High-fidelity simulation in healthcare education: Considerations for design, delivery and debriefing.

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Research Article

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Abstract

Background:

High-Fidelity Simulation (HFS) is a recognised teaching and learning tool and capable of facilitating skill retention and knowledge retrieval. Attitudes, values and behaviours may also be shaped by HFS, fostering a deeper appreciation of the experiential learning cycle as a lifelong learning strategy. Successfully achieving these outcomes relies on effective design, delivery and debriefing.

Methods:

A 3-step debriefing strategy was devised (Trinity Technique) and pilot-tested over a 17-month period. This incorporated a Hot Debrief, a ‘Question and Answer’ session and finally a Cold Debrief (using a newly fashioned tool called STOCK TAKE). The strategy was introduced into the learning of 208 students attached to paramedic science, physician associate, adult nursing and forensic science programmes. Participant feedback was captured in the form of Microsoft Teams transcribes and handwritten notes. Data was evaluated by faculty personnel to instigate refinements to teaching and learning practices.

Findings:

High levels of student and staff engagement were observed. Valuable insight into learner experience was gained and the novel strategy possessed a unique ability to debrief institutions as well as learners - enabling strategic improvements to future HFS design, delivery and debriefing.

Conclusion:

The Trinity Technique demonstrates promise and was effective when applied to interprofessional HFS.

Background

High-fidelity simulation (HFS) is a term that healthcare educationalists are well-acquainted with; although this approach to teaching and learning may represent something very different between the professional communities it serves. The wider literature highlights ambiguity surrounding the definition of HFS [1, 2, 3]; and there is strong argument to suggest the term is misunderstood [4]. This is perhaps because HFS can be designed and delivered in many different ways; however, the amalgamation of a believable scenario, immersive environment/s, realistic props and Standardised Patients (SPs) (and/or mannequins) complete with moulage, collectively represent its hallmark traits. Nevertheless, the universal goal of HFS is the creation of engaging and authentic learning experiences [5] which directly mirror situations faced in professional practice [6, 7].

Creating immersive environments with heightened levels of realism is time-consuming and frequently costly [8, 9]; and even the highest quality exercises possess limitations [10]. HFS cannot replace ‘real-world’ practice learning, even though learning attainments in the emergency environment will always be
ringfenced by the fact clinical need and patient safety remain the priority [11]. The emergency environment can therefore never provide safe spaces for learners to make mistakes without consequence; whereas HFS does have scope to provide this. When HFS is utilised effectively, important gaps between theory and practice can be bridged [12]; whilst evoking strong emotional responses capable of cultivating enhanced levels of emotional preparedness and mental resilience [9].

Pedagogic stance, instructor experience and resource availability are major influencers in simulation design and delivery; but at any level, ascertaining the most effective fidelity and modality are fundamental considerations [4, 13]. Simulation can be described as a continuum ranging from low to high fidelity [25]; and if we accept that low-fidelity simulation builds knowledge, mid-fidelity develops competence and high-fidelity augments performance [4], learning can be more effectively scaffolded. Careful consideration of student needs, method of assessment and the intended end-point, will help enable delivery of quality outputs which are safe, enjoyable and in-keeping with the desired learning objectives [14]. However, when considering the level of fidelity, more is not necessarily better [4], because learning is not proportionate with the level of realism provided [5].

There are various types of fidelity which can be included in HFS [15] and the three primary types are: physical, conceptual, and psychological [16]. Each should correspond with a different aspect of authenticity and represent a control measure for preventing learning impedance [17]. Physical fidelity depicts the depth a simulated environment reflects what a participant sees, hears, feels, or smells [4, 19, 20]; and conceptual fidelity depicts the depth of scripting and planning of the scenario so that it accurately reflects the way the scene would present in a real-world practice [7]. Finally, psychological fidelity reflects the emotional responses and behaviours elicited by participants as if the simulation were in fact real [1, 21]. These three types of fidelity can complement and overlap, yet they can also detract if not efficiently balanced [18]. To help contextualise this notion, an educator could heighten the physical fidelity of a scenario by adding realistic background noises to a scene (such as a crowd of people shouting or screaming), however this stimulus might raise an individual’s stress levels beyond their threshold and thereby hinder learning. Intuitively, we may think that the more realistic an environment, the more it will enhance learning - but without having first provided the learner with the requisite skillset to navigate specific stimuli, exposure will in fact serve as an unhelpful obstacle [22].

Orchestrating satisfactory harmony between these three fidelities will mentally signpost learners into spaces where ‘real’ learning will occur. This will typically be outside their comfort zone, but not far enough to harm confidence, clinical ability or wellbeing. When fidelity is robustly considered, participants are able to suspend disbelief and accept the simulation as if it were in fact real [1, 3, 5, 8, 23, 45]. Creating exercises with sufficient depth to reach this disposition is routinely challenging, but lapses in physical fidelity are preferable to lapses in conceptual fidelity [24]. Learners need a scenario that makes sense, and if educators deliver something which feels true-to-life, learners are better able to accept the artificial aspects of the physical environment being showcased [3]. The common denominator for lapses in physical fidelity (particularly in higher education settings) will typically be the fact a classroom or skills lab is being utilised; and this will inherently lead to losses in environmental realism. However, if the
scenario feels genuine, learners have the opportunity to apply knowledge and problem-solving skills through a heuristic and experimental approach. Recruiting subject matter experts to help develop and review the proposed scenario and perform pilot tests is considered best practice for securing conceptual fidelity [24]. It is also beneficial to deliver simulation as an integrated component of standard curriculum, instead of an extra-ordinary event [26].

It has been suggested that two further types of fidelity should be considered - functional fidelity and sociological fidelity. Functional fidelity refers to the dynamic interaction between participants and the assigned task, a notion considered important when teaching technical or psychomotor skills [4, 22]. The more precise the skill or procedure being performed, the higher the level of functional fidelity required [15]. Sociological fidelity relates to multi-disciplinary simulation and corresponds directly with the level of interactive realism between different groups of learners within a simulation [27, 28]. For example, if a road traffic collision were being simulated, paramedics, fire-fighters and police officers would need to interact at the scene. For the associated subtleties of these interactions to be authentically delivered, thereby heightening the level of sociological fidelity; input from educators attached to all three professional disciplines would be required.

HFS is almost always an expensive and a resource-intensive undertaking [9, 29] and the true value of an exercise cannot be evaluated without inclusion of a robust debrief. Healthcare educators have recognized the essential role of debriefing in simulation-based-learning [50] to help transform experiences into learning through reflection [51, 52, 53, 54]. Immediately congregating learners after the conclusion of a simulation to identify “things that went well” and “things that did not go so well” and outlining potential areas to enhance future practice helps cement this learning process [30, 31, 32]. The depth, exercise complexity and immersive realism inherent of HFS therefore requires careful navigation during the debriefing process because the emotional responses invoked can closely resemble those experienced in real-world practice; even though no actual harm to people, wildlife, property or possessions has occurred. Whilst a variety of tools exist to debrief learners following simulation-based-learning activities, little consensus exists to support the use of a specific model or approach. Some tools may also not extrapolate well to large-scale exercises, interprofessional working, or activities simultaneously spanning multiple geographical environments.

In real-world practice, ‘Hot Debriefing’ (HoD) describes a structured team-based discussion [38] following serious or unexpected incidents [33, 34]; and is typically conducted by operational team leaders immediately after an incident to support colleagues, uphold professional standards and pledge a duty-of-care [35]. HoD stems from a humanistic philosophy [40] and the paradigm that when humans are exposed to trauma, they instinctively desire to establish if those around them are ok. HoD has been shown to support psychological wellbeing of healthcare professionals and promote learning [46, 48, 62] by facilitating the sharing of situational awareness, mitigating for cognitive biases and promoting reflective practices. Yet despite these obvious benefits, the wider literature indicates HoD is infrequently undertaken in clinical practice [38].
Exposure to negative experiences within the emergency environment can seriously impact healthcare workers, giving rise to moral injury or burnout \[46\]. Mental health conditions such as Acute Stress Disorder (ASD) and Post-Traumatic-Stress-Disorder (PTSD) are at record highs within the emergency services \[42, 43\] and undertaking HoD may serve to protect (and in some cases prevent) service personnel developing mental health conditions. In serious emergencies or major incidents, responders will arrive at different time intervals and be subjected to a range of different tasks. Each clinician will therefore unlikely be exposed to the full spectrum of communications, decisions or proceedings and this prevents comprehension of a definitive incident timeline. This intrinsic disconnect creates emotive processing challenges, in an attempt to unpick, rationalise and comprehend a lived-experience. The human brain rarely stores lived-experiences as accurate accounts and instead the distressing incident will be reconstructed as a biased representation, tainted by personal knowledge, world views and occasionally events which never actually happened \[64\]. The human brain stores memory sequences in a reverse order \[64\], therefore encouraging staff to ask \textit{‘who’, ‘what’, ‘why’, ‘where’, ‘when’} questions during HoD may therefore mitigate for this recognised phenomenon by facilitating discussions which cultivate more factually accurate incident accounting. Those not provided with the opportunity to debrief may therefore be predisposed to processing through falsification \[64\], experiencing recall bias \[62\], or developing tension and heightened anxiety \[35, 36, 37, 38\].

Nightmares, flashbacks, emotional outbreaks, digestive disturbances, difficulty sleeping and a state of sustained restlessness and hyper-arousal are just some of the symptoms a responder can endure following exposure to traumatic incidents \[42, 43\]. This can be a debilitating ordeal and the symptoms progressive in nature, occurring once the responder’s initial state of heightened adrenaline has subsided, the ‘threat’ extinguished and normal life has resumed \[44\]. This process typically manifesting at 48–72 hours post incident; and the symptoms displayed should be considered normal reactions to an abnormal event \[63\]. It is important to recognise clinical debriefing (i.e. HoD), differs from critical incident stress debriefing \[36\] - which is a psychological intervention aimed to reduce post-traumatic stress. Whilst HoD is not a therapy, its value should not be underestimated as it has scope to address unanswered questions at an early stage and help responders make sense of traumatic incidents \[48, 49, 60\]. However, the quality, duration and impact of HoD can vary significantly; and heterogeneity between individual responders and the confounding variables unique to every emergency call, make authenticating the reliability and validity of HoD challenging. As a result, limited evidence exists to guide developments within this domain.

The “TAKE STOCK” model for HoD is widely utilised in professions spanning the breadth of the emergency medicine world \[38\] (Fig. 1), advocated by the Royal College of Emergency Medicine (RCEM) \[39\] and is also frequently utilised in paramedic practice.

In larger scale emergencies or in major incidents, a Cold Debrief may also be conducted, typically 1-month post incident. At this stage it is anticipated that emotions will be ‘cold’ and whilst a similar structure to that used in the Hot Debrief may still be utilised, the primary objectives of the Cold Debrief are to (a) evaluate the reflective practices undertaken (b) identify key lessons an organisation has learnt and (c) ascertain if changes to future practice on a wider level are required. If we accept that HFS will produce
a similar disposition and exploration of the same salient points, it is plausible to contemplate extrapolating real-world practice debriefing strategies into HFS to further enhance training and emergency service preparedness.

Cold Debriefing (CoD) is not a concept associated with Simulation-Based-Learning (SBL); likely because reviewing outcomes in such depth is not routinely required - especially following smaller classroom-based exercises utilising a low, or mid-fidelity approach. However, CoD could cultivate significant benefits for educational institutions undertaking large-scale HFS, whilst being of great value to learners and stakeholders alike. Providing this subsequent opportunity for everyone to come together and reflect, provides scope to instigate teaching and learning developments and would be advantageous for developing joint-working approaches. As part of a strategy for improvement in SBL, a new CoD tool was fashioned by the author, titled STOCK TAKE (Fig. 2). The tool incorporates elements of TAKE STOCK, but loaded with alternative questions to instigate evaluation into ‘what do we actually have’ at this point in time. The “STOCK” aspect provides a structure to guide reflective practices and the “TAKE” element facilitates opportunities for educators/university leaders to appraise the exercises key successes, areas for improvement, gained assets, future opportunities and sustainability.

This newly fashioned CoD tool (Fig. 2) supports the concepts underpinned in Kolb’s ‘Experiential Learning Cycle’ [75]; which is perhaps the most scholarly influential and cited model in reflective practice history [76]. Despite this, learners frequently struggle to advance their clinical practice due to being left with unanswered questions pertaining to their “concrete experience”. As part of a strategy for improvement, ‘TAKE STOCK’, a Q&A session and ‘STOCK TAKE’ were amalgamated to create a novel 3-step approach for HFS debriefing. The approach consists of (1.) a Hot Debrief using TAKE STOCK immediately post HFS, (2.) a Q&A session on completion of the module to address unanswered clinical questions, assess knowledge retention and evaluate student experience; and (3.) a Cold Debrief using STOCK TAKE 2–4 weeks later. A proof-of-concept study was then undertaken which aimed to: (a) evaluate the overall effectiveness of this newly fashioned 3-step approach to HFS debriefing, (b) assess knowledge gains and experience and (c) develop future teaching and learning practices.

Methods

This study was conducted at University of the West of England (UWE), Bristol, United Kingdom, between January 2022 and July 2023. The 208 participants were UWE students attached to paramedic science, physician associate, adult nursing and forensic science programmes. Lecturers and technical team personnel linked to these programmes of study were present during each debriefing component, as well as senior university leaders. With the exception of Forensic Science (as the only non-healthcare discipline within this study), HoD commenced immediately after conclusion of each HFS utilising the well-established TAKE STOCK model (Fig. 1). To mimic ‘real-world’ practices and facilitate the opportunity to develop skills in a peer-to-peer context, this component was ‘learner-led’ and undertaken by the student taking on the ‘team leader’ role. This individual was supported by an educator with experience debriefing clinical teams in emergency care settings. All learners participating in the HFS’s were included and for
each simulation conducted feedback was captured on an instruction sheet. The instruction sheet was a simple document with the letters TAKE STOCK written vertically down the left-hand side of the page, with a corresponding text box next to each letter. The facilitator of each simulation completed an instruction sheet in a systematic order to capture the salient points raised by the student participants. A summary of the information captured was reiterated by the lead educator upon completion of each HFS event to promote reflective practices and support student wellbeing.

A Q&A was then conducted on completion of the module to assess learner knowledge retention and evaluate student experience. This element was conducted in a lecture theatre; with a large white board positioned at the front, inscribed with 3 discussion panels. These panels were titled: “Things I enjoyed about the simulation”, “Things I did not enjoy about the simulation” and “Unanswered clinical questions”. The students were then given packs of ‘post-it’ notes and asked to autonomously write their responses and place them appropriately onto the 3 discussions panels. Once completed, the students were sent for a break, and the discussion panels reviewed by the faculty. The faculty reflected on the comments provided by students (both positive and negative) as a group; and mapped each of these against the module timetable to identify if particular teaching sessions may require additional refinement. Photographs of the 3 populated discussion panels were obtained and utilised as part of a module report to help improve future teaching and learning practices.

The faculty then reviewed the post-it notes containing “clinical questions for the team”. These were spread out on a large table and arranged into key themes based upon question similarity; of which five were identified: (1.) Major incident triage questions (2.) Functional Role implementation (3.) Termination of resuscitation/withholding interventions during a major incident (4.) Moral/ethical dilemmas at major incidents (5.) Challenges associated with pre-alerting or handing over in the emergency department during a major incident. After reconvening the learners, the lecturing team answered each of the clinical questions. This reflective evaluation facilitated programmatic adjustments for the subsequent module run.

Finally, CoD was undertaken utilising the author’s newly fashioned ‘STOCK TAKE’ tool (Fig. 2) within a Microsoft Teams meeting, 2–4 weeks later. Those participating in the CoD were the HFS project panel (comprising of at least one representative from each teaching programme or department), university manager/s and (where possible) one student representative from each programme of study. Transcribes of the CoD were captured as video recordings, and a written report compiled to summarise the salient points.

Ethical approval and consent to participate was reviewed by the Institutional Research Committee at the University of the West of England and approved as an exempt study; with an informed consent waiver provided due to the observational nature of the study and the involvement of normal educational practices. Therefore, participants were not consented because they were participating in routine debriefing practices as part of standard curricula.
Findings

Throughout the 17-month period this study was conducted, the Trinity Technique was repeatedly found to be well-received by students, educators and university managers alike - and high levels of academic engagement were apparent at each stage. This was evident by the enthusiasm shown by the students in each debrief held. An obvious desire to engage with the process and learn more about the application of their newly acquired skills was also seen. The educators recognised the value of using TAKE STOCK as a HoD framework following each simulation, not only because of its familiarity, but because it seamlessly extrapolated to the HFS environment. University managers appreciated this approach too because it could tangibly measure student experience and facilitate growth/development within SBL for the School.

Within the HFS’s conducted during this study, intermittent failures in telephone and/or radio-communications were responsible for heightened levels of emotional stress and this resulted in deviation from the clinical and/or managerial processes being undertaken within the scenario. These technical difficulties manifested in a comparable manner to those experienced in real-world practice, and this prompted high-quality reflective discussions. Key examples of this included: point-to-point radio communications not being consistently passed between participants to provide information updates; and the simulated Accident and Emergency (A&E) ‘Red Phone’ line or the ‘Bed Base’ telephone line being engaged when attempting to pre-alert, or make patient referrals. It was also identified that a clear lapse in conceptual fidelity, resulted in students failing to understand the level of clinical documentation that should be compiled for the patient/s within one of the scenarios. This later manifested in conflict between learners at patient handover junctions; and perhaps occurred because of the heightened levels of psychological fidelity within this particular simulation. Creating ‘fidelity harmony’ is an important consideration in HFS design, but as not all cohorts undertaking the same scenarios experienced this conflict, dynamic refinement was unlikely required.

The Q&A sessions added further depth to the facilitators understanding of their students experiences in HFS. It was apparent that following this final session that the module was representative of a very positive undertaking by each cohort because positive feedback was received in the form of ‘Thank You’ cards, complementary emails (received by multiple faculty members) and one cohort present a gift bag on the final teaching day of the module. Several learners (now alumni) also requested permission to return to participate in future HFS’s as volunteers, because they felt the learning had been so beneficial to their clinical practice. Industry professionals involved in several of the HFS’s, also offered to return to subsequent module runs and support future debriefing sessions.

The opportunity to participate in interprofessional working and witness complete sequences of scene management and/or clinical care throughout a patient’s journey from the prehospital environment to A&E, discharge (or death) were amongst the most commonly reported aspect of the HFS that learners most enjoyed. This viewpoint was documented on 20 of the post-it notes. Conversely, learners did not enjoy a perceived disproportionate level of clinical leadership allocated within the scenarios, thereby preventing them receiving a parity of experience. This viewpoint was noted on 11 of the post-it notes. Despite the
fact each learner was subjected to a selection of different HFS experiences, it was not feasible for every single paramedic student to be given the opportunity to be 'first-on-scene' and subsequently work in the role of Acting Operational Commander. The same situation applied to Functional Role allocation because those arriving on-scene as back-up crews, perhaps did not have comparable opportunities as those who arrived first. Whilst this realistically depicts real-world practice, it was apparent some refinement in simulation design might be required to maximise learner gains.

The Q&A session was particularly well-received by learners and uncovered questions they may not have felt able to ask within a formal lecture (or whilst in the HFS environment). Questions surrounding moral or ethical dilemmas represented the biggest area of clinical uncertainty; and it was evident learners struggled to make decisions when faced with situations that may require decision-making ‘outside’ clinical guidelines; or when algorithmic mechanisms could not provide clear solutions. This was evidenced by reviewing body-camera footage from several of the HFS’s; and perhaps suggests problem-solving skills in time critical situations require factoring more robustly into the educational journeys of learners at an earlier stage of their training. Within the HFS in this study, some instructors felt compelled to intermittently interrupt proceedings to offer guidance or capture feedback as a supplementary learning tactic. Similarly, this was evidenced by reviewing body-camera footage. Whilst it may feel intuitive to intervene, this will typically serve as a counterproductive measure, because HFS should negate ‘pause and reflect’ moments in order to instigate autonomous solution findings, clinical authenticity and prevent environmental realism being lost. This occurrence occurred in almost all episodes of supervised care; therefore, indicating the pre-briefing all instructors on this topic is required.

The CoD demonstrated that significant external stakeholder interest had been generated which later facilitated valuable networking and collaborative opportunities for the school. The personnel present for the CoD helped expedite these processes and allowed for the sharing of information and trajectory. Technological improvements were also identified, as well as opportunities to expand HFS to incorporate additional programmes of study. Collectively, this undertaking has progressed SBL development and facilitated reputation enhancing opportunities for the School.

**Discussion**

This pilot-study indicates the Trinity Technique is highly effective for HFS debriefing and may be valuable to educators facilitating large-scale and/or interprofessional training exercises. The key strengths of its 3-step approach (particularly within higher-education settings) were that: (a) comparatively heightened levels of student experience and individual learning ensued, (b) robust evaluation of taught content could be addressed and refinements to future HFS delivery acquired; and (c) this approach has the unique ability to debrief the institution as well as the learner. It is anticipated that organisations wishing to adopt the Trinity Technique are likely to be able to do so with minimal instructor training because of the algorithmic approach associated with TAKE STOCK and STOCK TAKE and because the Question and Answer (Q&A) session is largely ‘learner-led’.
The implications for institutions adopting the design, delivery and debriefing considerations outlined in this manuscript are broad, but yield scope to improve teaching and learning practices and the skillset of undergraduate and postgraduate learners training to work in emergency environments. Utilising TAKE STOCK following HFS will instigate closer ties to real-world practice and enable students to gain confidence in conducting peer-to-peer debriefs, whilst cultivating an ability to later lead HoD in clinical settings (having gained substantial practice in this during their training years). Utilising a ‘simulation specific’ HoD tool is seldom useful because these are not representative of real-world practice and as a result can widen the theory-practice gap. The use of a Q&A session helps evaluate pedagogic approaches and any finite specialist teaching content. This safeguards learners from being left with unanswered questions and knowledge shortfalls. Finally, the implications of using STOCK TAKE for CoD will focus simulation team meetings, whilst facilitating future improvements and identifying tangible institutional gains.

The data generated by educators following each debrief undertaken demonstrated strong reproducibility and reliability of the Trinity Technique. However, careful co-ordination of the educators involved was required to ensure detailed and consistent record keeping was obtained. Further streamlining of the processes conducted in this pilot-study is feasible; but the Trinity Technique is still a comparatively complex debriefing process, which may deter fellow educators and result in a more simplistic strategy being utilised.

The behaviours demonstrated by the students, educators and managers in this study may not represent those of the wider population within these communities; thus, the external validity of the Trinity Technique may also be limited. The fact that positive experiences were repeatedly reported by learners who participated in each debrief increased the reliability and internal validity of this pilot-study; however, a noteworthy limitation was that observation bias could not be eliminated due to the nature of the study design. Additionally, students sitting this module had prior awareness they were going to be taking part in several large-scale, mass-casualty HFS’s; and this heightened expectation may have subjected them to the Pygmalion Effect.

The construction of any simulation and its desired learning objectives will inevitably be unique to its developers [61], many of the key priorities pertaining to design, delivery and debriefing will be the same. Perhaps the most important of these objectives is learner wellbeing. It is important to appreciate that if the cognitive burden of HFS is too heavy, this will lead to overload and ineffective learning [4]. Implementing reliable and structured safety-netting mechanisms will allow important shortfalls to be detected and rectified. As HFS can subject learners to much higher levels of extraneous cognitive load than intended, adopting methods capable of nurturing learner developments throughout that period of focused study is therefore a worthy consideration. This pilot-study has evidenced that the proposed 3-step debriefing approach was effective in advancing learner developments and is thus recommended.

Facilitating HoD in SBL and ‘real-world’ practice settings alike requires clear direction and intention; as well as an acute awareness of participant distress. The key aim is that these experiences cultivate growth
in both clinical acumen, emotional preparedness and mental resilience. Yet, individuals who have been emotionally affected may not overtly present themselves; so, if signs of distress develop, switching from using the debriefing process to advance clinical learning, to listening/acknowledging and normalising emotional responses (without pushing for further detail) is recommended [64]. HFS can invoke emotional responses equivalent with those of ‘real-world’ practice [74] and will often require tactful handling. Debriefing has scope to advance learning by facilitating challenging discussions around topics such as clinical error or omission [65,66,67]; but this should not be explored if participants are evidently distressed. This is because most facilitators will not be satisfactorily trained in managing strong emotional responses within group settings [68]. Respecting boundaries and allowing learners the opportunity to discuss their feelings when they are ready is considered best-practice [68]. A facilitator’s desire to help a distressed individual, may inadvertently push them to initiating a well-intentioned discussion - with the belief that “a problem shared is a problem halved”. However, psychological debriefing may not prevent ASD, PTSD, anxiety, or depressive symptoms - and in fact ‘Good Samaritan’ acts yield the potential to cause harm [69, 70, 71, 72, 73].

Conclusion

HFS is an effective method for advancing interprofessional education; especially when educators strike a successful ‘fidelity balance’. However, a lack of high-quality randomised studies, sufficiently powered to evaluate the impact of SBL on actual patient outcomes is needed in order to advance this area of practice. Implementing sustainable SBL programmes takes time, expertise and financial commitment; but even well-conducted one-off exercises can produce valuable data and help fill vital research-knowledge gaps.

The TAKE STOCK debriefing model has previously been shown to robustly support clinician wellbeing; and extrapolating it to the HFS environment was evidenced in the HoD element of this pilot-study to produce favourable outcomes both clinically and psychologically. In the CoD phase of this study the newly devised STOCK TAKE tool worked well and prompted strategic refinement to future HFS outputs. Enhancements to teaching and learning practices were also evident; and the data generated has scope to contribute to the research-knowledge gap associated with SBL and its ‘cost-return’ benefits. In summary, the Trinity Technique offers a pioneering approach to HFS and possesses a unique ability to debrief both the learner and the institution. Independent research is now required to formally test the Trinity Technique to better appreciate its strengths, weaknesses and overall worth.

List Of Abbreviations

ASD – Acute Stress Disorder

CoD – Cold Debriefing

HFS – High Fidelity Simulation
Declarations

Ethics approval and consent to participate

All methods were carried out in accordance with the Declaration of Helsinki; as well as all other relevant guidelines and regulations. Ethical approval and consent to participate was reviewed by the Institutional Research Committee at the University of the West of England and approved as an exempt study; with an informed consent waiver provided due to the observational nature of the study and the involvement of normal educational practices. Therefore, participants were not consented because they were participating in routine debriefing practices as part of standard curricula.

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are available from the corresponding author upon reasonable request. All data associated with this manuscript has been stored in a repository at the University of the West of England.

Competing interests

The authors declare no potential conflict of interest.

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Figures

Figure 1
S.T.O.C.K

T.A.K.E

COLD DEBRIEF TOOL (Simulation)

Does the event meet the criteria for a COLD Debrief?
1. Large-scale major incident or mass-casualty Simulation
2. Staff request
3. Unexpected outcome

S – Summarise the event
T – Things that went well
O – Opportunities to learn and improve
C – Consider future prospects/opportunities
K – Key points to be recorded

T – Tangible achievements (staff/student/institution)
A – Acquisitions gained (by institution)
K – Knowledge gained (teaching and learning)
E – Evaluate sustainability (should we do this again?)

Newton, J., (2022)

Figure 2

STOCK TAKE, Cold Debriefing Tool

Supplementary Files

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- Bibliography.docx