinical care has been shown to improve (Guise, Chambers, & Valimaki, 2012; Thomson, Cross, Key, Jaye, & Iversen, 2013; Tiffen, Graf, & Corbridge, 2009). From undergraduates to community clinicians, mental health simulation has reduced negative attitudes towards mental illness (Brown, 2009; Gough & Happell, 2009; Happell, 2008). Benefits have been found to the ''nontechnical skills'' of participants, referring to capabilities essential for working with mental health needs, such as improved communication and reflective practice (Birndorf & Kaye, 2002; Edward, Hercelinskyj, Warelow, & Munro, 2007; Kowalski & Sathanandan, 2015; Sleeper & Thompson, 2008).

Despite consensus that interprofessional working is essential for care quality and safety and that simulation can improve teamwork and interprofessional collaboration (Baker et al., 2008; Fichtner, Stout, Dove, & Lardon, 2000; Ross et al., 2013), few studies assess simulation for two or more professional groups. Additionally, few studies have investigated interprofessional simulation designed to address physical and psychiatric comorbidities.

This study aims to be the first to evaluate an interprofessional mental health simulation course designed to address skills in managing overlapping

Key Points

- Interprofessional simulation training can be used to address care for physical and psychiatric comorbidities.
- Simulation training can benefit the professional development of, and possibly clinical care provided by, health care professionals.
- Interprofessional mental health simulation training should be increasingly employed in health care education, with concurrent further research.

physical and mental health needs—Simulation Workshop at the Mental–Physical Interface (SWAMPI). This study aims to examine the impact of SWAMPI on the knowledge, attitudes, confidence, and perceived changes to clinical practice of an interprofessional group of clinicians.

Methods

Participants and Procedures

Participants (n = 63) were an interprofessional group of nurses and junior doctors working in primary or secondary care in South London (see Table 1). Using opportunity sampling, attendees of SWAMPI were given study information and consent forms. Participants were administered self-report measures assessing knowledge, attitudes, and confidence both pre- and postcourse and a further postcourse measure examining perceptions of SWAMPI's impact. Participants were informed of their anonymity, confidentiality, and right to withdraw. Ethical approval was awarded by the Psychiatry, Nursing, and Midwifery Research Ethics Subcommittee on behalf of the UK Health Department's National Research Ethics Committee.

Measures

Self-evaluation Form

This 21-item questionnaire examined knowledge, attitudes, and confidence. Seven "true or false" questions assessed knowledge of treatment, clinical responsibilities, and presentations in comorbidity, giving scores of 0 to 7 with high scores indicating good knowledge. Seven "yes/no" questions assessed attitudes towards mental and physical comorbidities and working with colleagues, giving scores of 0 to 7 with high scores indicating positive attitudes. Seven 5-point Likert scales assessed confidence in assessing, managing, and treating varying patient presentations in mental and physical health, giving scores of 5 to 35 with high scores indicating high confidence. Reverse-scored items were recoded prior to analyses.

Table 1

Table 1 Number and Percentage of Participants by Profession

Profession	Total
Registered General Nurse	18 (28%)
Registered Mental Health Nurse	15 (24%)
Core Psychiatry Trainee/Resident	11 (17%)
Core Medicine Trainee/Resident	8 (13%)
General Practice Trainee/Resident	7 (11%)
Emergency Department Nurse	3 (5%)
Foundation Year Doctor/Intern	1 (2%)

Course Evaluation Form

This 12-item postcourse measure employed yes/no answers and open questions to assess participants' perceptions of the course's impact on professional development and clinical practice.

In the absence of validated measures that closely matched the research question and course learning objectives, development of measures was guided by the literature, researchers' clinical expertise, and the study aims (Groves et al., 2009). This process generated the tools described above containing concise and explicit statements for participants to respond to relating directly to the learning objectives and study aims. These tools were piloted on clinicians and researchers working with the simulation centre to assess their usability, with limited stylistic and grammatical changes highlighted.

Course Content

Simulation Workshop at the Mental–Physical Interface

A one-day interprofessional mental health simulation course consisting of six scenarios developed to meet clinicians' needs for working with physical and psychiatric comorbidities. Participants either took part in interprofessional scenarios using trained actors or high-fidelity mannequins or observed via video link.

Scenarios (see Table 2) were designed by clinical educators from psychiatry and emergency medicine following recording, transcription, and thematic analysis of focus groups supported by a blind researcher, to identify the needs of training participants. Six focus groups were completed with Emergency Department clinicians, general nurses, mental health nurses, psychiatry residents, general practice residents, and medical residents. This process guided the development of scenarios and design of learning objectives, whereas standards from CAIPE and competency frameworks from nursing, medical, and psychiatry professional bodies were consulted (CAIPE, 2013). Initially, eight scenarios were used in two pilot courses, and following review by academic supervisors and an external simulation centre, the final six scenarios focusing on two patient journeys were selected. Data from these pilot courses are not included in this study.

A 40-minute debrief followed each 15-minute scenario, facilitated by trained faculty and using the Diamond debrief model of description, analysis, and application to explore health care skills and broaden learning (Jaye, Thomas, & Reedy, 2015). The course aimed to support participants in the provision of care for patients with or at risk of physical and psychiatric comorbidities by increasing participants' knowledge, attitudes, and confidence in this area; enhancing interprofessional, multidisciplinary working in clinical teams and between health care settings; and improving the use of nontechnical skills such as communication, situational awareness, and leadership.

Table 2   Description of Training Scenarios and Individual Learning Objectives

Scenario Outline		Learning Objectives
1	Assessment of distressed patient with first episode psychosis in Emergency Department following possible leg fracture after fall/jump from window due to auditory hallucinations and cannabis use	- Mental state assessment for psychosis - Holistic assessment of mental and physical needs - Interprofessional working in the ED
2	De-escalation of the same patient due to acute agitation following admission to an inpatient general ward awaiting surgery on leg fracture	- De-escalation of agitated patients with mental illness - Rapid tranquilisation protocol - Interprofessional working on the ward
3	Management of medical deterioration in the same patient having been transferred to an inpatient psychiatric unit (mannequin used instead of actor)	- Medical deterioration in psychiatry - Prevention of medical emergencies - Interprofessional working between general and psychiatric hospital
4	Assessment of suicidal ideation in a new patient in a GP surgery, including engagement, risk assessment, and management plan	- Assessment of suicide and self-harm - Knowledge of Mental Health Act - Interprofessional working in community
5	Recognition and management of delirium in the same patient following ED presentation and admission for rehydration	- Assessment of delirium - Protocol of delirium guidelines - Interprofessional working on the ward
6	Management of difficult discharge and anxiety in the same patient, formulating collaborative discharge plans and repeated hospital presentations	- Management of anxiety in patients - Awareness of one's own emotions - Interprofessional working in discharge

Note. ED = emergency department; GP = general practitioner.

Data Analysis

Paired samples *t*-tests compared pre- and post-SWAMPI scores for knowledge, attitudes, and confidence. Eta squared determined effect sizes.

Thematic analysis and descriptive statistics were used to examine participants' perceptions of the impact on professional development and clinical practice. Data were transcribed, assisting with familiarisation, before researchers completed free coding and subsequently decided on final codes, organising these into themes (Green & Thorogood, 2004).

Results

Quantitative Findings

Paired samples *t*-tests found statistically significant increases in total knowledge scores precourse ($M = 2.46$, $SD = 1.26$) to postcourse ($M = 4.03$, $SD = 1.53$), $t(58) = -9.81$, $p = .001$, total attitude scores precourse ($M = 5.14$, $SD = 1.41$) to postcourse ($M = 5.73$, $SD = 1.17$), $t(58) = -4.40$, $p = .001$, and total confidence scores precourse ($M = 23.97$, $SD = 4.90$) to postcourse ($M = 28.10$, $SD = 3.64$), $t(58) = -9.54$, $p = .001$. The effect sizes, or magnitudes of the differences in the means, were calculated using eta squared and were large, 0.63, 0.25, and 0.61, respectively (Cohen, 1988).

Descriptive statistics from Course Evaluation Forms are outlined in Table 3.

Qualitative Findings

Thematic analysis of qualitative data identified six themes: interprofessional working, clinical skills, leadership and teamwork, reflection, and communication. Direct participant quotations have been included, as have comparisons between professions that could not be made in quantitative analyses due to sample sizes.

Table 3   Responses From Course Evaluation Form Regarding SWAMPI's Impact

Do You Believe That Today's Course is Likely to	Yes (n = 63)
1. Enhance your interprofessional working in your current/future team?	62 (98%)
2. Impact on your clinical practice in the future to the benefit of patient care?	63 (100%)
3. Impact on your future practice with regard to patent safety?	62 (98%)
4. Enhance your communication skills?	61 (97%)

Note. SWAMPI = Simulation Workshop at the Mental−Physical Interface.

Interprofessional Working

Interprofessional working is defined as collaboration in clinical care between members of two or more professional groups. This theme highlighted clear recognition of the importance of, and eagerness for, IPE that is a key precursor to collaboration in practice:

I find this really educational and such an important learning experience for a psychiatric nurse. It was insightful for general medics and nurses too, to understand the gap in general training and psychiatric nurses and the resources we have available.

Participants directly highlighted plans to change their clinical practice to facilitate and encourage interprofessional working:

Explicitly giving information when speaking to other specialities, [understanding] skill sets of other teams.

It was suggested that participants had developed an increased understanding of other disciplines, relating to training and ability, resources available, and difficulties faced. Participants contrasted this with their own settings and contexts and subsequently assessed how they might collaborate more effectively.

Clinical Skills

Clinical skills, in this context, refer to the ability to execute routine tasks in providing care. There were a variety of clinical skills and levels of ability that participants reported improvements in; ranged from management of medical deterioration, central to medical settings; to de-escalation and mental state examinations, central to psychiatric settings; as well as mutual tasks such as history taking, handovers, and decision making. Participants highlighted the benefits of practicing and honing their clinical skills:

Knowing to establish history of suicide attempts and whether they [patients] have a clear plan was really helpful.

This was suggested to impact on clinical practice, as participants identified specific improvements that they would subsequently make:

[I will] recognise possible causes of short duration delirium, then early intervention and treatment.

Participants specified that recapping clinical skills traditionally associated with their discipline was beneficial, although the most considerable improvements were to skills they had limited experience of and were traditionally regarded as for other professions. It was reported that this skill mix would help participants to address patients' physical and mental health needs, whereas improved ability to plan and prioritise in clinical decision making was cited most often.

Leadership and Teamwork

Understanding of and commitment to leading clinical situations and working in teams were highlighted. Participants emphasised their learning regarding the importance of leadership and functioning effectively as a clinical team:

[I learned] how to keep focused, prioritise, take lead in chaotic situations.

Participants reported that this would translate into adopting leadership roles more often in practice and focusing on improving team functioning:

[I will take a] leadership role and accept the knowledge of others in [a] team.

An increased openness to delegating and using the strengths of a team and its individuals were documented, whereas a comfort in assuming leadership in challenging circumstances was particularly notable.

Reflection

Reflection is the critical review and appraisal of oneself and one's professional performance, as well as one's team and its performance. Participants reported that SWAMPI encouraged such reflection, with regard to scenarios and wider professional duties:

The dementia portrayal was very accurate, even though my background is this area it's good to practice and reflect.

Participants employed this reflection in relation to specific actions or attributes of individuals, as well as in relation to team functioning in particular situations:

Made me reflect on roles within emergency situations, importance of clear roles and remaining calm.

The benefits of such reflective practice to care delivery were described, as was a commitment and endeavour to transfer reflection into the workplace, individually and within teams.

Communication

Communication skills were identified as improved across varying contexts, from de-escalating agitated patients, to being assertive with colleagues. Respondents highlighted the importance of understanding and using complete communication, rather than simply verbalisation:

Emphasis on establishing rapport with patients, to listen and understand patient experience/context.

Participants reported being able to utilise communication more effectively in practice. This included communicating with patients, families, and colleagues, as well as employing certain techniques at appropriate times, such as assertiveness, mirroring, and ensuring communications are understood.

[I will] be assertive when speaking to colleagues when advocating a patient's best interests.

Participants linked this to being able to deliver care tailored more specifically to the individual, as well as working interprofessionally.

Discussion

This study assessed the impact of SWAMPI, an interprofessional simulation course for the mental–physical interface, on the knowledge, attitudes, confidence, and future clinical practice of an interprofessional group of clinicians. Participants showed significant improvements in knowledge, attitudes, and confidence in managing physical and psychiatric comorbidities through interprofessional collaboration in emergency, medical, psychiatric, and primary care settings. Further perceived improvements to clinical practice were suggested in the areas of interprofessional working, clinical skills, leadership and teamwork, reflection, and communication.

Quantitative findings were in line with existing literature, with postcourse improvements to knowledge (Bennett et al., 2006; Lehr & Kaplan, 2013; Zigman et al., 2013), confidence (Guise et al., 2012; Thomson et al., 2013; Tiffen et al., 2009), and attitudes (Brown, 2009; Gough & Happell, 2009; Happell, 2008). These findings demonstrate the effectiveness of simulation training in improving clinicians' knowledge and confidence in working with physical and psychiatric comorbidities, linking to the experiential, interprofessional, and practical basis of simulation training that sees learning supported through debriefs. Improved attitudes towards mental health and comorbidity, which is of paramount important to improving care, further demonstrate the value of simulation and its experiential methods; however, evaluation of attitudes is complex in nature and further research is required to clarify this finding.

Qualitative analyses highlighted interprofessional working as a benefit of SWAMPI across all professions, in line with existing research (Baker et al., 2008; Fichtner et al., 2000; Ross et al., 2013). This finding aligned with 98% of respondents indicating that their interprofessional working in practice would improve postcourse. Suggestions that participants were more able, committed, and likely to collaborate interprofessionally in their workplaces may influence the quality and safety of care delivered for physical and psychiatric comorbidities. Furthermore, this meets recommendations of literature and policy in this area, supporting the use of interprofessional simulation training to improve collaboration (Frenk et al., 2010; World Health Organisation, 2010).

Clinical skills relevant to the mental–physical interface were reportedly improved through learning new and recapping existing skills, demonstrating a potential influence on the professional development of participants and subsequently their care delivery. Although these findings support existing literature, they represent new findings in relation to simulation training focusing on the mental–physical interface (Bennett et al., 2006; Edward et al., 2007). These outcomes may originate from the experiential nature of simulation, opportunities afforded to practice, and constructive review and consolidated learning processes during debrief, as well as having a heavy reliance on interprofessional involvement.

Reported increases in understanding and commitment to assume leadership and effective teamwork supported existing research into interprofessional simulation (Baker et al., 2008; Fichtner et al., 2000). Nursing staff, emergency, general, and psychiatric, reported the most substantial developments in leadership skills, perhaps reflecting a potential improvement for nursing training. Appropriate leadership and successful teamwork, particularly in frontline staff, is essential to providing safe care, highlighting another potential impact of simulation training. Explorations of hierarchy, situational awareness, and interprofessional team dynamics throughout SWAMPI may have facilitated such benefits and are intrinsic to simulation training.

Reflection in clinical practice, both individually and collectively, was identified as a benefit although this has received limited attention in the literature (Edward et al., 2007; Sleeper & Thompson, 2008). Reflection is an important part of personal development and clinical care, particularly in physical and psychiatric comorbidities as clinicians are likely to be managing patients' needs beyond their professional specialty. Reflection was cited more often as a benefit by nonpsychiatric professions, highlighting the importance of sharing perspectives and skills in IPE and the potential for simulation training to facilitate this.

The positive impact reported on communication aligns with simulation literature, as well as 97% of respondents perceiving that their communication skills were improved (Birndorf & Kaye, 2002; Kowalski & Sathanandan, 2015). Communication was reported to have improved with colleagues, linking back to interprofessional and team working, as well as with patients, linking to clinical skills. With communication failings contributing to significant numbers of serious untoward incidents, and having a significant effect on patient experience and continued care across professions and settings, this is a vital area of clinical improvement facilitated by SWAMPI.

Findings demonstrate the potential of health care simulation for training on mental and physical comorbidities, building on the existing literature base. The value of simulation was demonstrated through positive educational outcomes in key areas, such as knowledge, confidence, communication, and teamwork. These findings were often linked back to simulation's experiential nature, the use of interprofessional participants and faculty, and the debrief process, providing increased understanding of simulation training.

Further implications relate to clinical care delivery following these educational outcomes. Development of clinical skills, reflective practice, and effective leadership, among other benefits, may impact positively on care quality and safety. Furthermore, 98% of respondents stated that SWAMPI would help them to provide better, safer patient care. This demonstrates the link between simulation training and potential improvements to patient care, as viewed by health care professionals.

IPE receives further support from this study in line with both literature and policy, as all benefits were in the context of interprofessional designed, delivered, and received training (CAIPE, 2013; Frenk et al., 2010; World Health Organisation, 2010). Participants enhanced their abilities to work interprofessionally in care, linking to confidence and attitudes towards collaboration, and effective communication and skill sharing across professions. These findings support increased deployment of simulation training to foster interprofessional collaboration to the benefit of patient care.

Significant implications are evident in relation to addressing the mental–physical interface. The successful development of an interprofessional simulation course for managing physical and psychiatric comorbidities, that found perceived benefits to professional development and clinical practice of participants, demonstrates the suitability of simulation to this area. Much of SWAMPI's impact links to the clinical workplace and patient care, emphasising the need for increased interprofessional simulation training to support care at the mental–physical interface.

This study has reported interesting and unique findings relating to interprofessional simulation for the mental–physical interface, representing an addition to the literature base. However, it is acknowledged that self-report data may limit the findings and implications. Although a common limitation in educational research, it must be recognised that self-report data catches valuable information on the experience and views of the participants involved, providing useful and insightful data.

The study design did not facilitate direct comparison with other training methods, only indirect comparison through the participant's reports. Pre- and postcourse comparisons were conducted without the use of validated measures, although this is due to the lack of such validation in existing research and was compensated for by the clinical and educational expertise of the researchers along with piloting. Development of validated tools to measure the impact of simulation training should be seen as a priority.

Although a mixed methods design was employed and a large sample size was achieved for a study in this field, qualitative analyses could have been supplemented with longitudinal interviews or focus groups to assess long-term impact. The impact of training was examined by professional group as well as collectively, allowing interesting conclusions to be drawn regarding differences between professions. However, the proportions of participants by profession were not equal, and the sample size was not large enough to allow comparisons by profession for quantitative data.

The SWAMPI course was designed to provide interprofessional, experiential, and reflective training to clinicians working with physical and psychiatric comorbidities in emergency, medical, community, and mental health settings. Participants' knowledge, attitudes, and confidence in working at the mental–physical interface showed statistically significant improvements. Participants reported development of interprofessional working, clinical skills, reflective practice, leadership and teamwork, and communication skills. These findings link closely to clinical practice, with participants linking their learning to the ability to provide better patient care. This study succeeds in being the first to evaluate an interprofessional mental health simulation course on the mental–physical interface, representing a valuable contribution to the literature. Significant implications were highlighted in relation to the use of simulation for IPE and training clinicians working with physical and psychiatric comorbidities. Further research into simulation training for the mental–physical interface is highly warranted.

Acknowledgments

References

Attoe, C., Kowalski, C., Fernando, A., & Cross, S. (2016). Integrating mental health simulation into routine health-care education. *The Lancet Psychiatry, 3*, 702-703.

Baker, C., Pulling, C., McGraw, R., Dagnone, J. D., Hopkins-Rosseel, D., & Medves, J. (2008). Simulation in interprofessional education for patient-centred collaborative care. *Journal of Advanced Nursing, 64*, 372-379.

Bennett, A. J., Arnold, L. M., & Welge, J. A. (2006). Use of standardized patients during a psychiatry clerkship. *Academic Psychiatry, 30*, 185-190.

Birndorf, C. A., & Kaye, M. E. (2002). Teaching the mental status examination to medical students by using a standardized patient in a large group setting. *Academic Psychiatry, 26*, 180-183.

British Medical Association, Science & Education Department and the Board of Science. (2014). *Recognising the importance of physical health in mental health and intellectual disability: Achieving parity of outcomes.* London: Author.

Brown, S. A. (2009). Implementing a brief hallucination simulation as a mental illness stigma reduction strategy. *Community Mental Health Journal*, *46*, 500-504.

Centre for the Advancement of Interprofessional Education (CAIPE). (2013). *Introducing interprofessional education*. Fareham: Author.

Cepoiu, M., McCusker, J., Cole, M. G., Sewitch, M., Belzile, E., & Ciampi, A. (2008). Recognition of depression by non-psychiatric physicians: A systematic literature review and meta-analysis. *Journal of General Internal Medicine*, *23*, 25-36.

Chang, C. K., Hayes, R. D., Perera, G., Broadbent, M. T., Fernandes, A. C., Lee, W. E., …, & Stewart, R. (2011). Life expectancy at birth for people with serious mental illness and other major disorders from a secondary mental health care case register in London. *PLoS One*, *6*(5), e19590. http://dx.doi.org/10.1371/journal.pone.0019590.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale: Lawrence Earlbaum Associates.

Doherty, A. M., & Gaughran, F. (2014). The interface of physical and mental health. *Social Psychiatry and Psychiatric Epidemiology*, *49*, 673-682.

Edward, K., Hercelinskyj, J., Warelow, P., & Munro, I. (2007). Simulation to practice: Developing nursing skills in mental health: An Australian perspective. *International Electronic Journal of Health Education*, *10*, 60-64.

Fichtner, C. G., Stout, C. E., Dove, H., & Lardon, C. S. (2000). Psychiatric leadership and the clinical team: Simulated in vivo treatment planning performance as teamwork proxy and learning laboratory. *Administration and Policy in Mental Health and Mental Health Services Research*, *27*, 313-337.

Frenk, J., Chen, L., Bhutta, Z. A., Cohen, J., Crisp, N., Evans, T., …, & Zurayk, H. (2010). Health professionals for a new century: Transforming education to strengthen health systems in an interdependent world. *Lancet*, *376*, 1923-1958.

Gough, K., & Happell, B. (2009). Undergraduate nursing students' attitude to mental health nursing: A cluster analysis approach. *Journal of Clinical Nursing*, *18*, 3155-3164.

Green, J., & Thorogood, N. (2004). *Qualitative methods for health research*. London: SAGE Publications.

Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology* (2nd ed.). New Jersey: John Wiley & Sons.

Guise, V., Chambers, M., & Valimaki, M. (2012). What can virtual patient simulation offer mental health nursing education? *Journal of Psychiatric and Mental Health Nursing*, *19*, 410-418.

Happell, B. (2008). The importance of clinical experience for mental health nursing. Part 1: Undergraduate nursing students' attitudes, preparedness and satisfaction. *International Journal of Mental Health Nursing*, *17*, 326-332.

Hatcher, S., & Arroll, B. (2008). Assessment and management of medically unexplained symptoms. *British Medical Journal*, *336*(7653), 1124-1128.

Jaye, P., Thomas, L., & Reedy, G. (2015). 'The Diamond': A structure for simulation debrief. *Clinical Teacher*, *12*(3), 171-175.

Katon, W. J., Von Korff, M., Lin, E. H., Simon, G., Ludman, E., Russo, J., …, & Bush, T. (2004). The pathways study: A randomized trial of collaborative care in patients with diabetes and depression. *Archives of General Psychiatry*, *61*, 1042-1049.

Kirmayer, L., Groleau, D., Looper, K. J., & Dao, M. D. (2004). Explaining medically unexplained symptoms. *Canadian Journal of Psychiatry*, *49*, 663-672.

Kowalski, C., & Sathanandan, S. (2015). The use of simulation to develop advanced communication skills relevant to psychiatry. *British Medical Journal Simulation & Technology Enhanced Learning*, *1*, 29-32.

Kulkarni, M., Huddlestone, L., Taylor, A., Sayal, K., & Ratschen, E. (2014). A cross-sectional survey of mental health clinicians' knowledge, attitudes, and practice relating to tobacco dependence among young people with mental disorders. *BMC Health Services Research*, *14*, 618.

Lehr, S. T., & Kaplan, B. (2013). A mental health simulation experience for baccalaureate student nurses. *Clinical Simulation in Nursing*, *9*, 425-431.

McNaughton, N., Ravitz, P., Wadell, A., & Hodges, B. D. (2008). Psychiatric education and simulation: A review of the literature. *Canadian Journal of Psychiatry*, *53*, 85-93.

Naylor, C., Parsonage, M., McDaid, D., Knapp, M., Fossey, M., & Galea, A. (2012). *Long-term conditions and mental health: The cost of co-morbidities*. London: The King's Fund.

NHS England. (2014). *A call to action: Achieving parity of esteem; Transformative ideas for commissioners*. Retrieved from http://www.england.nhs.uk/wp-content/uploads/2014/02/nhs-parity.pdf

Parsonage, M., & Fossey, M. (2011). *Economic evaluation of a liaison psychiatry service*. Retrieved from www.centreformentalhealth.org.uk/evaluation-liaison-psychiatry

Parsonage, M., Fossey, M., & Tutty, C. (2012). *Liaison psychiatry in the modern NHS*. Retrieved from www.centreformentalhealth.org.uk/liaison-psychiatry-nhs

Prina, A. M., Cosco, T. D., Dening, T., Beekman, A., Brayne, C., & Huisman, M. (2015). The association between depressive symptoms in the community, non-psychiatric hospital admission and hospital outcomes: A systematic review. *Journal of Psychosomatic Research*, *78*(1), 25-33.

Rayner, L., Matcham, F., Hutton, J., Stringer, C., Dobson, J., Steer, S., & Hotopf, M. (2014). Embedding integrated mental health assessment and management in general hospital settings: Feasibility, acceptability and the prevalence of common mental disorder. *General Hospital Psychiatry*, *36*(3), 318-324.

Ross, A. J., Anderson, J. E., Kodate, N., Thomas, L., Thompson, K., Thomas, B., …, & Jaye, P. (2013). Simulation training for improving the quality of care for older people: An independent evaluation of an innovative programme for inter-professional education. *British Medical Journal Quality & Safety*, *22*, 495-505.

Rothenhausler, H. B. (2006). Mental disorders in general hospital patients. *Psychiatria Danubina*, *18*, 183-192.

Salmon, P., Peters, S., Clifford, R., Iredale, W., Gask, L., Rogers, A., …, & Morriss, R. (2007). Why do general practitioners decline training to improve management of medically unexplained symptoms? *Journal of General Internal Medicine*, *22*(5), 565-571.

Sleeper, J. A., & Thompson, C. (2008). The use of hi fidelity simulation to enhance nursing students' therapeutic communication skills. *International Journal of Nursing Education Scholarship*, *5*(1), 1-12.

Thomson, A. B., Cross, S., Key, S., Jaye, P., & Iversen, A. C. (2013). How we developed an emergency psychiatry training course for new residents using principles of high-fidelity simulation. *Medical Teacher*, *35*, 797-800.

Tiffen, J., Graf, N., & Corbridge, S. (2009). Effectiveness of a low-fidelity simulation experience in building confidence among advanced practice nursing graduate students. *Clinical Simulation in Nursing*, *5*, 113-117.

Tiihonen, J., Lonnqvist, J., Wahlbeck, K., Klaukka, T., Niskanen, L., Tanskanen, A., & Haukka, J. (2009). 11-Year follow-up of mortality in patients with schizophrenia: A population-based cohort study (FIN11 study). *Lancet*, *374*(9690), 620-627.

UK Department of Health, No health without mental health: A cross-government mental health outcomes strategy for people of all ages, 2011, Author; London.

World Health Organisation. (2010). *Framework for action on interprofessional education and collaborative practice*. Geneva: Author.

Zigman, D., Young, M., & Chalk, C. (2013). Using simulation to train junior psychiatry residents to work with agitated patients: A pilot study. *Academic Psychiatry*, *37*, 38-41.