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From the Editor

Prof Kichu Nair[1]
Editor-in-Chief

Welcome to the 3rd Volume, 1st Issue of *Health Education in Practice: Journal of Research for Professional Learning*

This is my first editorial. Let me thank David Schmidt for keeping everything in order and working beyond his call of duty in these difficult times. I do hope he will continue to work with us and bring in his corporate memory to provide ongoing support and leadership to the Journal. I would also like to thank Mark Parton who has provided his expertise in a copyediting capacity and has been critical to the behind the scenes work of the journal.

This issue reflects the philosophy of HETI – Interprofessional care and education.

The first paper by Simon Holliday and colleagues is about prescribing for chronic pain which is a major issue in our community. They have shown how to provide a multifaceted pain management program and how the General Practitioners can be upskilled. Triage nurses have to be efficient and effective in running our emergency rooms. Thawley and colleagues have done a survey of educational needs of triage nurses and have come up with some interesting suggestions to improve patient safety and outcomes. For optimum patient care, we need allied health professionals who are fit to practice. Farlie and colleagues have explored strategies for this. Simulation training is the way we prepare students for the future in many curricula. Ryall et al explore MASK-ED for physiotherapy students to make simulation more authentic. We look forward to their next paper on this protocol.

I do hope in these challenging times, you are all keeping well, both physically and mentally
As somebody said, ask your colleagues, what matters to you and not what is the matter with you. We are all together, in this difficult COVID times.

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Prescribers or Multidisciplinarians? An Evaluation of Brief Education for General Practitioners on Chronic Pain Management

Simon Holliday[1], Chris Hayes[2], Lester Edmund Jones[3], Jill Gordon[4], Catherine Fraser[5], Newman Harris[6], Michael Nicholas[7], Carl Holder[8], Christopher Oldmeadow[9], Parker Magin[10]

ABSTRACT

PURPOSE

Active pain self-management (PSM) for patients with chronic pain (CP) is assumed to require multidisciplinary care, leaving prescribing analgesics the most accessible option for general practitioners (GPs). As such, we sought to upskill GPs in multimodal PSM with a harm minimisation approach for any opioid prescribing.

DESIGN AND METHODOLOGY

Having developed an educational training resource, a multidisciplinary team (MDT) delivered the program to attendees at a GP conference in 2017. The educational package comprised pre-readings, a six-hour interactive, skills-based workshop, and post-workshop resources. The single-group intervention was evaluated with an original and unvalidated pre-/post-test (three months) survey of four domains: knowledge, attitudes, utilisation of strategies involving PSM and opioid harm minimisation. Paired t-tests were conducted on each domain score and overall, with effect sizes assessed using Cohen's d. A sensitivity analysis was performed on the data lacking a post-test survey response. Post-survey scores were imputed using chained regression equations, then paired t-tests analyses were conducted on imputed datasets using Rubin's method to pool estimates.

FINDINGS

Of 99 participants, 33 returned both surveys for primary analysis. These were combined in the sensitivity analysis with 60 unpaired surveys with modest internal consistency (Cronbach's alpha 0.736). Primary analysis demonstrated significant self-reported improvements in each educational domain, with the overall score increasing 10.54 points out of 130 ($p < 0.001$, Cohen's d 1.11). Improvements were similar in a sensitivity analysis.

DISCUSSION, LIMITATIONS AND CONCLUSIONS

This study found that a brief GP educational package might be a viable intervention for facilitating PSM and promoting safer prescribing strategies. Outcomes at three months, from this unvalidated survey instrument, suggest improvements in knowledge, attitudes and self-reported facilitation of PSM and opioid prescribing. As this study did not measure clinician behaviour or patient outcomes objectively, further

educational research is indicated to confirm the findings and identify how best to deliver CP management training.

Keywords: analgesics, opioid, chronic pain, general practice, educational measurement, pain management, deprescribing

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BACKGROUND

Pain is common, experienced in the last month by most (68%) adults in Australia, with 15% reporting recurrent or persistent pain in the previous six months (Miller et al. 2017). General practitioners (GPs) often manage chronic pain (CP) as if it were an acute condition and focus on elimination of pain rather than promotion of functional restoration (Schneiderhan, Clauw & Schwenk 2017; Semple & Hogg 2012; Sullivan & Ballantyne 2016). Historically, pain management education has been advocacy driven. Professor Emeritus John Bonica championed the multidisciplinary team (MDT) combined with interventional approaches (Loeser 2017), and Dame Cicely Saunders (1978), of the hospice movement, taught how the multifaceted nature of pain in terminal illness required attention to social, psychological and spiritual distress along with liberal access to opioid analgesics. Liberal access—appropriate in palliative care practice—was promoted for all patients for 'under-treated' non-cancer CP by pain specialists and commercial interests, despite a lack of clear scientific evidence (Sullivan & Ballantyne 2016). Pharmaceutical manufacturers underwrote pain advocacy organisations, medical societies, medical education and guideline development to influence prescribing culture (Davis & Carr 2016; Organisation for Economic Co-operation and Development [OECD] 2019). Continuing medical education (CME) for CP claimed that 'judicious' opioid prescribing strategies could prevent prescription opioid analgesic (POA) patients from being transformed into addicts (Dyer 2019; Kertesz & Gordon 2018; Kuehn 2017; Madras 2018; OECD 2019). A composite model of CP care soon emerged, highlighting specialist multidisciplinary and interventional care combined with opioids titrated to symptoms (Sullivan & Ballantyne 2016).

Consequently, over the last three decades, the availability of POAs has boomed across the Western world (OECD 2019). Iatrogenic harms such as opioid-related deaths (ORDs) increased an average of 20% across 25 OECD (2019) countries. In the United States (US), opioid prescribing escalated over 300% (Madras 2018), with over one-third (37.8%) of adults reporting POA use during 2015 (Han et al. 2017). In America, drug poisonings (predominantly ORDs) are now the leading contributor to reduced gains in life expectancy (Dowell et al. 2017; OECD 2019). The situation in Australia is similar, with POA dispensing increasing 15-fold from 1992 to 2012 (Blanch, Pearson & Haber 2014). An estimated 16% of adult Australians are being dispensed a POA annually (Lalic et al. 2019), with a 10-fold variation in prescribing rates across the nation (Australian Commission on Safety and Quality in Health Care 2015). Past or current POA misuse is common and, in 2016, was reported by 11% of adults (Australian Institute of Health and Welfare 2018). In the decade leading to 2016, the rate of ORDs almost doubled to three each day with over three-quarters involving POAs (Australian Institute of Health and Welfare 2018; Department of Health 2019). Tapering or termination of long-term POAs may actually increase ORDs without the introduction of active pain self-management (PSM) as well as strategies used for opioid maintenance in dependency (James et al. 2019).

The World Health Organization recently discontinued two CP guidelines due to the emerging science supporting non-pharmaceutical strategies, as well as reports of conflicts of interest involving the experts who developed the guidance (Dyer 2019). Evidence informed CP management emphasises non-pharmacological and non-invasive PSM (a multidisciplinary engagement with multimorbidity), the non-initiation or deprescribing of opioids, and a harm minimisation approach to addictive pharmacotherapies (Australian Commission on Safety and Quality in Health Care 2015; Department of Health 2019; Hogans et al. 2018; Holliday et al. 2018; Malfliet et al. 2019; Manhapra & Becker 2018). The shift away from POAs reflects concerns about harms including pre-clinical research that indicates opioids may intensify and prolong

pain (Grace et al. 2016), and a prospective one-year clinical trial showing better outcomes from non-opioid management of musculoskeletal pain (Krebs et al. 2018).

Most pain education supports referral to a multidisciplinary team (MDT) (White et al. 2019) but this is usually impractical, with less than 0.2% of those with CP accessing them each year (Semple & Hogg 2012). GPs often deal with patients with CP—in fact, discussing pain in almost half of their consultations (Tai-Seale et al. 2011). GPs are responsible for half of all POA initiations (Lalic et al. 2019) which are a GP's most commonly prescribed (10%) initial script (NPS MedicineWise 2019). Overall, POAs comprise 4.4% of GP prescribing (NPS MedicineWise 2019).

GP care may be less expensive than specialist MDTs, but considering the costs of lost earnings and productivity, GP care is less cost-effective (Deloitte Access Economics 2019; Lin et al. 2011; Semple & Hogg 2012). Cost-effectiveness may be improved with the addition of PSM, whether delivered by a GP or accessed by referral (Lin et al. 2011). To date, there have been no direct comparisons of multidisciplinary care against a biopsychosocial approach taken in a monodisciplinary setting (Malfliet et al. 2019), so we simply do not know which approach is more cost-effective. However, we can make some assumptions based on what we know. For example, the prevalence of CP and opioid consumption is higher in populations with demographics characterised by low levels of education, low income, rurality and complex psychosocial issues (Hardman, Lawn & Tsourtos 2018). Such populations are less willing or able to access specialist MDTs and are more likely to dropout from PSM (Hardman, Lawn & Tsourtos 2018). That said, GPs offer greater geographical and financial accessibility along with opportunistic and longitudinal care. This may explain why population-level research shows strengthening of the GP sector improves many health outcomes, including mortality (Basu et al. 2019).

In the US, the National Institutes of Health has committed to developing and disseminating non-addictive pain management strategies integrated with the prevention and treatment of addiction (Kuehn 2017). In Australia, the Department of Health (2019) has called for action to translate best practice CP management into primary care to make it accessible. The department identified a need for short training courses for GPs, which featured engagement activities such as webinars and workshops (Department of Health 2019). To equip GPs to address the biopsychosocial under-treatment of CP and to minimise the unsafe provision of POAs, our MDT developed training, compatible with standard CME scheduling, promoting strategies deliverable within routine clinical workflow. As the authors are not aware of any evaluations of similar training, we undertook this study.

METHODS

This paper describes a questionnaire-based evaluation of a pragmatic educational intervention, using a pre-/post-test design without a control group. Our working group included a pain physician (CHa), a pain physiotherapist (LJ), a clinical psychologist (MN) and a psychiatrist (NH)—all of whom specialise in CP—as well as three non-pain specialised GPs. All the GPs worked in private practice—two with special interests in mental health (CF and JG) and one as a rural GP and addiction physician (SH).

The project was named 'Time-efficient Management of Pain in the Office' (TEMPO). It was designed to promote positive, active pain care involving multiple PSM micro-interventions delivered longitudinally during standard GP consultations. Reliance on safety strategies, derived from a non-pain dependency model, was recommended for any provision of POAs. Content advice was also received from the pain and addiction specific interest groups within the Royal Australian College of

General Practitioners (RACGP). During 2016–2017, the TEMPO package was delivered and refined in a webinar and at four conferences, and was specifically accredited by the RACGP as an 'active learning module' (ALM). Every three years, Australian GPs are required to obtain CME credits from such a module in which two-thirds of a six-hour workshop involves active learning exercises. Participants in this study were emailed readings before the workshop (Holliday & Jammal 2015; Lack 2016; Schneiderhan, Clauw & Schwenk 2017), directed to relevant websites such as the NSW Health ACI Pain Management Network (https://www.aci.health.nsw.gov.au/chronic-pain) or the Hunter Integrated Pain Service (http://www.hnehealth.nsw.gov.au/Pain/Pages/Health_professionals.aspx). Online CME and patient education resources were provided subsequently as published in detail previously (Holliday et al. 2018) and cited in the Australian National Strategic Action Plan for Pain Management (Department of Health 2019). The content is summarised in Box 1.

BOX 1: WORKSHOP CONTENT

- The history of pain and opioid management: acute analgesia, palliative care and dependency treatments
- Opioid-related harms in chronic pain including how prescribing volume correlates with overdoses and addiction
- The regulators' view: identifying misprescribers
- The non-initiation and de-prescribing of opioid analgesics
- Management or prevention of the various opioid-related harms including dependency, naloxone rescue provision, and avoiding co-consumption with benzodiazepines
- Stigma and opioid substitution therapy
- The limited role of pharmaceuticals including medicinal cannabis
- Over-investigation
- Patient-centred care
- The role of practice nurses
- Pain active self-management
- Biopsychosocial case formulation
- Assessment of function and of pain outcome scores
- Screening with 10-item Örebro
- Patient neuro-education including central sensitisation
- Active versus passive therapies
- Goal setting and activity pacing
- Cognitive behavioural therapy for pain or insomnia
- Depression and affective disorders
- Active relaxation: breathing and mindfulness

- Strategies for flare-ups
- Addressing coping-orientated substance use
- The endogenous opioid system: social reward and social pain
- Social reconnection with work, family and partner or with art or spirituality
- Couple interventions
- Obesity-independent nutritional factors and the microbiome
- How to operationalise PSM into time-poor general practice

WORKSHOP DETAILS

The six-hour skills-based workshop was presented by an MDT and included 16 learning activities. Participants undertook role-plays and small group discussions covering patient education, outcome assessments, deprescribing and the provision of PSM. Most of the workshop involved non-pharmacological management with less than an hour allocated to discussing POAs and other pharmacotherapy.

STUDY POPULATION AND RECRUITMENT

The ALM ran during the RACGP national annual conference in Sydney, Australia, on 25 October 2017. Registrants were invited to participate in the research study and provided with hard copy or electronic forms of the study questionnaire.

QUESTIONNAIRE

No previously published CP education evaluation instruments covered non-pharmacological PSM, as they related predominantly to opioid-focused paradigms of care. Therefore, we developed an instrument specifically for this study, informed by an evaluation of the US Risk Evaluation and Mitigation Strategy (REMS) program (Alford et al. 2016). Our instrument (Box 2) covered four domains: knowledge, attitudes, current utilisation of PSM strategies, and last-month use of pharmaceutical REMS strategies. The questionnaire was not validated, though piloted in two TEMPO workshops during 2016.

Demographic factors elicited included age, gender, Prescription Shopping Information Service registration status and main practice site postcode (to describe rural versus urban status) (Department of Health 2018). A unique identifier allowed pairing of pre/post data.

Questionnaires were emailed one month before the workshop. Participants could return the pre-workshop form by email, fax or post, or else hand-deliver it at the workshop. Participants were able to indicate consent for their responses to be used for educational research. The presenters were blind to these evaluations at the time of the workshop.

The post-workshop questionnaire was delivered to all delegates at 12 weeks post-workshop and included an invitation for qualitative feedback. There was a $20 shopping voucher offered for the first 10 responses, and all registrants were emailed two reminders. Ethics approval was given by the RACGP National Research and Evaluation Ethics Committee (NREEC 16-005).

OUTCOME FACTORS

Eleven multiple-choice questions assessed knowledge of assessment, PSM and REMS, with one question derived from previous work (Alford et al. 2016). Each question gave 4–6 options with the one correct answer scoring two points. Other domains utilised a five-point Likert scale from 0–4, with approximately one-third of items being reverse scored. Attitudes were assessed based on participants' level of agreement with 11 statements, with four of these items based on previous work (Alford et al. 2016). Current utilisation of PSM was assessed with nine items, and past-month REMS with seven. Domain sums were calculated to give maximum scores of 22, 44, 36 and 28, respectively, and totalled to give an overall maximum score of 130.

STATISTICAL ANALYSES

Internal consistency of the instrument domains, and of the overall instrument, was assessed with Cronbach's alpha. Paired *t*-tests were conducted on each domain score and on the overall score. Effect sizes for domain scoring changes were assessed with Cohen's d.

For sensitivity analysis, each domain's item scores underwent multiple imputation. The pre-survey section scores, along with the respective section items, were used to predict the imputed post-survey section scores. The imputations were also adjusted for gender, Prescription Shopping Information Service registration status, age and practice location. The chained regression equations method was used to impute 30 completed datasets, and results of the paired *t*-test were produced over the datasets using Rubin's method. Paired *t*-tests were performed on the imputed data, as for the primary analysis. All analyses were conducted using SAS Version 9.4 (SAS Institute Inc, Cary, NC, USA).

RESULTS

From 99 attendees, 91 completed the pre-workshop survey. Of these, 33 participants (36%) completed a post-workshop survey (overall completion rate 33%). The demographic characteristics of the sample are presented in Table 1. Baseline participants had a mean age of 48 years, an even gender split, with over two-thirds from major urban centres, and six practicing outside Australia.

Table 1. Demographics (Pre-workshop)

	Statistic	Total (*n* = 91)	Chi square	Degrees of freedom for chi square	*P*
Age	Mean	47.9 (14.4)	.	.	0.3644
	Median	47 (27, 100)			0.4162
Gender	Male	45 (49%)	0.113	2	0.9450
	Female	46 (51%)			
Remoteness classification	Major city	53 (62%)	16.876	12	0.1543
	Large regional	5 (5.9%)			
	Medium–large regional	8 (9.4%)			
	Medium regional	6 (7.1%)			
	Small regional	6 (7.1%)			
	Remote	1 (1.2%)			
	Overseas	6 (7.1%)			

Statistic	Total (n = 91)	Chi square	Degrees of freedom for chi square	*P*
Missing	6			

The instrument sub-scales assessing attitudes and utilisation of PSM and REMS had Cronbach's alphas of 0.57, 0.73 and 0.41, respectively. Overall, the entire survey had good overall internal consistency with a Cronbach's alpha of 0.736.

The comparison of pre- and post-workshop scores showed increases in every domain and overall (Figures 1 and 2). For our primary analysis (33 paired questionnaire responses), there were changes of 1.6 (95%CI 0.4,2.8; $p = 0.001$), 2.7 (95%CI 1.28,4.1; $p < 0.001$), 4.4 (95%CI 2.6,6.2; $p < 0.001$) and 1.8 (95%CI 0.5,3.1; $p < 0.010$) for knowledge, attitudes, and utilisation of PSM and REMS, respectively. The Cohen's d for these effect sizes for the pre–post differences by domain were 0.49, 0.68, 0.86 and 0.48. The overall score increased by 10.5 ($p < 0.001$), with Cohen's d of 1.11.

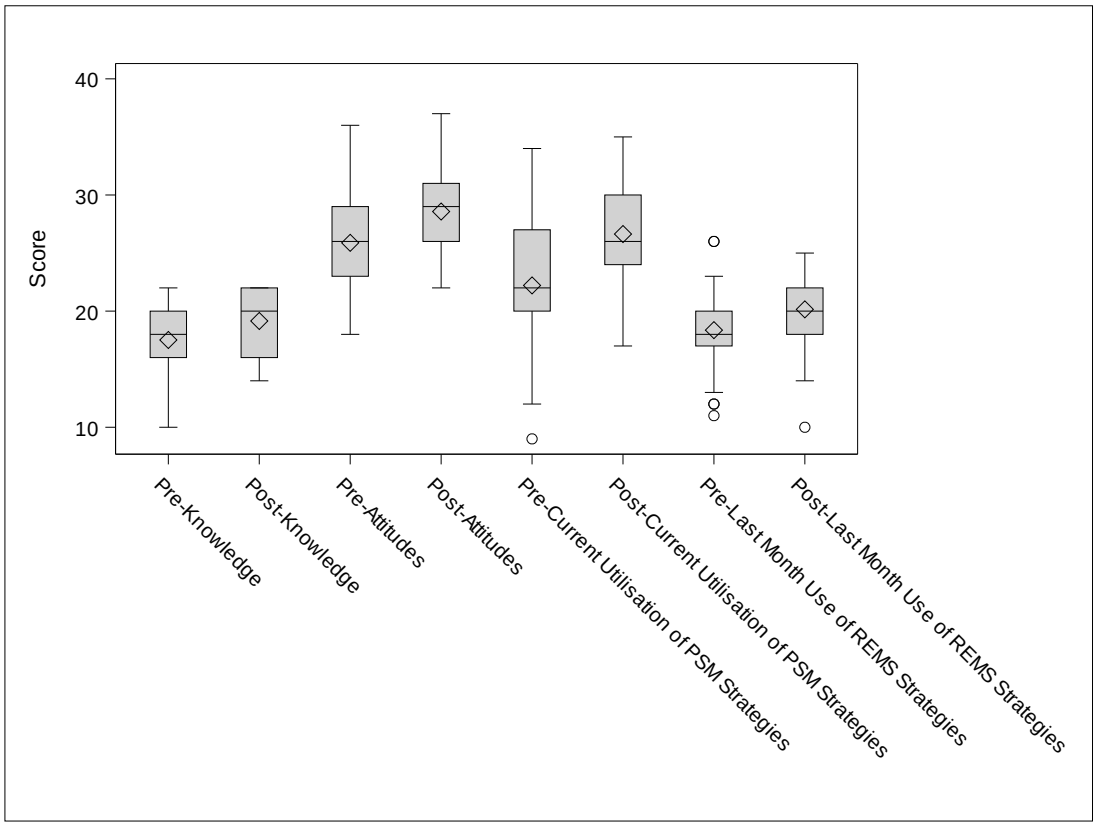

Figure 1. Boxplot of pre- and post-workshop domain scores with complete data (n = 33)

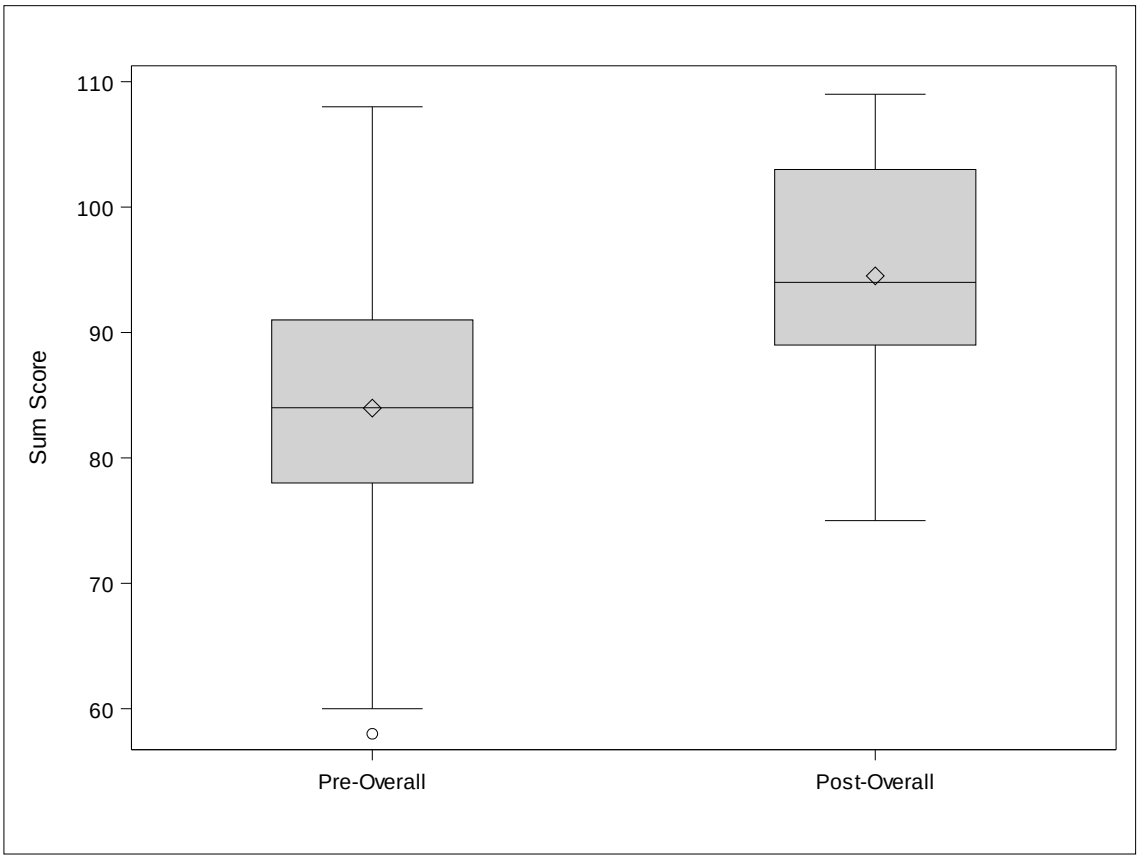

Figure 2. Boxplot of pre- and post-workshop overall scores (n = 33)

The sensitivity analysis using imputed data (91 paired questionnaire responses) produced similar findings with marginally larger changes of 2.2 (95%CI 1.4,2.6; p = 0.001), 3.6 (95%CI 2.6,4.6; p < 0.001), 3.5 (95%CI 2.9,4.3; p < 0.001) and 2.2 (95%CI 1.6,2.7; p < 0.001) for knowledge, attitudes, and utilisation of PSM and REMS, respectively. The total score increased by 11.1 (95%CI 9.1,13.3; p < 0.001).

QUALITATIVE FEEDBACK

There were 40 comments about the beneficial aspects of training. For example, one respondent stated 'it empowered me to think I can do it and gave me tools to start using to achieve this' (Participant 4), while another acknowledged the 'use of objective measure for function (e.g., sit-to-stand test and online resources for patients to understand chronic pain)' (Participant 5). Participant 16 expressed 'how increasing physical activity and providing psychoeducation may decrease a need for analgesic medications', therefore, 'providing the rationale of moving from opioids and providing clear alternatives to manage chronic pain' (Participant 22). Others simply 'enjoyed it', particularly as the 'case examples and role-plays work well' (Participant 28), including the 'simple strategies and a common-sense approach to management' (Participant 32).

There were also 27 comments about areas to improve. For example, one thought that 'not enough time [was] spent discussing modes to reduce dosing' (Participant 7), while another requested 'extension ALMs to build on skills' (Participant 30). One

participant queried whether 'there [was] online access to the presentations', as 'each speaker offered excellent strategies but there was too much to take in' (Participant 8). This sentiment was echoed by Participant 52, who:

> found the information hard to translate into my older chronic pain patients and would appreciate a top-up education about what to do to help the elderly, or chronic pain patients who have been the same situation for years. I have started initiating the conversation with them but would appreciate more helpful tips.

Nonetheless, some participants shared no criticisms about the training, believing 'it was a good session and every GP should be required to undertake the course', particularly 'GP registrars' (Participant 40).

DISCUSSION

Various allied health providers have successfully trained in PSM (Nicholas & Blyth 2016) and this evaluation suggests that GPs may do so as well. Three months after brief training, scores for knowledge, attitudes and self-reported practice improved for each measure, with moderate to large effect sizes.

Previous evaluations of pain education for GPs have focused on the under- or overuse of opioids (Hogans et al. 2018; Ospina et al. 2013). Reviews indicate they lack consensus on content, or on how outcome measures are defined or gauged (Davis & Carr 2016; Hogans et al. 2018). A diversity of findings with differing evaluation methods was demonstrated by dual evaluations of opioid REMS training for Australian GP registrars. The pre-/post-test survey showed improved knowledge and reported practice, but the objective prescribing data revealed no reduction in total opioid prescription (Holliday, Hayes, Dunlop, Morgan, Tapley, Henderson, Larance, et al. 2017; Holliday, Hayes, Dunlop, Morgan, Tapley, Henderson, van Driel, et al. 2017). In 2015, over 7,000 Australian GPs received academic detailing, led by specialists and GPs, that recommended a transition from opioid prescribing to non-pharmacological care (NPS MedicineWise 2017). One year afterwards, a questionnaire found improved knowledge about prescribing, but none regarding non-pharmacological care (Deloitte Access Economics 2019; NPS MedicineWise 2017). In 2016, 19 GPs in New South Wales, Australia, and other primary health clinicians were invited to two workshops. These aimed to encourage deprescribing of POAs and referral to local MDTs to deliver regimes similar to specialist MDTs (White et al. 2019). Eleven attitudinal items were assessed with an unvalidated questionnaire within a pre-/post-test design. At the conclusion of the second two-hour workshop, six attitudinal items had improved. Since 2012, US pharmaceutical manufacturers have been mandated to fund REMS education, despite the risks for conflicts of interest (Davis & Carr 2016). Two months after the voluntary 2–3 hours of training, clinician knowledge and confidence had improved, with 86% reporting changes in practice (Alford et al. 2016). Of previously evaluated CP education interventions, none have focused on upskilling and empowering GPs to provide psychobehavioural care.

SIGNIFICANCE OF THE STUDY

The National Strategic Action Plan considers it vital to upskill time-poor GPs in early interventions, including PSM, to prevent the chronification of acute pain (Department of Health 2019). This study indicates such training may be considered viable. One report estimated that a nationwide CP education program for GPs would be cost-

effective based solely on the reduction of ORDs (Deloitte Access Economics 2019). Another goal of the National Strategic Action Plan is the addressing of barriers to safer pharmacotherapy (Department of Health 2019), a major one of which is a perceived lack of effective alternatives (White et al. 2019). If further evaluations show TEMPO-like education is effective, then the initiation, or re-triggering, of opioid-related harms may be reduced (Nicholas & Blyth 2016). Variability in healthcare provision also may be reduced as higher rates of opioid provision and overdoses are found rurally, in lower socio-demographic areas and among Aboriginal and Torres Strait Islander populations (Australian Commission on Safety and Quality in Health Care 2015; Penington Institute 2017). These are demographic factors shared with CP and multimorbidity (Barnett et al. 2012; Lujic et al. 2017).

The facilitation of PSM is now considered a core GP competency in the management of chronic disease (Rochfort et al. 2018). As such, the dissemination of PSM skills through primary care should reduce healthcare disparities and the burden of non-communicable disease (Bruggink et al. 2019; Department of Health 2019; Hardman, Lawn & Tsourtos 2018).

IMPLICATIONS FOR REGULATORS

This interprofessional collaboration developed an innovative approach to a common and complex clinical conundrum. Such non-commercial educational research partnerships will be unlikely without financial support from health funding bodies (Hogans et al. 2018). Since discontinuation of POAs (particularly if non-consensual) risks increased harm, more resourcing is required for addiction training and management (Kertesz & Gordon 2018). Should regulators mandate periodic training in pain and addictions, TEMPO-like education may provide a template (Davis & Carr 2016).

FUTURE RESEARCH

To appraise effectiveness, investment in development and validation of an educational assessment instrument will be necessary, potentially involving interrogation of GP electronic health records and patient-reported functional outcome measures (Hogans et al. 2018; Sullivan & Ballantyne 2016). Improved outcomes from training may require repeated training exposures, with scaleability enhanced by the utilisation of web-based formats (Hogans et al. 2018).

STRENGTHS AND LIMITATIONS

These data reflect real-world GP education, delivered at a mainstream conference. Individually matched outcomes were sustainable; the three-month, post-workshop gap exceeds most other evaluations of similar interventions.

A major limitation of the study is the lack of a control group. This workshop occurred four months before codeine was ‘up-scheduled’, making it unavailable over the counter (Holliday et al. 2018). A control group would have helped to identify bias from concurrent training. There is also a risk of sampling bias due to the ALM registrants being self-selected. However, the matching of individualised results may ameliorate this bias. We also relied on a pragmatic uncontrolled mode of evaluation—the pre-/post-test, which is the most commonly used instrument evaluating CP education (Ospina et al. 2013). Our evaluation instrument was original with moderate internal validity. As with the majority of educational evaluations, lack of instrument reliability and validity data and modest response rates limits the strength of our

conclusions (Hogans et al. 2018). That said, our response rate was consistent with many surveys of GPs (Bonevski et al. 2011).

Our pre-readings may have boosted pre-test scores, reducing the apparent effect of the package. Further, we did not observe objective clinical behaviour, which may be discordant with paper-based self-report (Holliday, Hayes, Dunlop, Morgan, Tapley, Henderson, Larance, et al. 2017; Holliday, Hayes, Dunlop, Morgan, Tapley, Henderson, van Driel, et al. 2017). Finally, pain and opioid education is ultimately designed to improve patient and societal health, neither of which was measured in this evaluation (Hogans et al. 2018).

CONCLUSION

GPs manage the vast majority of CP and do so without the resources and interventions of specialist MDTs. Therefore, an alternative is needed to allow GPs to transition from biomedical medication management towards a multifaceted approach. We showed that it is feasible to assemble an MDT involving specialist pain practitioners and GPs to deliver brief CP training as standard CME to disseminate competencies appropriate for a GP's clinical workflow. Our unvalidated instrument showed modest evidence that the training had sustainable value. Three months following the workshop, GPs self-reported improved knowledge and attitudes as well as increased utilisation of multimodal PSM and less reliance on addictive pharmacotherapy. Further studies are needed to explore whether PSM training for GPs improves access to affordable holistic pain care. Intriguingly, such training may improve outcomes for the common and intersecting problems of CP, addictive pharmacotherapy, disadvantage and multimorbidity.

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BOX 2: TIME-EFFICIENT MANAGEMENT OF PAIN IN THE OFFICE (TEMPO)

PRE-WORKSHOP SURVEY

Thank you for participating in the pre-assessment survey for the Time-efficient Management of Pain in the Office (TEMPO) program. It should take you about 15 minutes to complete. We request that you please answer all questions, so that, with the post-assessment survey, we can measure the effectiveness of this educational activity. Ethical approval for this evaluation has been given by the RACGP National Research and Evaluation Ethics Committee (NREEC) 16-005.

Please complete the following.

Q1 **For GPs**: RACGP Continuing Medical Education number _____

or ACRRM Continuing Medical Education number _____

For non-GPs: Please note your profession _____

For non-GPs: Specialty Continuing Education number _____

Q2 What is your gender? _____

Q3 What is your age? _____

Q4 Postcode of your main practice address _____

Q5 **Circle <u>one</u> only**: Are you registered with the Prescription Shopping Information Service (or for Tasmanians, the Drugs and Poisons Information System Online Remote Access [DORA])?

a) Yes, and use it often

b) Yes, but rarely use it

c) No, not registered

For the following questions, please give your initial responses without dwelling on any question.

Q6 **Circle <u>one</u> only**: The initial assessment of chronic non-cancer pain patients should routinely cover all of the following **<u>EXCEPT</u>**:

a) sleep

b) depression

c) diagnostic imaging

d) concerns and fears

e) drug and medication history

(Answer: c)

Q7 **Circle <u>one</u> only:** Chronic non-cancer pain patient education explains that …

a) pharmaceuticals have a limited role

b) long-term opioid treatment is only effective as a last resort

c) sedentary behaviour may prevent disease progression

d) pain flare-ups indicate tissue damage

(Answer: a)

Q8 **Circle <u>one</u> only:** In the self-management of chronic non-cancer pain, an important aspect for patients is …

a) learning that worse things have happened to other people

b) regulating interfering thoughts and feelings

c) learning to follow the doctor's instructions

d) accepting that suffering is mental, not physical

e) accepting that you cannot wind back the clock

(Answer: b)

Q9 **Circle <u>one</u> only:** Activity pacing means encouraging patients to …

a) gradually build up activity, taking regular breaks

b) keep pushing harder: 'no pain, no gain'

c) increase the duration of rest with increasing durations of activity

d) stop the activity whenever the pain gets too much

e) increase rest and recovery

(Answer: a)

Q10 **Circle <u>one</u> only:** Insomnia in patients experiencing chronic non-cancer pain requires …

a) 'Z-drugs' (e.g., zolpidem or zopiclone) at higher doses

b) a referral to a sleep specialist

c) a judicious balance of benzodiazepines and opioids

d) sleep-restriction strategies

e) opioid analgesia to precede any non-pharmacological management

(Answer: d)

Q11 **Circle <u>one</u> only:** When managing chronic non-cancer pain …

a) self-medication of pain with alcohol may worsen pain outcome scores

b) smoking cessation should be delayed pending effective pain control

c) stimulating SSRIs are preferred to increase activity levels

d) muscular and psychological tension are improved by benzodiazepines

f) there is strong evidence to support the medical prescription of cannabis

(Answer: a)

Q12 **Circle <u>one</u> only:** Supporting self-management of chronic non-cancer pain involves the doctor …

a) confronting patients about the dangers of their risky choices

b) always being enthusiastic and positive

c) always expressing your frustration if patients fail to practise agreed tasks

d) focusing in-depth on patient defences

e) exploring patients' hopes and goals

(Answer: e)

Q13 **Circle <u>one</u> only:** Regarding prescribed opioids in chronic non-cancer pain …

a) patients describing severe genuine pain have a right to opioid painkillers

b) reserve psychological interventions for those with psychiatric illnesses

c) tolerance or hyperalgesia is unlikely in the treatment of genuine pain

d) overdose is a risk in those taking long-term opioids, as prescribed

e) reserve urine drug tests for patients where there is suspicion of drug or medication abuse

(Answer: d)

Q14 **Circle <u>one</u> only:** If starting opioid analgesic prescription for chronic non-cancer pain …

a) patients must sign a legal contract that states their opposition to addiction

b) imaging must have shown an anatomically verified diagnosis

c) there cannot be any past or present substance use disorders

d) codeine or tramadol are always a safe choice

e) all of the above

f) none of the above

(Answer: f)

Q15 **Circle <u>one</u> only:** Opioid analgesics in chronic non-cancer pain will be safe if …

a) patients are regularly monitored for medication misuse

b) patient assessment shows they are at low risk of medication abuse

c) patients are not identified as doctor shoppers

d) patients are kept on lower opioid doses

e) all of the above

f) none of the above

(Answer: f)

Q16 **Circle <u>one</u> only:** Your patient increased his/her opioid dose because his/her pain is '10 out of 10' and he/she appears oversedated. What would you do?

a) increase dose of opioid because he/she still has severe pain

b) continue current opioid dose until tolerance to sedation is reached

c) decrease current opioid dose because of his/her oversedation

d) stop the current opioid because the patient is likely addicted

(Answer: c)

ATTITUDES

This section is designed to assess your clinical opinions and experience with chronic non-cancer pain patients. Using the five-point scale provided, where **1 = completely**

disagree and **5 = completely agree,** please indicate your level of agreement with the following statements:

Q17 Please circle the number in the right-hand column to indicate your response to each question. (target answer is answer 5 unless it is reverse scored)

My experience is that:	**Agreement**				
	Completely disagree	**Disagree**	**Neutral**	**Agree**	**Completely agree**
a) treating chronic non-cancer pain patients is time-consuming and frustrating (**reverse scored**)	1	2	3	4	5
b) pain scales help me monitor my patients' management	1	2	3	4	5
c) I am comfortable discussing patients' unhelpful thoughts	1	2	3	4	5
d) I am comfortable coaching patients regarding their activity levels	1	2	3	4	5
e) pain patients are rarely truthful about illicit drug use (**reverse scored**)	1	2	3	4	5
f) I am comfortable discussing naloxone rescue kits	1	2	3	4	5
g) I prefer to stop seeing/following a patient who has misused his/her opioid prescription (**reverse scored**)	1	2	3	4	5
h) I am comfortable asking for a urine drug test from a patient who does not seem to be abusing their opioid prescription	1	2	3	4	5
i) I am comfortable with making opioid prescribing more restrictive if there is any abuse or dependency risk	1	2	3	4	5
j) I am comfortable shifting away from opioids towards active self-care	1	2	3	4	5
k) non-pharmacological pain approaches generally are ineffective (**reverse scored**)	1	2	3	4	5

Q18 Please tick the appropriate box for each question.

Currently, with patients experiencing chronic non-cancer pain, I am:	**Never or hardly ever**	**About a quarter**	**About half**	**About three-quarters**	**All or just about all**
a) taking a psychiatric and psychological history					
b) taking a drug and alcohol history including addictive pharmaceuticals					

Currently, with patients experiencing chronic non-cancer pain, I am:	**Never or hardly ever**	**About a quarter**	**About half**	**About three-quarters**	**All or just about all**
c) using a pain outcome measurement scale d) facilitating establishment of achievable functional goals e) providing fast breathing education for self-management of flare-ups (**reverse scored**) f) exploring how emotions and thoughts affect physical symptoms g) prescribing long-term opioid analgesics (**reverse scored**) h) providing education about the neuroscience of chronic pain i) assessing activity or inactivity					

Q19 Please tick the appropriate box for each question.

Over the last couple of months with patients experiencing chronic non-cancer pain on long-term opioids, I am:	**Never or hardly ever**	**About a quarter**	**About half**	**About three-quarters**	**All or just about all**
a) discussing their side effects b) prescribing a benzodiazepine for insomnia (**reverse scored**) c) starting a conversation about opioid reduction d) seeking regulatory approval (where required) e) warning patients that anyone who misuses their analgesics will be fired from the practice (**reverse scored**) f) considering naloxone prescription g) assessing suicide risk					

Q20 **Please tick the appropriate box**: I understand these results will be de-identified and analysed to evaluate this educational project. Are you willing for your responses to be used for research purposes?

Yes ☐

No ☐

Please return this survey prior to the workshop. See over for details. Thank you.

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The educational needs of triage nurses

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ABSTRACT

The role of triage nurses is critical to ensuring patient safety and timely access to emergency care. Continuing professional development and ongoing support is required to effectively support the competence of triage staff. To date, very few studies have sought to describe the educational needs of triage nurses.

This study aimed to identify which type of educational support nurses feel they need to manage the triage process.

A validated questionnaire was used to explore triage nurses' perceived educational support needs in relation to managing the triage process.

On average, participants had 11.33 years of experience in their current role (SD = 7.27), 15.43 in emergency (SD = 9.80) and 13.44 in triage (SD = 9.16). Triage nurses (n = 27) identified the introduction of new ideas at triage to increase efficiency as the area in which they were in greatest need of training. Priority education needs that focused on clinical tasks, such as physical assessment skills, particularly in relation to observations and vital signs, to inform triage decision making were also identified. These priority education needs will inform the design of education programs and the development of the capabilities of the nursing workforce.

Future research should seek to explore the traditional responsibilities of triage nurses, particularly to address queuing and delays at triage.

Keywords: triage, emergency, education, patient flow, Emergency Triage Education Kit.

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INTRODUCTION

Patient safety and timely access to care in the emergency department (ED) relies upon the experience, education and training of ED nurses, including in the area of triage. Novice ED nurses require structured education and mentorship (Hitchcock et al. 2014; Varndell, Hodge & Fry 2019). Continuing professional development and ongoing support is required to effectively support ED nurse competence in triage processes (Holloway, Arcus & Orsborn 2018; Hitchcock et al. 2014). Educators should regularly conduct analyses of training needs to ensure that the training being provided aligns with staff needs (Gould et al. 2004). The appropriate training of nursing staff has been shown to improve service delivery and patient care (Smith & Topping 2001).

Triage plays a vital role in our health care system, as it enables undifferentiated patients, within a dynamic environment, to be managed in a timely manner based on clinical urgency (Hodge et al. 2013). As triage requires complex decisions in time-critical environments, triage should be undertaken by experienced nurses who have been specifically trained to perform this role (Ministry of Health NSW 2013). McCallum Pardey (2007) explored the varying roles and skills of triage nurses, including critical thinking and decision-making, conducting rapid clinical assessments, assessing urgency and severity in unpredictable situations while ensuring positive patient outcomes and providing a high standard of care.

Registered Nurses who perform emergency triage require specific educational training that is delivered as part of the standardised national training course endorsed by the College of Emergency Nurses Australasia (CENA 2009). The Emergency Triage Education Kit (ETEK) is a resource for nurse educators that seeks to provide overall triage education for ED nurses with an emphasis on triage consistency when using the Australasian Triage Scale (ATS) (CENA 2009; Department of Health 2009). The ATS is a five-tier validated and reliable triage tool that recommends maximum ED waiting times and is used throughout Australian EDs and endorsed by the Australasian College of Emergency Medicine (ACEM 2013) and the CENA (2012). Such training may be provided by clinical nurse educators (ACEM 2012; Northern NSW Local Health District 2015).

Continuing professional development and ongoing support is required to effectively support the competence of ED triage staff (Holloway, Arcus & Orsborn 2018). Varndell, Hodge and Fry (2019) highlighted how variability in triage education may contribute to poor patient outcomes and emphasised the need for the ongoing revision of ED triage nurse education. To date, very few studies have sought to describe the educational needs of triage nurses. The present study aimed to identify the type of educational support nurses feel they need to manage the triage process.

METHODS

STUDY DESIGN

A cross-sectional study used a validated questionnaire to identify the educational support nurses feel they need to manage the triage process.

SETTING

ED triage nurses currently employed at a NSW regional referral hospital, at which approximately 50,000 patients per year currently present to the ED, were invited to participate in the study. The hospital is a Level 5 hospital with a current bed capacity

of 247. At the time of the study, 90 registered nurses were working in the ED of the hospital. Of these, 60 were performing a triage role.

Advertisements for the study were posted on the ED news board in the tea room and in various other strategic areas, outlining the purpose of the study and providing the name of an individual to contact for further information. Additional information summarising the key objectives of the study was presented at the regular ED nurses' education sessions during the six-week research period by a research officer and the ED Clinical Nurse Educator. Staff were provided with a Participant Information Statement and had the opportunity to complete a questionnaire at the end of the review meetings or at a time convenient to them. A secure box was located in the ED triage area for the return of completed questionnaires. All responses to the questionnaires were anonymous and the participants were advised that completion of the questionnaire was not compulsory. Only triage trained nurses working in the ED were invited to participate in the study. It was anticipated that approximately 50 ED triage nurses would be available to participate in the study.

ETHICAL CONSIDERATIONS

This study received ethics approval from the North Coast NSW Human Ethics Committee (Reference No. 2018/ETH00169—11/07/2018).

MEASUREMENT TOOL

An adapted version of the Hennessy-Hicks Assessment of Training Needs Questionnaire (see Table 1) (Hicks et al. 1996), a psychometrically validated and reliable tool, was used to identify the educational support nurses feel they need to manage the triage process.

Table 1. Adapted Hennessy-Hicks assessment of the training needs questionnaire (Hicks et al. 1996).

	Standard Questionnaire	Adaption Questionnaire
1.	Establishing a relationship with patients	Establishing a relationship with patients
2.	Completing paperwork and/or inputting routine data	Completing paperwork and/or inputting routine data
3.	Appraising your own performance	Appraising your own triage performance
4.	Getting along with your colleagues	Getting along with your colleagues
5.	Communicating with patients face to face	Communicating with patients face to face
6.	Treating patients	Triaging patients using rapid assessment
7.	Introducing new ideas at work	Introducing new ideas at triage to increase efficiency
8.	Accessing relevant literature for your clinical work	Accessing relevant literature for your clinical work

	Standard Questionnaire	Adaption Questionnaire
9.	Providing feedback to colleagues	Providing feedback to colleagues about triage decisions
10.	Providing information to patients and/or carers	Providing information to patients and/or carers
11.	Showing colleagues and/or students how to do things	Showing colleagues and/or students how to triage
12.	Planning and organising an individual patient's care	Prioritising patient care according to the ATS
13.	Evaluating patients' psychological and social needs	Evaluating patients' psychological and social needs
14.	Organising your own time effectively	Organising your own time effectively
15.	Using technical equipment, including computers	Using technical equipment, including computers
16.	Undertaking health promotion studies	Understanding, and the escalation of, current public health priorities (e.g., influenza and gastroenteritis)
17.	Making do with limited resources	Making do with limited resources
18.	Assessing patients' clinical needs	Assessing patients' clinical needs who present to the ED requiring rapid triage assessment and streaming patients to an Early Treatment Zone
19.	Working as a member of a team	Working as a member of a team
20.	Undertaking administrative activities	Undertaking logistical triage activities, such as patient flow through the ED and the use of the Early Treatment Zone
21.	Personally coping with changes in the health service	Personally coping with changes to the triage process in the health service

The questionnaire has previously been used to identify the training needs of health professionals, including nurses, to support the development of appropriate education programs, current practices and models of care (Carlisle, Bhanugopan & Fish 2011; Hicks & Hennessy 2011; Holloway et al. 2018). The questionnaire comprised five categories: research/audit, communication/teamwork, clinical tasks, administration and management/supervisory tasks. Participants were asked to use a 7-point Likert scale to rate the categories according to their importance in relation to their role (an assessment of occupation profile [Rating A]) and how well the task was currently being

performed (an assessment of current skill level [Rating B]). When compared, the two ratings provided a measure of the skill deficit, such that the more important a task is rated and the more poorly it is performed, the greater the need for training.

Training needs were measured as the difference between activity importance and performance scores using a modified version of the valid and reliable Hennessey-Hicks Training Needs Questionnaire (Hennessy & Hicks 2011; Hicks et al. 1996). This instrument is considered psychometrically robust to modifications of up to 25% of the tool (Hennessy & Hicks 2011). The original tool comprised 30 items of which eight can be replaced or amended to customise the instrument for a specific purpose without compromising its validity and reliability (Hennessy & Hicks 2011). Nine items of the original 30-item instrument that referred to conducting and applying research in the work role were deleted (i.e., items 3, 6, 7, 9,17, 21, 25, 26 and 28, which related to the research/audit sub-section; see Hennessy & Hicks 2011, pp. 12–13). Minor changes in wording were made to seven items (i.e., Items 3, 6, 7, 9, 11, 18 and 21) in the questionnaire to improve their applicability to the role of triage nurses. As Table 1 shows, permission from the authors was granted to use the tool with the omission of the research category (nine items).

The following three items were modified more significantly:

- Item 12. Prioritising patient care according to the ATS: this item was originally less focused on care prioritisation and more on the individual's care plan ('Planning and organising an individual patient's care');
- Item 16. Understanding, and the escalation of, current public health priorities (e.g., influenza and gastroenteritis). This item was originally more focused on studying rather than responding to public health priorities ('Undertaking health promotion studies'); and
- Item 20. Undertaking triage logistical activities, such as patient flow through the department and the use of the Early Treatment Zone. This item originally referred to administrative tasks generally ('Undertaking administrative activities').

Following the amendments to the questionnaire, the final four categories remained: Communication/Teamwork (Items 1, 4, 5, 9, 10 and 19); Clinical Tasks (Items 6, 8, 12, 13, 16 and 18); and Administration (Items 2, 15 and 20); Management/Supervisory Tasks (Items 3, 7, 11, 14, 17 and 21). An open-response field following the questions was added to allow participants to specify any areas in their job for which they would like to receive further training or instruction. These amendments were overseen by a group of senior ED nurses with education expertise and discussed until a consensus was reached. The nurses in this group were excluded from participating in the study. The adapted Hennessey-Hicks questionnaire was piloted with a small group of senior nurses. No changes were required. The questionnaire took approximately 15 minutes to complete.

ANALYSIS

Quantitative data analyses were conducted in IBM SPSS version 24 (IBM Corp 2016) by an independent researcher. The distributions of individual items and the category summary scores were calculated. Training needs were determined by the difference in ratings between participants' perceptions of the importance of a work performance task and participants' self-appraisals of their current performance of this task; larger positive differences indicated greater training needs. Similar to Holloway, Arcus and Orsborn(2018), to gain further insight into participants' training needs, responses to the open-response section were clustered into themes using the categories from the Hennessey-Hicks questionnaire (Hennessey & Hicks 2011). Two researchers

independently reviewed the qualitative data to identify recurring themes according to the questionnaire categories and then consolidated ideas until a consensus was reached.

RESULTS

Of the 50 ED triage nurses who were eligible, available and invited to participate in the study, 27 submitted completed questionnaires. This represents a response rate of 54%. Table 2 summarises the participants' characteristics. On average, participants had 11.33 years of experience in their current role (SD = 7.27, range 1–30 years), 15.43 in emergency (SD = 9.80, range 3.5–48 years) 13.44 in triage (SD = 9.16, range 1–40 years).

Table 2. Participant characteristics.

Participant Characteristics	**Mean *(SD)*, Range years**	**Number (%)**
Average number of years in current position *(n = 26)*	11.33 *(7.27),1–30*	
Years of experience in current role (*n* = 26)		
Less than five		7 (26.9)
Five to 10		7 (26.9)
More than 10		12 (46.2)
Average number of years of experience in emergency *(n = 27)*	15.43 *(9.8),3.5–48*	
Years of experience in emergency *(n = 27)*		
Less than five		4 (14.8)
Five to 10		7 (25.9)
More than 10		16 (59.3)
Average number of years of triage experience *(n = 26)*	13.44 *(9.16),1–40*	
Years of experience in triage *(n = 26)*		
Less than five		6 (23.1)

Participant Characteristics	Mean *(SD)*, Range years	Number (%)
	Five to 10	6 (23.1)
	More than 10	14 (53.8)

TRIAGE NURSES' ANALYSIS OF TRAINING NEEDS

Table 3 sets out triage nurses' training needs. The training needs are ranked in order from highest to lowest. The mean training need identified was the difference between importance and performance (each scored from 1 to 7) and thus had a possible range of -6 to +6. A larger positive score indicated a greater training need. The three top training needs identified by the nurses were:

- Introducing new ideas at triage to increase efficiency;
- Understanding and the escalation of current public health priorities (e.g., influenza and gastroenteritis); and
- Accessing literature relevant to clinical work.

Table 3 presents the importance of training needs as rated by the triage nurses. Activities were ranked broadly by participants with average scores ranging between –0.44 (completing paperwork and/or inputting routine data) and 1.00 (introducing new ideas at triage to increase efficiency).

Table 3. The training needs of triage nurse (ranked from highest to lowest) (n = 27).

Item no.	Triage nurse work tasks	Mean Training need* (SD)	Mean Importance rating (SD)	Mean Performance rating (SD)
7	Introducing new ideas at triage to increase efficiency	1.00 (1.64)	5.93 (1.07)	4.93 (1.73)
16	Understanding, and the escalation of, current public health priorities (e.g., influenza and gastroenteritis)	0.96 (1.16)	6.30 (0.76)	5.33 (1.39)
8	Accessing relevant literature for your clinical work	0.63 (0.97)	5.85 (1.01)	5.19 (1.13)
9	Providing feedback to colleagues about triage decisions	0.56 (1.45)	5.67 (1.27)	5.11 (1.55)
14	Organising your own time effectively	0.52 (0.80)	6.63 (0.63)	6.11 (0.85)

Item no.	Triage nurse work tasks	Mean Training need* (SD)	Mean Importance rating (SD)	Mean Performance rating (SD)
11	Showing colleagues and/or students how to triage	0.37 (1.78)	5.78 (1.63)	5.41 (1.60)
18	Assessing patients' clinical needs who present to the ED requiring rapid triage assessment and streaming patients to appropriate treatment areas	0.33 (0.55)	6.63 (0.88)	6.30 (0.95)
20	Undertaking logistical triage activities, such as patient flow through the ED and the use of the Early Treatment Zone	0.33 (0.92)	6.64 (0.64)	6.28 (0.79)
19	Working as a member of a team	0.26 (0.66)	6.63 (0.88)	6.37 (0.79)
5	Communicating with patients face to face	0.22 (0.70)	6.74 (0.66)	6.52 (0.80)
6	Triaging patients using rapid assessment	0.22 (0.64)	6.30 (0.76)	6.07 (1.04)
13	Evaluating patients' psychological and social needs	0.22 (0.97)	5.59 (1.25)	5.37 (1.50)
15	Using technical equipment, including computers	0.22 (1.25)	6.12 (1.11)	5.88 (1.02)
12	Prioritising patient care according to the ATS	0.19 (0.56)	6.81 (0.56)	6.63 (0.69)
21	Personally coping with changes to the triage process in the health service	0.19 (1.00)	6.21 (1.06)	6.00 (0.83)
10	Providing information to patients and/or carers	0.15 (1.10)	6.11 (1.05)	5.96 (1.13)
3#	Appraising your own triage performance#	0.04 (1.40)	5.96 (1.19)	5.88 (1.11)
17	Making do with limited resources	–0.04 (1.29)	5.59 (1.74)	5.63 (1.39)
4	Getting along with your colleagues	–0.15 (1.23)	5.89 (1.25)	6.04 (1.13)

Item no.	Triage nurse work tasks	Mean Training need* (SD)	Mean Importance rating (SD)	Mean Performance rating (SD)
1	Establishing a relationship with patients	–0.30 (1.46)	5.48 (1.48)	5.78 (1.09)
2	Completing paperwork and/or inputting routine data	–0.44 (1.34)	5.30 (1.35)	5.74 (1.02)

Note. *'Training need' was calculated by subtracting the 'mean rating of a current performance in a task' from the 'mean importance rating of a task'. Ratings for importance and performance ranged from 1 (not well) to 7 (very well). #Task 3 had n = 26 participants

Table 3 also shows the importance of work performance tasks as rated by triage nurses. All of the activities were ranked as strongly important by participants with average scores ranging between 5.30 (completing paperwork work and/or inputting routine data) and 6.81 (prioritising patient care according to the ATS).

Table 3 also presents the level of performance of the skilled tasks as rated by triage nurses. The level of performance for all activities were ranked highly; however, the range was broad; average scores ranged from 4.93 (introducing new ideas at triage to increase efficiency) to 6.63 (prioritising patient care according to the ATS).

OVERALL TRAINING NEEDS BASED ON QUESTIONNAIRE CATEGORIES

The most important overall training need fell in the category of Clinical Tasks (Items 16, 8 and 18), followed by Management/Supervisory Tasks (Items 7, 14 and 11), Communication/Teamwork (Items 19, 5 and 10) and Administration (Item 20) (see Table 4).

Table 4. Training needs based on categories.

Domain	Mean overall training needed
Clinical Tasks	0.43
Management/Supervisory Tasks	0.35
Communication/Teamwork	0.12
Administration	0.04

OPEN-ENDED RESPONSES

An open-response field following the questions allowed participants to specify any areas of their job for which they would like to receive further training or instruction. Open-ended responses (n = 53) were received from 18 participants. The responses were clustered into themes using the categories from the Hennessey-Hicks

questionnaire (see Figure 1). The largest area of training needs fell in the clinical task category (25 or 47%). Of these, the largest response related to vital signs (11 or 44%). Other themes included consistency of triaging according to the ATS (4 or 16%), physical assessments, such as fracture care, eye and stroke assessments (3 or 12%), rapid triage assessment processes (2 or 8%), ED models of care (2 or 8%) and other (3 or 12%).

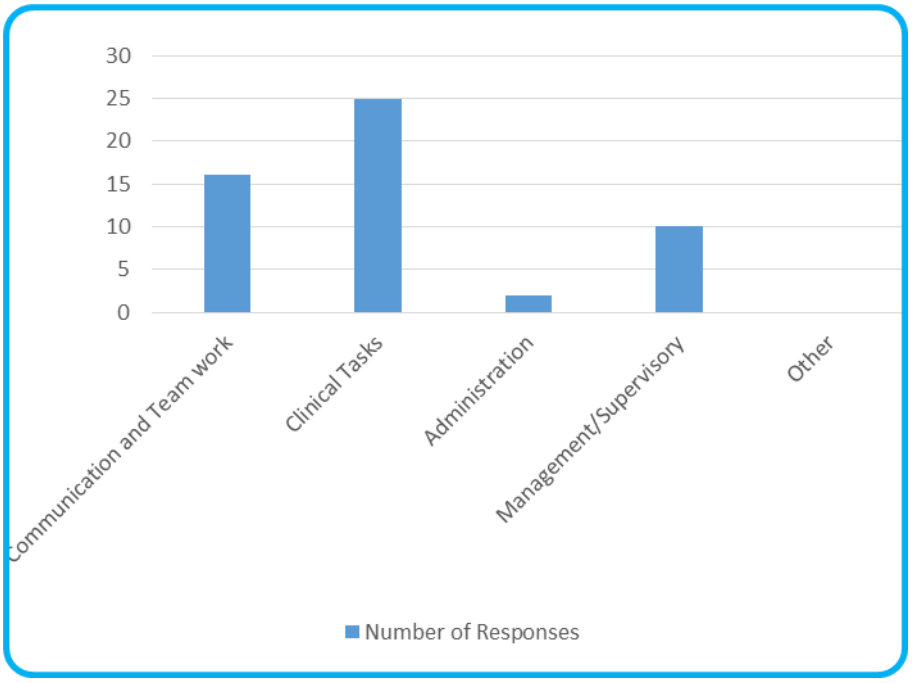

Figure 1. Training needs based on Hennessy-Hicks's categories: Responses to open-ended questions.

DISCUSSION

The Hennessey-Hicks Training Needs Analysis Questionnaire was adapted for this study (Hennessey & Hicks 2011). A training needs gap was identified by calculating the difference in mean rating scores between the importance of a work performance task and participant nurses' self-appraisal of their current performance of that task. The findings of this study showed that triage nurses ranked the importance and performance of all tasks highly. The top three larger positive differences indicated that to manage the triage process, nurses were of the view that they required educational support in relation to introducing new ideas to increase efficiency, current public health priorities and accessing the relevant literature. Similar to Holloway et al. (2018), the clinical tasks category was identified by triage nurses as a priority area for which there was an overall training need. Notably, the triages nurses identified training in vital signs and physical assessment as priority areas.

Efficient triage processes are critical to provide safe and best quality care to patients accessing EDs (Burgess et al. 2019; Hitchcock et al. 2014). Recently, the ACEM (2016) stated that triage should be an assessment of the presenting problem and general appearance, including physiological observations whereby vital signs may be required to estimate urgency if time permits (Burgess et al. 2019). Part of the revised process

includes limiting the responsibilities and tasks of triage nurses and focusing on a brief clinical assessment to ensure urgency and timely clinical care (MoH 2013; ACEM 2016). This change aligns with the literature that discusses limiting the traditional responsibilities of triage nurses, such as assessing vital signs, to avoid queuing and delays at triage (ACEM 2016; MoH 2013; Burgess et al. 2019). These recent changes to the ACEM's (2016) position on triage may explain why nurses were of the view that they needed training in the areas of introducing new ideas to increase efficiency and clinical tasks with a strong emphasis on vital signs. Further education to support ED nurses to triage efficiently using brief clinical assessments may be required.

As evidenced by Holloway et al. (2018), the participants in this study indicated that they required training in relation to understanding, and the escalation of, current public health priorities and accessing relevant literature to manage the triage process. Holloway et al (2018) suggested that primary health care and health promotion reflects a gap in confidence in the provision of evidenced-based care. Triage education largely supports complex technical skills and accuracy to determine the primary issue requiring immediate treatment (Innes, Plummer & Considine 2011). Recent variations to triage nursing roles places an emphasis on both the theoretical and practical aspects of nursing to cope with the demands of the role (Sanders & Minick 2014). Education in health promotion and the development of skills to access the relevant literature will support the complexity of the nurses' role and increase their confidence and competence in their ability to manage the triage process.

LIMITATIONS

As this study was restricted to a single site and comprised only a small sample size of triage nurses, the generalisability of the results may be limited.

CONCLUSION

Triage nurses have an autonomous role that requires complex critical thinking in the context of emergency care, patient safety and outcomes (CENA 2012; McCallum Pardey 2007; Varndell et al. 2019). Triage nurses receive education as part of the standardised national training course; however, the nurses in this study indicated a need for further training and support (Department of Health 2009). The results of this study will inform the design of future education programs and the development of the capability of the nursing workforce to triage efficiently and effectively.

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Conflict of Interest
The authors declare no conflict of interest.

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Exploring student fitness to practise with allied health clinical educators

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Abstract

Purpose: This research project aimed to 1) evaluate if a brief interprofessional education workshop changed the knowledge of supports and confidence of allied health clinical educators to manage student fitness to practise (FTP) issues that arise on clinical placement, 2) elucidate allied health clinical educators' personal experiences with student FTP issues and 3) explore allied health clinical educators' recommendations of strategies to use when supporting students on clinical placement.

Methodology: Allied health clinical educators attended a one-and-a-half-hour workshop on student FTP. The participants identified strategies to identify and manage student FTP issues on clinical placements and completed pre- and post-workshop questionnaires. Quantitative and qualitative data were analysed with independent t-tests, content and thematic analyses, respectively.

Findings: Forty-six clinical educators from nine professions participated. The participants initially lacked confidence and identified a need for training to help them support students with FTP issues. On reflection, the participants identified numerous strategies to support students with additional learning needs, and their confidence increased following the workshop.

Discussion: A brief, facilitated workshop had an immediate effect on the clinical educators' confidence in defining FTP and their knowledge of available supports. The participants offered several experience-informed insights and recommendations that build on a similar study of physiotherapy clinical educators.

Conclusion: A brief education workshop with an interprofessional group of allied health clinical educators elucidated various important strategies to consider when supporting students with FTP issues in the clinical setting.

Keywords: clinical education, fitness to practise, allied health, interprofessional education

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INTRODUCTION

Health professional students reportedly experience fitness to practise (FTP) issues that may affect their performance while on clinical placement (Lo, Maloney et al. 2014). FTP issues comprise clinical competence, professionalism, mental or physical health, communication and the ability to recognise limits (Parker 2000; Parker 2006; Lo, Curtis et al. 2017). While FTP issues are common on clinical placements, clinical educators (clinicians who work in the clinical environment and have dual responsibility to support patients and student education) may not feel confident in supporting students presenting with issues that may affect their FTP (Lo, Curtis et al. 2017). This study builds on a previous study that investigated the effect of a brief education workshop on the perceptions and confidence of physiotherapy clinical educators. Demonstrably, that study identified that physiotherapy clinical educators were aware of, but lacked confidence in assisting students with, FTP issues (Lo, Curtis et al. 2017). Therefore, one way to potentially increase clinical educators' confidence and skill is to provide further education and training on addressing issues that may affect student FTP during clinical placement.

The use of brief continuing professional development workshops for health professionals is common in workplace settings and has been shown to improve professional practice (Forsetlund et al. 2009; Gerdtz et al. 2013). Additionally, facilitated debriefing and collaborative learning strategies have been shown to enhance workplace learning by recognising the educational effect of discussion and questioning in promoting reflection on practise (Mertens et al. 2018). Considering previous research, this study employed a brief educational intervention aimed at broadening the exploration of clinical educators' reflections on, and confidence to work with, students presenting with FTP issues outside physiotherapy. Additionally, this study sought to use a facilitated education workshop to identify the experiences and describe the recommendations of clinical educators from a diverse range of allied health professions, exploring the full range of potential FTP issues that may affect student performance during clinical placement.

The aims of this study were to 1) evaluate if a one-and-a-half-hour interprofessional education workshop changed the knowledge and confidence of allied health clinical educators to manage student FTP issues that may arise on clinical placement, 2) elucidate allied health clinical educators' experiences with student FTP issues in the clinical setting and 3) explore strategies that allied health clinical educators use or would recommend to support students on clinical placement.

METHODS

A once-only clinical educators' professional development workshop was the source of data for this study. Monash University (#13824) and Monash Health (#RES-18-0000-073XL) Research Ethics committees approved this study.

DESIGN

This study used a mixed-methods approach to investigate the perceptions of allied health clinical educators who participate in an education program regarding managing student FTP issues in the clinical setting. Clinical educators rated their confidence with and knowledge of supports for students with FTP issues in pre- and post-workshop questionnaires (see Supplement 1). The qualitative section of the questionnaire sought to elucidate clinical educators' views and experiences of supporting students with FTP issues during their clinical placement.

An interactive discussion during the education workshop was used to record strategies that clinical educators identified as appropriate in various scenarios involving students on clinical placement. Issues discussed in the workshop related to anxiety, a crying student, cultural and linguistic diversity (CALD), a disinterested student, a student involved in a clinical incident, a student who does not take on feedback, challenges transitioning to the clinical placement, an unaware and incompetent student and an unprofessional student. The participants had the opportunity to provide additional recommendations about managing these scenarios via an online survey following the workshop.

PARTICIPANTS

Clinical educators where invited to attend a one-and-a-half-hour FTP professional development workshop. The workshop was advertised to all allied health clinical educators across a large health network via email distribution lists managed by the Allied Health Student Coordinator team. Attending the workshop was the only inclusion criterion and all participants received an explanatory statement. Of the 77 allied health clinical educators who attended the workshop, 46 participated in the study. The workshop occurred at a tertiary health service in Melbourne, Australia.

DATA COLLECTION

If participants consented, they completed a 4-item pre-workshop and a 14-item post-workshop questionnaire related to the workshop content (see Supplement 1). Quantitative questions were scored on a 5-point Likert-type scale from 1 (not at all confident) to 5 (very confident). Five points was devised as the optimal number to give respondents the opportunity to express a range of views including a neutral stance, while minimising the cognitive effort required to complete each questionnaire (Chyung et al. 2017). Additionally, a member of the research team (MF) transcribed verbatim the facilitated discussion commentary live during the workshop. This transcription was visible during the workshop to all participants, who confirmed its accuracy in real time. Additionally, the participants had the opportunity after the workshop to provide additional written suggestions of how they would manage cases. This data was collected via an optional reflective survey that was available over a two-week period. The researchers provided this survey, along with the workshop content and documented discussion notes, to the participants.

TRAINING PROGRAM CONTENT

The content of the professional development workshop was based on a workshop previously conducted with a group of physiotherapy clinical educators (Lo, Curtis et al. 2017). The first 30 minutes of content included: the definition and contextualisation of FTP; an overview of regulatory frameworks and notifiable conduct pertaining to pre-qualification health professionals; university preparation of students for clinical learning; and options for university and clinical placement providers to manage FTP issues in the clinical setting. The remaining one hour comprised a facilitated discussion about the clinical educators' experiences of, and strategies used when, working with students presenting with various FTP issues. Learning objectives, facilitator and learner activities, and questions that guided the facilitated discussion are summarised in Supplement 2.

DATA ANALYSIS

Data were analysed to evaluate the effect of the interprofessional education workshop on clinical educators' knowledge of FTP supports and confidence in their ability to manage student FTP issues that arise on clinical placement. Pre- and post-workshop quantitative data were analysed by independent t-tests using GraphPad with a significance level of $p < 0.05$.

The transcript of the recommended strategies that incorporated not only the strategies identified during the workshop, but also additional reflections submitted online were analysed using content analysis (Graneheim & Lundman 2004). Two researchers (MF, KL) independently coded the data, which was then merged into a final matrix by consensus. The open-ended survey responses exploring the personal experiences of clinical educators working with students with FTP issues were inductively coded independently by two investigators (MF, KL) using thematic analysis (Braun and Clarke 2006; Miles et al. 2014). After independent coding, code tables were reviewed, and a consensus was reached on a merged final code table. This final table was reviewed by a third member of the research team (JT) to confirm and validate the codes and thematic structure.

RESULTS

QUANTITATIVE DATA ANALYSIS

Forty-six clinical educators participated in the study, representing nine professions: allied health assistance, dietetics, exercise physiology, occupational therapy, physiotherapy, podiatry, psychology, speech pathology and social work. In summary, the participants had an average of 8 years ± 5.4 years (range 1–20 years) of clinical experience. Further, the participants had collectively supervised 212 students in the 12 months preceding the workshop and indicated that they had worked with 54 students presenting with issues that affected the students' FTP (24% of all students). The participants were asked to categorise the FTP issues that those students presented with. They reported that 36 students had issues with reaching competency on placement, 23 presented with professional behaviour issues and 15 presented with mental or physical health issues. In 39 cases (75%), the participants reported seeking support from the local health service student coordinator (an allied health educator employed by the health service with responsibility for supporting students and managing clinical placement allocation across the health service) or the university.

Unpaired t-testing showed that the change in confidence in ability to define FTP following the workshop increased significantly from a mean of 2.59 (SD 0.93) to a mean of 4.1 (SD 0.62), $p < 0.001$. Similarly, the change in participants' knowledge of support available to help manage FTP issues for students on clinical placement improved significantly from a mean of 2.57 (SD 1.11) to a mean of 4.0 (SD 0.81), $p < 0.0001$.

QUALITATIVE DATA ANALYSIS

Two types of qualitative analyses were performed: a thematic analysis of participants' experiences of student FTP issues and a content analysis of clinical educators' recommendations to manage student FTP issues.

The thematic analysis of clinical educators' responses to questions about experiences of student FTP issues identified three major themes. These themes included a description of the types of student FTP issues that were experienced, the effect of student FTP issues on clinical educators and system factors that are important

in managing student FTP issues that arise on clinical placement (see Figure 1). A summary of the key themes is presented here in student-, educator- and system-related clusters. The full code table is provided in Supplement 3.

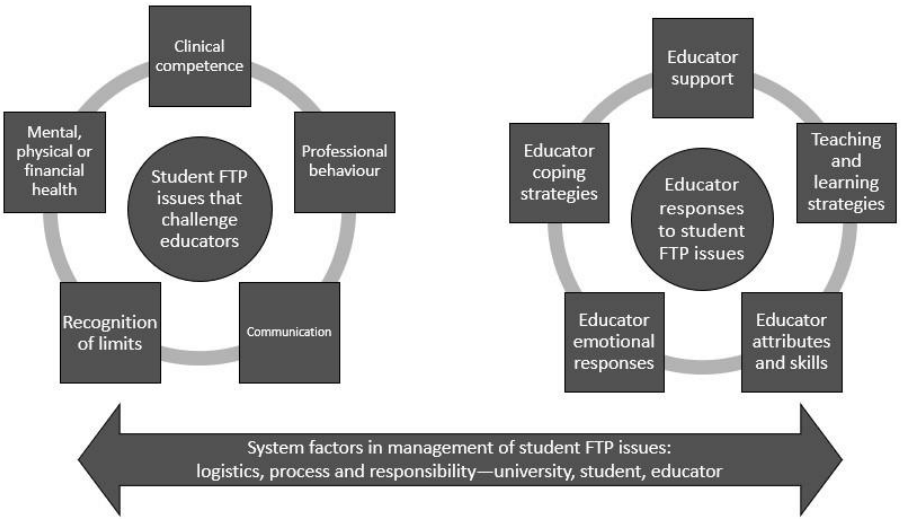

Figure 1. *Schematic representation of themes grouped in student, educator and system related clusters.*

THEME 1: STUDENT FTP ISSUES

In their responses, clinical educators identified several themes of student FTP issues that have been described previously by Parker (2000, 2006) and Lo et al.(2017). These themes included: clinical competence; professional behaviour; communication; recognition of limits; and mental, physical and financial health. Further, the challenges that clinical educators described included working with students who did not adequately translate feedback into practise, students who were affected by external issues such as homelessness and students who were not necessarily aware of the issues affecting their FTP, which at times led to failing the placement.

> [T]he student was late, unprofessional, did not take on [or] change professional behaviour following feedback, did not seem to care about the placement or profession. (Professionalism)

> A person who was so impacted by anxiety that they didn't have the insight into how this was impacting their performance. (Clinical competence)

> [The student was] falling asleep in meetings, [had a] lack of eye contact during feedback, [and was] eye rolling. (Communication)

> [The s]tudent becoming homeless during placement secondary to family breakdown. (Mental, physical and financial health)

THEME 2: AFFECTS ON CLINICAL EDUCATORS

Clinical educators described the effect of student FTP issues on themselves personally and emotionally, and gave insights into their support options and coping mechanisms.

There were mixed accounts of experiences when students did and did not reach competency and how that affected clinical educators.

> [I felt f]rustrated as I put … a lot of effort into trying to support the student but was unable to 'succeed'. (Emotional response)

> [I felt f]ailure, guilt, frustration, sadness for [the students'] struggle [and] anger over 'wasted' time and effort. In the end relief that [the] student identified their own struggle and found their own path. (Emotional response)

> [I] required more support from uni to further assist [the] student with the process following failing a placement. (Support)

> [I m]ade expectations [of the student] clear, [provided] regular supervision [and] feedback … involved university, put more responsibility for the student's learning on them [the student], [used] reflection strategies and more direct expectations. [I used] FTP definition [and] support available from uni. (Coping strategies)

The clinical educators also identified the attributes and skills they bring to their role, and the teaching and learning strategies they use in the clinical setting to support learners with FTP issues. Some clinical educators expressed uncertainty of or a lack of confidence in the teaching strategies they have used in the past or would like to try in the future. This was due to either their own breadth of experience or from their concern of treating a student with FTP issues inappropriately or insensitively.

> [I f]elt awkward repeating myself when we both knew I had gone over [the feedback point] a number of times before. [I a]lso found it hard to problem-solve different ways of giving feedback. (Clinical educator attributes and skills)

> [I] felt ill-equipped to assist with significant mental health issues. (Clinical educator attributes and skills)

> I felt I was going out of my way to change my methods to … assist the student but not getting the same effort in return from the student. Hence feeling lost with what to do. (Teaching and learning strategies)

> [I]ncreased feedback (formal [and] informal), student coordinator involvement, tutorials, learning needs, step-by-step breakdown of problem lists [and] clinical reasoning, planning with both educators and student, unsupervised interactions with clients when it was deemed safe and appropriate. (Teaching and learning strategies)

THEME 3: SYSTEM FACTORS IN MANAGING STUDENT FTP ISSUES

The third theme centred on the roles and responsibilities of the university, the health service student coordinator and the clinical educator in identifying and managing

student FTP issues that arise while on clinical placement. This theme includes the importance of communication, frustration when a university is unable to disclose information about a student prior to placement, and the practical realities of navigating these situations and who is ultimately responsible for what.

> [S]uspected issues with anxiety [or] depression. Student did not disclose. Spoke to [university] clinical support [team] about this issue but still felt that we were searching in the dark about what was going on. (Logistics and process)

> [B]eing very proactive in seeking support from the uni and student coordinator as [there are] many resources out there. (Logistics and process)

> I am comfortable that I tried everything that I could including discussion with colleagues and the university and providing appropriate strategies to [s]upport the student. (Logistics and process)

> [I]t was important to bring to their [university] attention but also [to] gain information re[garding] what checks are in place at uni for clinical competence as well as supports available for financial and mental health issues. (Responsibility)

> [My actions included communicating] clear expectations of placement. Developed understanding of how best to provide feedback. Liaised with student coordinator regularly. Clear communication with co-supervisor. (Responsibility)

> [R]aise issue[s] early, notify student coordinator early, use professional development forms early. Document all discussions for future reference. (Responsibility)

Finally, the clinical educators identified several ways that they were intending to change their practise after attending the workshop. These changes indicated an intention to increase their environmental scanning and level of collaboration with the student and education providers.

> [G]ive students more opportunities to discuss FTP issues and ask about it. (Process)

> [E]scalate to uni earlier and be more assertive when requesting support through using evidence relating to FTP. (Responsibility)

> [M]ake the time to check in with students about their wellbeing. (Process)

The clinical educators' recommendations for managing FTP issues that may arise on clinical placement were examined by content analysis to create a matrix of strategies that indicated the frequency of recommendations for each FTP issue (see Table 1). Three strategies were recommended for use in the majority of potential scenarios. The first strategy included facilitating open discussion, providing feedback without judgement and gaining rapport (>4 recommendations for all but one FTP issue

category, with 1–3 recommendations). The second strategy was seeking support from others outside the clinical educator–student pairing (>4 recommendations for all but three FTP issue categories, with 1–3 recommendations). The third strategy, which was recommended to a lesser extent, was providing feedback to facilitate learning, including written and verbal feedback and feedback books (>4 recommendations for 1 FTP issue category). Additionally, giving a student space and providing opportunities for observation were each recommended for only two FTP issue categories. Finally, following protocols was recommended for only one type of FTP issue category—a clinical incident involving a student.

Table 1. Content analysis of clinical educator recommendations to assist students with various FTP issues on clinical placement

	Category of Issues Affecting FTP								
Recommended Strategies to Manage Issues Affecting FTP	**Anxiety**	**Crying**	**Cultural and Linguistic Diversity**	**Disinterest**	**Clinical Incident**	**Not Taking Feedback**	**Transition Challenges**	**Unaware and Incompetent**	**Unprofessional**
Scaffold tasks and time to match skill level	✓	✓✓	✓	✓	✓	×	✓	×	×
Identify learning needs	✓	✓	✓	✓	×	✓	✓	×	✓
Allow mistakes, use risk management strategies	✓	×	✓	×	✓	✓	×	✓	×
Use templates and structure	✓	×	✓	×	✓	×	×	✓	✓
Clarify expectations and the roles of student and clinical educator	✓	×	✓✓	✓	✓	×	✓	✓	✓✓
Have open discussions, give feedback without judgement, gain rapport	✓✓	✓✓✓	✓✓	✓✓	✓✓✓	✓✓	✓	✓✓	✓✓
Plan and practise (write things down, role-play, use peer-assisted learning techniques)	✓	✓	✓✓✓	×	×	×	✓	✓	×
Facilitate independent learning and coaching	✓	×	✓	×	×	✓	×	×	×
Think critically, ask questions, problem-solve	×	×	✓	✓	×	✓	×	✓	✓

Recommended Strategies to Manage Issues Affecting FTP	Category of Issues Affecting FTP								
	Anxiety	Crying	Cultural and Linguistic Diversity	Disinterest	Clinical Incident	Not Taking Feedback	Transition Challenges	Unaware and Incompetent	Unprofessional
Provide student with opportunities for observation	✓	×	×	✓	×	×	×	×	×
Record video, practise self-reflection, write in a diary	✓	×	✓	✓	×	×	×	✓	✓
Seek support from others outside the clinical educator–student pairing	✓	✓✓	✓	✓	✓✓	✓✓✓	✓✓✓	✓✓✓	✓✓
Give feedback to facilitate learning (written and verbal feedback, feedback books)	✓	✓	✓	✓	✓	✓	✓	✓✓	✓
Give student space, ensure appropriate environment	×	✓✓	×	×	×	×	×	✓	×
Follow protocols	×	×	×	×	✓✓	×	×	×	×

Key: ✓ = 1–3 responses, ✓✓ = 4–5 responses, ✓✓✓ = >5 responses, × = 0 responses.

DISCUSSION

This study has identified several experience-informed insights and recommendations made by a multidisciplinary group of clinical educators during a one-and-a-half-hour interprofessional workshop on student FTP. The workshop had an immediate effect on the clinical educators' confidence in defining FTP and their knowledge of available supports, which was particularly reflected in the quantitative data. This is important because the participants in this workshop identified that more than one in four of their students in the preceding 12 months had presented with an FTP issue. Considering this experience, this study provides not only an interprofessional perspective on how working with students presenting FTP issues affects clinical educators, but also suggestions and recommendations on how to deal with FTP issues during a clinical placement.

Several similarities arose when comparing the findings of this study (that engaged a multidisciplinary group of clinical educators) with those from a similar study (that engaged a group of physiotherapy clinical educators and academics). Both groups discussed clinical competency issues, but the participants in the previous study raised their lack of confidence in supporting students with mental health issues more often

than the clinical educators in the current study. This could be due to the current study including clinical educators from professions such as social work, occupational therapy and psychology, which all necessitate core skills based on working with people with mental health conditions.

Participants in both studies preferred early disclosure (prior to placement) of mental health issues, such as anxiety, and using feed forward mechanisms, and valued receiving early support. While only the participants in this study discussed the importance of students' insight into difficulties, participants in both studies identified that they were 'going out of their way' to support students who presented with FTP issues, and were unsure how to proceed and where to draw boundaries. Additionally, both groups found that their relationships with education providers were helpful regarding support, particularly when student performance was unsatisfactory. Further, both groups identified the importance of preparation as a key education strategy and felt there was inadequate training for clinical educators in managing FTP issues in the clinical setting.

Although the participants in this study stressed the importance of putting the onus of learning on the student, they also listed numerous strategies they would use to support students with additional learning needs. Notably, the participants in both studies identified not only a lack of confidence in their role as clinical educators, but also a pressure to 'bring students up to standard'. This tendency to contribute more effort and time when a student is struggling is consistent with the key findings of Bearman et al. (2013) regarding the usual actions of clinical educators while working with an underperforming student. Interestingly, in both studies some of the clinical educators' lack of confidence was related to a fear of not treating students who present with FTP issues in a sensitive and appropriate way.

Conversely, the facilitated discussion in this study's workshop included more prompts than in the previous study, meaning the participants in the former were invited to address a broader variety of student FTP issues. Specifically, the participants in this study were asked to discuss their past experiences of students with FTP issues. These included safety and professionalism, mental and financial health, problems of sleep deprivation and becoming homeless during placement.

Additionally, this study's workshop content included information regarding how written and verbal communication issues present as an FTP issue. This was specifically related to mature aged students and students from CALD backgrounds. Further, effective communication was considered a critical skill when managing student FTP issues, especially regarding the clinical educators increasing their environmental scan of the issues that can affect students on clinical placement.

The participants in this study raised concerns regarding students self-identifying their scope of practise. In response, other participants recommended setting expectations early in the clinical placement and developing an understanding of how to best provide feedback. Another key strategy raised was clinical educators communicating with support persons other than university staff (e.g. managers), particularly where multiple clinical educators were involved with the same student. The group also discussed the benefits of clearly defining FTP issues and escalation processes.

In both studies, the participants discussed the skills that they possessed and the coping skills they utilised in the learning environment. After further prompting, this study's participants disclosed their emotional responses to educating students with FTP issues. They also discussed the range of supports they used, including other supervisors, student coordinators and university staff. The clinical educators' perspectives in this study have further elucidated factors important in supporting

students with FTP issues. However, investigating more comprehensive education regarding student FTP issues for clinical educators and a longer-term assessment of the effect of this type of education may be beneficial to better understand how to support students and educators in a workplace learning environment.

Limitations to this study include the relatively small number of participants from a single metropolitan health network and the self-reported pre- and post-workshop measures of knowledge and confidence. Considering these limitations, the results of this study may not represent allied health clinical educators in general. However, the participants had been involved in the education of a large number of health professional students in the preceding year, and a high proportion of those students had experienced some form of FTP issue while on clinical placement. Therefore, the combined experience of the participants is highly relevant to the findings. Additionally, the findings of this study are aligned with and build on the results of the previous study discussed above.

CONCLUSION

A multidisciplinary group of clinical educators who have worked with students with FTP issues reported higher levels of confidence and greater knowledge of appropriate supports after a brief workshop on managing student FTP issues. The clinical educators not only identified increased confidence levels, but also identified and recommended a range of appropriate strategies drawing on their practical, personal and emotional experiences of supporting students with FTP issues. In addition to the clinical educators' experiences, academics' perspectives should also influence future professional development for clinical educators to reinforce their confidence and skills in supporting students with FTP issues while on clinical placement.

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Conflict of Interest
Nil to declare

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Nil

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Supplement 1

PRE- AND POST-WORKSHOP QUESTIONNAIRES

Discipline: _____

How many years of clinical experience? _____ (years)

PRE-WORKSHOP

How confident are you to define fitness to practise (FTP)? (Please circle.)

(5-point Likert scale: not at all confident [1] to very confident [5])

Are you aware of university supports for students with FTP issues? (Please circle.)

(5-point Likert scale: not at all aware [1] to very aware [5])

POST-WORKSHOP

How confident are you to define fitness to practise (FTP)? (Please circle.)

(5-point Likert scale: not at all confident [1] to very confident [5])

Are you aware of university supports for students with FTP issues? (Please circle.)

(5-point Likert scale: not at all aware [1] to very aware [5])

How many students have you been involved with educating this year from any education provider (as either primary or secondary supervisor)? (n = __)

How many students with FTP issues have you had this year from any education provider? (n = ___)

What types of FTP issues did they have?_____

Number of students with:

- professionalism issues (n = __)
- clinical competence issues (n = __)
- mental, physical health or financial issues (n = __)

How many of these did you speak to the student coordinator or university about? (n = ___) Why or why not? _____

Name the most challenging situation that you have had with a student with FTP issues. Why did you find this challenging?

_____
_____

What feelings did you experience? _____

If the situation arose again, what would you do? Do you have any plans if a similar situation arose again?

_____
_____

What were the new things you learned today?

_____
_____

What sort of support do you need from education providers to support your supervision of students with FTP issues more effectively?

_____
_____

How will you change your practise as a result of attending this presentation?

_____

Supplement 2

Student fitness to practise workshop learning objectives and facilitator and learner activities

Learning Objectives	Facilitator and Learner Activities
Define FTP and inherent requirements with case examples.	Defined FTP. Defined inherent requirements.
Identify relevant regulatory authority definitions and related research.	Found AHPRA's definition of notifiable content and links between undergraduate warnings and postgraduate legal issues.
Identify FTP support strategies.	Wrote an FTP self-declaration.
Discuss the effect of student insight on clinical performance.	Discussed the differences between student-rated and educator-rated assessments of clinical competence.
Demonstrate awareness of key stakeholder perspectives of FTP issues in students on clinical placement.	Discussed university and clinical educator perspectives of FTP, including encouragement to refer students onto relevant support services and for educators to seek help themselves. Discussed the expertise of different allied health professions.
Identify the contributors and risks associated with failure to fail.	Participated in facilitated discussion of the literature.
Acknowledge the benefits of delivering course content on wellbeing.	Discussed the wellbeing course content at university and other programs reported in the literature.
Describe how to support students with FTP issues including underperformers.	Discussed roles of the student and clinical educator in underperformance, including articulating the signs and symptoms of the distressed student that educators might see in clinical practice. Discussion acknowledged that allied health professionals are familiar with diagnosing and solving clinical problems and identifying where those skills may be appropriate to apply in scenarios involving students.
Apply FTP management principles to common case scenarios.	Used student scenarios to prompt discussion during the workshop and an optional post-workshop follow-up survey. Key question: 'For each scenario, what strategies would you recommend clinical educators use to manage these scenarios?' Scenarios in the discussion included students who:

	1. are anxious 2. are crying 3. are culturally or linguistically diverse 4. are disinterested 5. are involved in an incident 6. are not taking on feedback 7. have challenges transitioning to clinical placement 8. are unaware and incompetent 9. are unprofessional.

Note. FTP: fitness to practise. AHPRA: Australian Health Practitioner Regulatory Authority.

Supplement 3

Qualitative analysis code table

Theme	Theme Description	Codes	Examples and Golden Quotations
Clinical Competence	Challenges working with students who are developing skills based on the thresholds of clinical competence	Failure or termination	'Lack of insight from the student regarding their competency [resulted in] having to fail the student.'
		Acting on feedback	'The student was late, unprofessional, did not take on [or] change professional behaviour following feedback, and did not seem to care about the placement or profession.'
		Milestone achievement	'[I t]ried multiple strategies to improve communication and awareness of clinical skills but [was] unable to bring [the student] up to minimum standards by the end of the placement.'
		Safety	'[The student's p]atient intervention strategies [were] not fully safe or comprehensive.'
Professionalism	Challenges working with students who were displaying what the educator considered was unprofessional behaviour	Unprofessional behaviour	'Un-notified [*sic*] absences, overconfident, [ignored] education provided by supervisor, argumentative regarding practise and university ended up ceasing student's placement.'
Communication	Challenges with different types of communication skills that affected student FTP, including a lack of disclosure	Communication skills: written	'Documentation needs to be legible for all staff in patient notes. Difficult to teach better written skills to mature aged students.'
		Communication skills: verbal	'International student. Lack of English … and ability to communicate verbally and non-verbally. Difficulty writing patient notes.'
		Communication skills: non-verbal	'Student of CALD background [was] falling asleep in meetings, [had a] lack of eye contact during feedback, [was] eye rolling.'
		Lack of disclosure	'Suspected issues with anxiety [or] depression. Student did not disclose. Spoke to [university] clinical support [team] about this issue but still felt that we were searching in the dark about what was going on.'
Recognised Limits	Challenges working with students who had difficulty recognising	Insight	'A person who was so impacted by anxiety that they didn't have the insight into how this was impacting their performance.'

Theme	Theme Description	Codes	Examples and Golden Quotations
	their limitations and how this affects performance	Personal and professional boundaries	'Student was being borderline "disrespectful" to educator, working beyond scope of practise without informing educator. Student missed out [on] important information from own discipline but [overstepping into] other disciplines' area of expertise.'
Mental, Physical and Financial Health	Challenges working with students' mental, physical and financial health issues	Motivation	'I felt I was going out of my way to change my methods … to assist the student but not getting the same effort in return from the student. Hence feeling lost with what to do.'
		Health condition affecting performance	'Knowing when to make the call that the student wasn't fit to practise and how to make that call … we didn't feel adequately trained or supported to make a call for a student to cease placement.'
		Fatigue	'Significant mental health issues—wasn't sleeping, [was] falling asleep on drive to [and] from placement, falling asleep on placement, late, not prepared.'
		Social pressure	'Student becoming homeless during placement secondary to family breakdown.'
Logistics and Process	The organisation of clinical placements and the role of the university and clinical placement provider in supporting clinical education and the time taken to educate students	Issue identification	'Be more aware of the many issues that can affect student[s] on placement. Facilitate open communication with students.'
		Partnership between university and clinical placement provider	'Being very proactive in seeking support from the uni and student coordinator as [there are] many resources out there.'
		Support process: clear	'Student did not show clinical competence and [I] needed support to go through the appropriate processes to fail the student.'
		Support process: unclear	'The student coordinator was aware, the university was aware and in touch with the student, but the decision was given to [the] student if she didn't think she was fit to practise and whether she wanted to defer. I found this difficult as I was told to make the call or the student who was struggling could.'
		Documentation	'Raise issue[s] early, notify student coordinator early, use professional development forms early. Document all discussions for future reference.'
		Placement planning	'Differences [in] learning methods, needed to put in more time during placement, planning for placement.'
		Time demands	'Multiple strategies attempted without outcomes. Lack of time to thoroughly address challenges.'

Theme	Theme Description	Codes	Examples and Golden Quotations
Responsibility	Issues of who is responsible for what in the clinical education relationship	Reduced responsibility for student	'I was secondary supervisor; it wasn't my call.'
		Responsibility for identifying issues	'Suspected student had FTP (anxiety) issue but they or the university did not let me know.'
		Shared understanding of student performance	'Reassurance that it may not be your skills as a clinical educator that's resulting in poor performance—could be FTP issues.'
Support for Clinical Educators	The range of supports that clinical educators value and whether they sought the supports from the clinical placement provider or university	Clinical placement provider support team	'[My actions included communicating] clear expectations of placement. Developed understanding of how best to provide feedback. Liaised with student coordinator regularly. Clear communication with co-supervisor.'
		University support team	'Broad definition of FTP and escalation process within the university. Hearing that … university is supportive of the clinical educator's assessment of a student's performance.'
Strategies for Teaching and Learning	Types of teaching and learning strategies that clinical educators employed to support students	Feedback to facilitate learning	'[I m]ade expectations [of the student] clear, [provided] regular supervision [and] feedback … involved university put more responsibility for the student's learning on them [the student], [used] reflection strategies, and more direct expectations. [I used] FTP definition [and] support available from uni.'
		Providing tasks and time to match skill level	'[I]ncreased feedback (formal [and] informal), student coordinator involvement, tutorials, learning needs, step-by-step breakdown of problem lists [and] clinical reasoning, planning with both educators and student, unsupervised interactions with clients when it was deemed safe and appropriate.'
		Identifying learning needs	'Talking more about expectations at the beginning of the placement and reinforcing expectations throughout the placement.'
Clinical Educators' Attributes and Skills	Skills that clinical educators brought to the clinical educator–student relationship	Feedback delivery	'[I f]elt awkward repeating myself when we both knew I had gone over [the feedback point] a number of times before. [I a]lso found it hard to problem-solve different ways of giving feedback.'
		Level of experience	'Now I am more aware of the supports available. Increased skill set around managing some subtle and abstract things.'
		Identifying performance gaps	'Frustration, increased cognitive load of having to teach what should be existing knowledge from uni.'

Theme	Theme Description	Codes	Examples and Golden Quotations
		Difficult conversations about poor performance	'Being able to find a method to educate the student and getting feedback from the student as to whether the method was effective. Constant miscommunication of a lot of assumptions thus making student situation very frustrating.'
		Feelings of failure and lack of confidence, and feeling unprepared	'Frustrated, feeling like I've failed to educate effectively, doubted my skills, and reduced my confidence to educate in the future.'
Clinical Educators' Emotional Responses	Clinical educators' emotional responses to clinical education	Joy (relief)	'Failure, guilt, frustration, sadness for their struggle [and] anger over "wasted" time and effort. In the end relief that [the] student identified their own struggle and found their own path.'
		Surprise (disbelief, confusion, uncertainty)	'[I felt u]ncomfortable like I was inadequate as a CE [clinical educator]. I was confused as to why the student was not able to change their performance.'
		Anger (frustration, offense)	'[I felt f]rustrated as I put … a lot of effort into trying to support the student but was unable to "succeed".'
		Sadness (helpless, guilty, insecure, disheartened, lack of recognition)	'[I felt] guilt.'
		Fear (anxiety, stress, overwhelm, shock)	'[I felt s]tress and anxiety to ensure we as supervisors were giving [the] student the best possible chance to pass.'
Clinical Educators' Coping Strategies	Coping strategies clinical educators might use to support their provision of clinical education	Peer support	'I am comfortable that I tried everything that I could including discussion with colleagues and the university and providing appropriate strategies to support the student.'
		Managerial support	'Sought support from [clinical s]upervision formally and debrief from co-supervisors.'
		Recognise and support student to take responsibility for own learning	'Put more responsibility for the student's learning on them, reflection strategies, more direct with expectations.'
		Partnering with learner	'[M]ake the time to check in with students about their wellbeing.'
		Preparation	'I'd be prepared for student supervision and requirements of the placement and assessment criteria.'

Theme	Theme Description	Codes	Examples and Golden Quotations
		Reflect on expectations of students	'Look into cultural reasons for communication—weigh up grammar issues and whether this is really an issue if documentation still clear. Early discussion about communicating goals.'
		Early identification and flagging	'Raise issue[s] early, notify student coordinator early, and use professional development forms early. Document all discussions for future reference.'

Note. CALD: cultural and linguistic diversity.

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Study Protocol: MASK-ED™ (KRS Simulation) - impact on physiotherapy student performance

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Abstract

Purpose: MASK-ED™ (KRS Simulation) involves an educator donning a silicone mask to portray a patient character that has been specifically developed in line with learning outcomes. The effectiveness of MASK-ED™ (KRS Simulation) to prepare physiotherapy students prior to commencing work integrated learning has not been investigated.

Methodology: This randomised cluster trial will investigate MASK-ED™ (KRS Simulation) in addition to usual teaching in neurological physiotherapy. Physiotherapy students in an intervention group will receive simulated learning via a MASK-ED™ (KRS Simulation) character as well as usual teaching. Students in a control group will receive usual teaching only, including role-play with peers. Consent will be concealed from the investigating team and blinded assessors will assess the primary outcome. Secondary outcomes will be practical and written examination results and a satisfaction survey.

Research implications: This will be the first randomised trial investigating MASK-ED™ (KRS Simulation)'s effect on students' readiness for work integrated learning.

Practical implications: The results from this study will inform physiotherapy education and curriculum development by increasing the evidence base for the use of simulation in training physiotherapy students prior to work integrated learning.

Originality: MASK-ED™ (KRS Simulation) was developed in nursing education at Central Queensland University, Australia. Although it has been investigated in medical imaging, this is its first practical application within physiotherapy curricula.

Limitations: It will be impractical and unfeasible to blind the participants and the investigators to tutorial group allocation and impractical for blind assessing of practical examinations.

Keywords: simulation training, students, physiotherapy, education

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BACKGROUND

Simulation allows students to practise realistic clinical skills prior to patient contact, thereby maximising learning opportunities and patient safety after students commence clinical placement (Alinier et al. 2004; Seropian et al. 2004; Watson, R et al. 2002). Preclinical simulation has the potential to better prepare students for work integrated learning by offering opportunities to practise clinical skills in a safe and supportive learning environment. Simulated learning allows students to make mistakes without potentially harming real patients and builds their confidence and professional identity.

Simulated learning environments in physiotherapy have been investigated as a substitute for work integrated learning (Watson, K et al. 2012). Replacing portions of clinical time with a simulated learning environment had no significant effect on student competence compared to standard work integrated learning in cardiorespiratory (Blackstock et al. 2013) and musculoskeletal practice (Watson, K et al. 2012). Physiotherapy students' stress responses during clinical placements, in a hospital setting and a simulated learning environment, have also been studied. The findings suggested that while both settings produced comparable physiological responses (heart rate and cortisol levels), students rated the simulation environment more stressful (Judd et al. 2016). Therefore, the simulated environment's stress demands should be built up gradually (Judd et al. 2016). This reinforces that simulation should be introduced into the classroom setting early in healthcare university degrees. Additionally, simulation may prove beneficial within the real clinical setting or in a simulated learning environment before clinical work integrated learning placements.

Simulated patients (usually trained actors or volunteers) have been used in physiotherapy education to provide students with more authentic clinical scenarios(Pritchard et al. 2016). The validity and reliability of simulated patients in assessing clinical competence has been investigated in physiotherapy with 'promising' yet inconclusive results (Panzarella & Manyon 2008). Although an Objective Structured Clinical Examination using simulated patients is feasible and correlates with physiotherapy students' final course grades (Gorman et al. 2010), simulated patients require developed scripts and characters, lengthy training and reimbursement. When faced with unique situations (e.g., questions not covered in training), standardised patients are not necessarily able to respond to these spontaneous teaching moments in an authentic and realistic manner.

MASK-ED™ (KRS Simulation) is a novel simulation technique in which expert clinicians don a high-fidelity silicone mask and role-play a character (McAllister et al. 2013). The character is developed with a distinct personality and history relevant to the teaching objectives (Reid-Searl et al. 2012). MASK-ED™ (KRS Simulation) allows the masked academic to steer the interaction with the student, to take advantage of and capitalise on spontaneous teaching moments and allows for immediate debriefing (McAllister et al. 2013). The academic has intimate knowledge of the curriculum's learning objectives, does not need a script and can mould the established character to these objectives. Standardised patients without appropriate knowledge of the curriculum, requirements of a physiotherapist, or potential patient reactions will be less able or unable to guide a teaching session to achieve necessary learning objectives.

MASK-ED™ (KRS Simulation) has been shown to decrease nursing students' anxiety of work integrated learning and build their confidence and feelings of preparedness (Reid-Searl et al. 2012). Nursing students perceived MASK-ED™ (KRS Simulation) to significantly contribute to preparedness for work integrated learning and be more

authentic and effective for learning in comparison to actors and high-fidelity patient simulators (Kable et al. 2013). Therefore, it is possible that a MASK-ED™ (KRS Simulation) character will provide a richer learning experience for students than alternative teaching methods.

No randomised trials investigating any aspect of MASK-ED™ (KRS Simulation) have occurred in any health discipline. Additionally, MASK-ED™ (KRS Simulation)'s effectiveness to increase clinical performance in physiotherapy students has not been examined. Classroom-based simulation's effect on clinical performance scores also requires further research. This randomised cluster trial will investigate MASK-ED™ (KRS Simulation)'s effectiveness on students' knowledge and clinical practice in neurological physiotherapy.

This paper follows the SPIRIT 2013 guideline (Chan et al. 2013) in outlining this randomised cluster trial's protocol. The questions this research intends to answer are:

1. Is MASK-ED™ (KRS Simulation) more effective than role-play with peers in improving physiotherapy student performance during work integrated learning?
2. Which components, if any, of physiotherapy student clinical performance does MASK-ED™ (KRS Simulation) affect?
3. To determine students' perceptions of MASK-ED™ (KRS Simulation).

RESEARCH HYPOTHESIS

Classroom-based MASK-ED™ (KRS Simulation) combined with usual teaching is superior to peer role-play combined with usual teaching.

PRIMARY OBJECTIVE

The primary objective is to determine if MASK-ED™ (KRS Simulation) is superior to usual teaching (including role-play with peers) in neurological physiotherapy.

KEY SECONDARY OBJECTIVE

The key secondary objective is to determine if MASK-ED™ (KRS Simulation) is superior to role-play with peers regarding improving any specific areas of knowledge or clinical skills (e.g., professionalism, communication, assessment or intervention).

OTHER SECONDARY OBJECTIVE

The other secondary objective is to determine students' perceptions of using MASK-ED™ (KRS Simulation) in the neurological curriculum.

TRIAL DESIGN

This study is a single-centre, single-blind, cluster randomised trial with concealed allocation between group post-measures and intention-to-treat analysis. Each tutorial group will be randomised to receive either the experimental or the control intervention. The aim is to compare the use of MASK-ED™ (KRS Simulation) to role-play with peers and determine the former's effect on physiotherapy students' clinical performance during their work integrated learning placements.

STUDY SETTING

This study will occur at an Australian university as part of the neurological units of study undertaken by physiotherapy students enrolled in either a bachelor or a master program (2018–21). The students will be in either their third year of a four-year bachelor's degree or their first year of a two-year graduate-entry master's degree. The students commence their work integrated learning after successfully completing their neurological curriculum.

ELIGIBILITY CRITERIA

All students enrolled in neurological units of study will be eligible to participate and there will be no exclusion criteria. Tutorial groups will be randomised; all students will be in either the experimental group and undertake the intervention or the control group and continue with usual teaching only. Only students who consent to and enrol in the study will have their data analysed. Consenting to data analysis will not affect students' tutorial group allocation as consent remains blinded until after all work integrated learning placements have occurred.

INTERVENTION

The experimental group will receive MASK-ED™ (KRS Simulation) and usual teaching. The unit of study's usual teaching encompasses a one-hour lecture in a large group (approximately 90 students) and two 2.5-hour tutorials in small groups (≤24 students) per week over 10 weeks. Tutorials incorporate explicit teaching, case-based learning, problem-based learning, video-taped practical skill demonstration and student practise. Specific feedback from the tutor regarding the class' learning outcomes supports all learning. Students have access to pictures and videos of clinical skills in the required text and the student manual.

The experimental group will receive MASK-ED™ (KRS Simulation) during five tutorials (12.5 hours). Students will directly interact with a uniquely created MASK-ED™ (KRS Simulation) character played by one of the researchers (see Figure 1). This character was designed and developed in accordance with MASK-ED™ (KRS Simulation) training principles to align with and enrich the course's learning objectives (e.g., assessment and treatment of a patient with neurological impairments) (Central Queensland University 2019). In small groups in the tutorials, students will be able to ask the MASK-ED™ (KRS Simulation) character questions and practise assessment and intervention skills that will have been covered in lecture content. Reflection is a critically important element of a successful simulation experience (Fanning & Gaba 2007); therefore, time will be devoted to debriefing the students following these interactions. Another investigator will be present during these tutorials to assist the masked researcher and students.

The control group will receive usual teaching, including role-play with peers. One tutor will teach all four control groups and another the four experimental groups.

Figure 1. MASK-ED™ (KRS Simulation) character with students during tutorial.

ADHERENCE

Class rolls will be kept to monitor the number of sessions that each participant attends and to ensure that there has been no contamination by swapping tutorial groups. If students must swap groups, they must swap into another corresponding group (i.e., from experimental to experimental).

OUTCOMES

The primary outcome will be criterion number 5 ('communication', verbal and non-verbal) of the 'Assessment of Physiotherapy Practice' scored out of four. Additionally, the following scores will be individually analysed: 'overall' (out of 80), 'professionalism' (out of 16), 'assessment' (out of 12) and 'intervention' (out of 20). A blinded assessor who will be unaware of student allocation and of the study will complete the assessment at the completion of the students' rehabilitation clinical placement. The 'Assessment of Physiotherapy Practice' is an assessment tool that has been tested and is reliable (Dalton et al. 2012), valid (Dalton et al. 2011) and the most common measure of physiotherapy student clinical performance in Australia.

The secondary outcomes will be the students' performance of clinical skills at the end of their units of study and before clinical placement, their written examination marks and a satisfaction survey. Performance will be measured during a practical examination in which students are provided with a clinical problem requiring them to demonstrate clinical skills: either an assessment or intervention technique. The student will act as the 'therapist' while another student simulates a 'patient'. A standardised 100-point marking schema based on the 'Assessment of Physiotherapy Practice', will be used to measure performance.

PARTICIPANT TIMELINE

The participants will be from two consecutive cohorts of students and will participate in the unit of study's tutorials from February to June of that year. During the subsequent 12 months, they will commence their work integrated learning and undergo a five-week rehabilitation practicum (see Figure 2). After Cohort 2 completes their study, consent will be unconcealed and data collected.

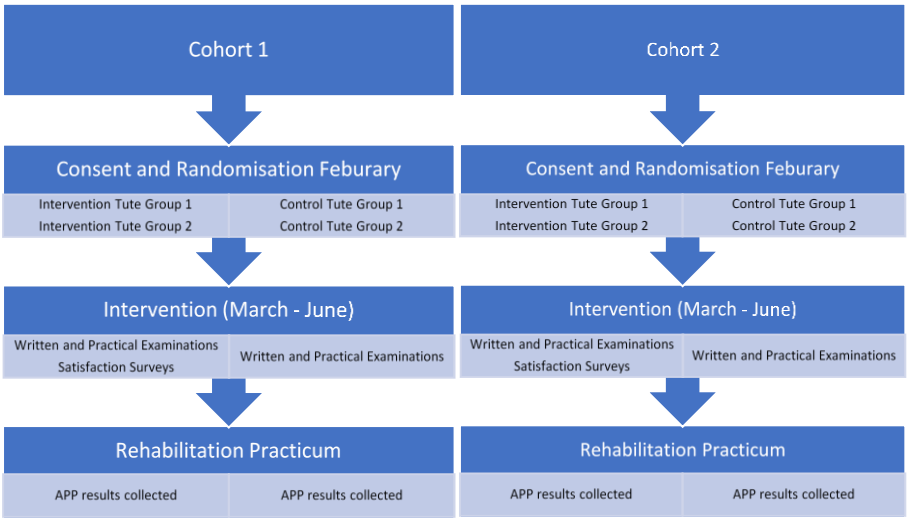

Figure 2. Project timeline for Cohort 1 and 2.

SAMPLE SIZE

Sample size calculations indicate that a sample size of 120 students will detect a 0.5/4 mark difference (12.5% change in criterion number 5 of the APP) with 80% power at a two-tailed significance level of 0.05.

RECRUITMENT

There are 160–180 potential participants across two cohorts of students. Therefore, a sample size of 120 is feasible. Students will neither receive any incentives to participate nor be disadvantaged if they do not.

ALLOCATION

Students are randomised into tutorial groups earlier in their academic careers. The tutorial groups will be randomised by drawing numbers from a hat.

BLINDING

Due to the nature of the teaching, all investigators and participants will know the allocation of intervention and control groups. The 'Assessment of Physiotherapy Practice' assessors will be blinded to the students' allocation and to the whole research project.

DATA COLLECTION AND MANAGEMENT

All 'Assessment of Physiotherapy Practice' results will be kept on a database managed by an independent staff member and will only be accessed in the data collection phase in 2021. One of three assessors will score practical examinations, with random moderation occurring across assessments. The exam results will be collected and stored on an internal university drive. Satisfaction surveys (see Table 1) will be distributed to all students in the intervention group after their fifth session with the MASK-ED™ (KRS Simulation) character. The secondary investigator will collect and store the surveys. After collection, all data will be deidentified, coded and stored securely on a password-protected computer during the project. According to university protocols, the data will then be stored at the university for the required five-year period, after which they will be destroyed.

Table 1. Satisfaction survey questions.

	Very unhelpful (0)	Somewhat unhelpful (1)	Neutral (2)	Somewhat helpful (3)	Very helpful (4)
Confidence engaging with an older person					
Developing rapport and empathy with patients					
Manual handling skills					
Communicating with an older patient					
Explaining treatments without using jargon					
Ability to step into the physiotherapist role					
Ability to apply theory to practice					
Interest / engagement with the material covered in the unit					
Remembering practical lessons from the classroom					
Self-reflection and learning from mistakes in a safe environment					
Potential to learn from other students' experiences (peer learning)					
Ability to give / receive feedback					
Readiness to undertake the practical exam					
Readiness to undertake clinical placement					

1. Do you think that MASK-ED™ (KRS Simulation) has been beneficial in any other way to enhance learning? Please describe.

2. In the classroom, is MASK-ED™ (KRS Simulation) more valuable for students than just practicing on each other? Please explain why / why not:

3. Are there any negative aspects to including MASK-ED™ (KRS Simulation) in the Physiotherapy classroom?

4. On balance, do you think we should continue MASK-ED™ (KRS Simulation) as a feature of the Physiotherapy curriculum? Please explain why / why not:

STATISTICAL METHODS

The groups' 'Assessment of Physiotherapy Practice' scores for 'overall', 'communication', 'professionalism', 'assessment' and 'intervention' and practical examination marks will be compared and presented as mean differences (95% CI). A Mann–Whitney U test will be used to determine whether differences are statistically significant. Intention-to-treat analysis will be used whereby all data from consenting participants will be included in the analysis regardless of whether participants attended the tutorials incorporating MASK-ED™ (KRS Simulation). If required, adjustments will be made for differences in grade point average across the tutorial groups. The surveys' Likert scores will be quantitatively analysed and the open-ended questions will be thematically analysed.

ETHICS AND DISSEMINATION

Initial ethics approval has been received from the university's Human Research Ethics Committee (6 November 2017: HREC 17–266).

CONSENT AND CONFIDENTIALITY

Participants will be recruited by an independent university staff member during one of the initial lectures in the study's neurological units. This independent staff member will introduce the study to the students and provide them with a participant information statement and consent form. The independent staff member will collect and store the consent forms to decrease any student-perceived bias. Deidentifying students' results and allowing only the investigators to access identifiable consent and data, as per the consent form, will maintain confidentiality.

DISSEMINATION OF RESULTS

After the research report is published, its summary can be forwarded to students who provide their contact details on their consent form. Trial results will be published in a peer-reviewed academic journal and presented at research conferences and meetings as appropriate. This paper will be authored by the investigating team.

DISCUSSION

This study's results will inform physiotherapy education and curriculum development by increasing the evidence base for using simulation to train physiotherapy students before work integrated learning. An improved understanding of classroom-based simulation's effect will help to optimise teaching strategies in the physiotherapy curricula. By improving pre-work integrated learning education, the following might be possible: improved student readiness to practise; reduced student failure rates; decreased student and clinical educator stress levels; and decreased burden on universities to find repeat placements. Simulation has shown promising results in healthcare education—particularly in medicine and nursing—and this study is endeavouring to expand this evidence base into physiotherapy education.

Contributions

EP and NM conceived the initial project. TR, EP, NM and BB not only initiated the study design but also comprise the investigating team and will be involved in implementation. All authors contributed to refining the study protocol and approved the final manuscript.

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Conflict of Interest

The research team declares no conflicting interests.

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