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2 **Critical Incident Techniques and Reflection in Nursing and Health Professions Education:**

3 **A systematic narrative review**

4

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10

11 **Abstract**

12 *Background :*

13 The terms Critical Incident Technique (CIT) and Reflection are widely used but often
14 not fully explained, resulting in ambiguity.

15 *Purpose:*

16 To map and describe existing approaches to recording or using critical incidents and
17 reflection in nursing and health professions literature over the last decade, identifying
18 challenges and facilitating factors, strengths and weaknesses and discussing relevance
19 for nursing education.

20 *Methods:*

21 A systematic narrative review was undertaken. Medline and CINAHL were searched
22 using MeSH terms, returning 223 papers (2006-17). After exclusions, 41 were
23 reviewed.

24 *Results:*

25 Papers were categorised into three areas: those describing the development of an
26 original tool or model, those where critical incidents or events were used as learning
27 tools, and personal reflections on incidents.

28 *Conclusions:* Benefits have been identified in all areas. More attention is needed to the
29 pedagogy of reflection, and the role of educators in reflection.

30 **Keywords:**

31 Critical incident technique, reflection, nursing, health professions, learning, clinical
32 teaching methods

33 **Introduction and Background**

34 The use of critical incident technique (CIT) and reflecting on incidents has
35 become widespread across nursing and the health professions - often linked to patient
36 safety and education.^{1,2} However the terms 'Critical Incident Technique' and
37 'Reflection' are often used without clear explanation or definition, having become
38 'received wisdom' within nursing and healthcare education, research and practice - the
39 assumption being one of shared understanding.

40 Such assumptions obscure diverse interpretations, adaptations, and methods of
41 implementation, compounded by limited exploration of the purposes for which these
42 techniques are employed and the ways in which they are operationalised. Norman and
43 colleagues³ suggest the most appropriate unit of analysis is not the incident itself but
44 the 'happenings' revealed by respondents *reflecting* on incidents. A clear overview of
45 the use of these linked techniques is needed so researchers and educationalists can
46 understand variations, use these as inspiration, be clear about strengths and

47 limitations of diverse operationalisation of the techniques, and develop a shared
48 language. This systematic narrative review aims to begin to fill that gap.

49 Since Flanagan's seminal paper, the term 'critical incident technique' has
50 become common across a wide range of industries, disciplines, and professions.⁴ Later
51 studies incorporated additional questions regarding participants' reflections and
52 feelings. Butterfield and colleagues⁴ reviewed fifty years of CIT as a research method,
53 noting further evolution and proposing the need to standardise terminology. Since that
54 review, much additional literature employing variations of CIT has been published. One
55 variation in nursing is the notion of a 'significant event' rather than critical incident,
56 suggested as leading to better descriptions of the event.⁵ Such variations indicate the
57 continued evolution and flexibility of CIT as a research technique, potentially both a
58 strength and weakness. ⁶

59 A growing movement toward reflection on incidents⁴ saw participants asked to
60 consider the meaning, personal importance and motivation. This paralleled a rise in
61 the 1980s/90s of the idea of reflective practice as a process of articulating and making
62 sense of professional activities in health and social care. Furthermore as 'patient
63 safety' emerged as a growing field drawing heavily on the aviation industry, so the use
64 of CIT and reflection have burgeoned and reflection has, like CIT, become a familiar
65 term. The various ways in which 'critical incident techniques' and 'reflection' are
66 enacted and the purpose of their use have been little explored, therefore we
67 undertook a systematic narrative review⁷ to gather and analyse relevant literature
68 focusing on the use of critical incident techniques and reflective practice in education
69 for health professions.

70 The objectives of this narrative review were: to describe existing tools, models
71 and approaches to recording critical incidents or learning events and reflection on
72 these and to identify the challenges and facilitators and key components in each.

73 Method

74 A systematic narrative literature review⁷ was employed allowing inclusion of a
75 wide range of literature, such as anecdotal evidence, qualitative and quantitative
76 findings.⁷ The process shared some characteristics with a scoping study⁸ or rapid
77 review but did not seek to appraise the quality of the evidence examined.

78 In December 2016 a systematic search over the past decade was undertaken in
79 two databases, Medline and Cumulative Index of Nursing and Allied Health Literature
80 (CINAHL), then repeated in December 2017 to identify newer papers. Search terms
81 were Critical inciden* OR critical incident techniqu* AND Reflectio* OR learning. An
82 information scientist helped with access to databases and the development of search
83 terms and strings. The search deliberately omitted the term 'patient safety,' as this
84 significantly reduced the number of potentially relevant hits, and did not result in
85 additional papers. An initial search was carried out on the title and abstract only. A
86 total of 223 papers were returned (see Supplemental Digital Content, Figure 1).
87 Inclusion criteria were English language only, academic journal articles with full-text,
88 related to medicine, nursing, physiotherapy, occupational therapy, or social work and
89 evaluated the use of CIT or reflection as a learning tool. Papers not meeting inclusion
90 criteria, and duplicates, were excluded.

91 Papers were dispersed across paired members of the international team for
92 full-text analysis. We used a data extraction form developed from an amalgamation of

93 previous work^{9,10,11} refined in international research group discussions. This allowed
94 reviewers to systematically and consistently, review papers. Once all reviewers had
95 analysed the papers, two authors discussed each data extraction sheet, and agreed
96 papers appropriate for this review. A reference and citation search was carried out on
97 all relevant papers with no further papers included. A total of 41 papers were included
98 in the full review (Supplemental Digital Content, Figure 2). From initial data extraction,
99 papers were categorised thematically in three areas: descriptions of the *development*
100 of an original tool or model, critical incidents or reflection on events *used as a learning*
101 *tool*, and *personal reflections* on critical incidents.

102 Findings

103 *Paper characteristics*

104 Twenty-four of the 41 retrieved papers were qualitative or quantitative
105 research studies,¹²⁻³⁴ eight described a model or tool used for data gathering in
106 teaching or research,³⁵⁻⁴² and eight were personal reflections.⁴³⁻⁵¹ Most studies were
107 carried out in the United Kingdom (n=12),^{17,21,22,25,28,30,32,35,40,44,49,50} and the United
108 States (n=8)^{14, 19,26,27,31,39,41,45} Others were from Australia,⁴⁶ Belgium,^{18,24} Brazil,³³
109 Canada,^{12,15,20,36,37} Cyprus,⁴³ Finland,¹³ Ireland,^{47,48} Norway,⁴² South Africa,⁵
110 Singapore,²³ Spain,²⁹ and Sweden.³⁴ Three of the studies were carried out in multiple
111 countries: Norway and the United States,³⁸ Canada, Estonia, Finland, Sweden and the
112 United Kingdom,¹³ and Japan and the United Kingdom.¹⁶ Twenty-six studies related to
113 nursing, six to medicine, four to physiotherapy, three to social work and two to
114 occupational therapy.

115 *Papers developing a tool or model*

116 Two papers specifically described development of a tool (for use) or model
117 (explaining how something works).^{35,36} Barksby, Butcher & Whysall³⁵ described a new
118 model of reflection entitled 'REFLECT'. Menon³⁶ aimed to develop and validate the
119 PERFECT tool (professional evaluation and reflection on change tool), a standardised
120 critical incident tool which explored change and reasons for change in professional
121 practice. Both aimed to achieve a thorough, reflective process, with REFLECT being
122 developed for student and practitioner reflection³⁶ and PERFECT primarily as a
123 research tool.³⁵

124 *Papers using critical incidents or reflection on events as a learning tool*

125 Thirty-two papers used CIT or reflection as learning tools in nursing and health
126 professional education.^{12-34,37-42,51} Tools included written critical incident
127 reports,^{13,16,17,21,22,28,31,33,40,51} semi-structured interviews,^{5,18,19,23-26,30,34} survey
128 responses,²⁷ and reflective essays.⁴⁵ Some papers used multiple methods in collecting
129 critical incidents: a reflective journal and focus group,¹⁵ a critical incident questionnaire
130 and group interview,²⁹ a combination of reflective journals, case studies, critical
131 incident analyses, document analyses, and semi-structured interviews.³² Novel
132 learning activities were also described, designed to support the reflection of
133 undergraduate students using stories, art,³⁹ and creative tasks.³⁷ Findings from
134 Solomon's¹⁴ study illustrate the rewards students gained from listening to personal
135 stories and experiences as part of a learning event, however, other evidence was
136 limited, with few evaluation outcomes.

137 Studies were viewed as a process for generating and enhancing learning¹⁹ by
138 optimising learning from real experiences,^{15,25} specifically, understanding the meaning
139 of learning,⁹ development of critical thinking and reflection skills,^{5,13,21} and creativity⁵.
140 The use of reflection and CIT were also described as tools to benefit practice,
141 specifically: making explicit their own assumptions,²⁰ gaining clarity about the
142 incident,⁵ reaching a positive outlook,⁵ for self-empowerment,⁵ for ownership of
143 learning outcomes,⁵ dealing with ethical issues⁵, cultural understanding,^{5,13,51} the
144 development of reasoning,²⁷ personal and professional awareness and behaviours,^{21,51}
145 and in facilitating respondents' reflection on communication.³⁰

146 Reflection was generally viewed as a positive process for learning. Concerns
147 included student hesitancy in writing reflective documents²⁰ and worries about the
148 formality of written reflections⁴². Student understanding of CIT in an online tool
149 without the educator's presence,³⁴ and workload, especially overloading students with
150 additional written work⁵ were considered barriers. Potential issues regarding accuracy
151 were also noted, for example the impact of one or two months' time lag after an event
152 on participants' ability to describe it in detail²³. Comparing reflection on past and
153 current clinical events¹², reflection on current events appeared more beneficial,
154 leading to enhanced motivation, self-efficacy, self-regulation, and turning learning into
155 action. Other work highlighted difficulty in focusing on specific critical incidents³⁰.
156 Despite the focus of CIT on significant events, recall often includes non-events and
157 situations where more than one event merge in an individual's mind²⁵. Accuracy was
158 also questioned if individuals were aware of their journal being read by a faculty
159 member.²⁰

160 *Papers using Critical Incident Technique in personal reflection*

161 Eight papers described personal reflections based on critical incidents.⁴³⁻⁵⁰ Five
162 were reflections by the author,^{43,47-50} two papers report another person's
163 reflection,^{38,39} and one paper followed an ethnographic methodology with the
164 reflection being observed and documented by a third person, in addition to
165 interviewing clinicians and gathering audio-recordings of interactions⁴⁶. Seven papers
166 utilized structured models of reflection: Gibbs,⁴⁸⁻⁵⁰ Johns,^{47,52} Schon,⁴⁵ Smith and
167 Russell,^{43,53} and Duke and Appleton.^{44,54}

168 The benefits of reflection were described as being empowering,^{43,45,47}
169 motivating,⁴³ bringing closure on traumatic incidents or conflicts and reducing bullying,
170 interpersonal conflicts and horizontal violence.⁴⁵ Reflection also allows people to
171 question their own assumptions,⁴⁴ closes the gap between theory and practice,⁴⁷⁻⁴⁹
172 and enhances understanding of professional conduct and the importance of consent.⁴⁴
173 Authors advocated introducing reflection early in training and throughout the career,⁴⁵
174 as well as valuing the educator or mentor's role in reflection.^{43,45,49} It was not just
175 about doing reflection, but understanding the underlying processes and purpose⁴⁵.

176 Limitations

177 The range of nationalities involved in this review was both a strength and a
178 weakness, in our understanding of concepts. The inclusion of only English language
179 sources means that other important material may have been excluded. Sources were
180 all academic journal publications: inclusion of unpublished literature, may also have
181 strengthened the review. A variety of tools, models and approaches were used in the
182 studies examined. Tools were diverse. Studies used critical incidents or events in
183 multiple ways with different or absent pedagogical approaches. Studies utilising
184 reflection followed various models. Diversity and inconsistency make it harder to
185 evaluate effectiveness.

186 Discussion

187 In nursing and in health care more generally the term critical incident has
188 become closely linked to the field of patient safety. Safety-critical events focus on
189 failures or malfunctions with serious consequences. Embracing this view may inhibit
190 reflection on *positive* experiences or events from which much could be learned.

191 More attention is needed to the pedagogy of reflection – promoting an
192 understanding of why we should reflect, and what the reflection is trying to do. It is
193 important for students not just to think ‘we will reflect’ but ‘we will reflect in order to
194 *learn*’. This point is drawn out, for example, in work on the use of reflection in
195 interprofessional learning.⁵⁵ In nursing, Rolfe⁵⁶ has argued that reflective practitioners
196 must ‘reassert the importance of experiential knowledge’ (p21). Another important
197 issue is the role of nurse educators in prompting the reflective process – through
198 offering alternative perspectives, otherwise potentially hidden from the student.

199 Conclusion

200 This paper has examined the use of critical incident techniques and reflection in
201 literature on health professions over a decade. Papers have described the
202 development of original tools or models, looked at the use of critical incidents for
203 learning, and explored personal reflections on events. Benefits of using critical
204 incidents and reflection on events in learning have been identified in all of these.
205 However, the terminology used is diverse and the term 'critical incident' has negative
206 connotations. Thus, future work needs to attend to the pedagogy of reflection, the role
207 of educators in facilitating reflection and the use of positive experiences. With this, the
208 further development of reflection on significant 'learning experiences' in the process
209 of education for nursing and healthcare has huge potential for future practice.

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