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Barriers and enablers to implementation of pressure injury prevention in hospitalized adults: a mixed methods systematic review protocol

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1 **Abstract**

2 Objective: The objective of the proposed systematic review is to determine the barriers and enablers
3 (or facilitators) to the implementation of pressure injury prevention among adults receiving care in the
4 hospital setting.

5 Introduction: Hospital-acquired pressure injuries are preventable; however, they remain an ongoing
6 safety and quality healthcare concern in many countries. There are various evidence-based
7 preventative interventions for pressure injuries, but their implementation in clinical practice is limited.
8 An understanding of the different factors that support (enablers or facilitators) and inhibit (barriers) the
9 implementation of these interventions from different perspectives is important, so that targeted
10 strategies can be incorporated into implementation plans.

11 Inclusion criteria: This review will include quantitative, qualitative and mixed-methods studies that
12 investigate barriers and/or enablers in relation to hospital-acquired pressure injury prevention in
13 hospitalized adults. Only English publications will be considered, with no publication date restrictions.

14 Methods: The systematic review will be conducted in accordance with the JBI methodology for mixed-
15 methods systematic review. Published studies will be searched in PubMed, CINAHL, Embase,
16 PsycINFO and Scopus. Gray literature will also be considered. Critical appraisal and data extraction
17 will be performed using standardized tools, followed by data transformation. Data synthesis will follow
18 the convergent integrated approach.

19 **Keywords:** Barriers; enablers; facilitators; mixed methods; pressure injury

20

21 Introduction

22 Hospital-acquired pressure injuries (HAPI), also known as pressure ulcers, are localized areas of
23 damage to the skin and/or underlying tissue, usually over a bony prominence, secondary to sustained
24 pressure and/or friction and shear during an inpatient hospital stay.^{1,2} Pressure injuries are classified
25 using a staging system developed by the National Pressure Ulcer Advisory Panel and the European
26 Pressure Ulcer Advisory Panel; the classification includes stage 1 (non-blanchable erythema), stage 2
27 (partial-thickness skin loss), stage 3 (full-thickness skin loss), stage 4 (full-thickness tissue loss),
28 unstageable (depth unknown), and suspected deep tissue injury (depth unknown).³ There are a
29 number of factors that predispose hospitalized patients to develop pressure injuries including
30 advanced age, immobility, poor nutritional status, presence of diabetes, urinary or fecal incontinence,
31 impaired sensation and altered hematological measures.¹⁻³ Pressure injuries are associated with pain,
32 discomfort, infection and decreased level of function, which can lead to longer hospital stay. Although
33 they are considered preventable, HAPI remain an ongoing safety and quality healthcare concern in
34 many Western countries.^{4,5} In Australia, the rate of HAPI in 2015–16 was 9.7 injuries per 10,000
35 hospitalizations. Globally, HAPI rates range from 3% to 33%.^{6,7} The management of HAPI places a
36 significant economic burden on the healthcare system. An economic study reported an estimated cost
37 of AUD983 million in 2012–13 for the treatment of pressure injury across Australian public hospitals,
38 which was approximately 1.9% of all public hospital expenditure.⁸ Internationally, the financial burden
39 associated with pressure injuries was an estimated US\$9.1–11.6 billion per year in the US,⁹ and the
40 mean cost of treatment per patient varied between £1214 (Stage 1) and £14108 (Stage 4) in the UK.¹⁰
41 Preventative strategies can potentially reduce the cost associated with the treatment of HAPI.

42 Clinical practice guidelines containing recommendations for pressure injury prevention, which are
43 informed by high-quality research and expert consensus, have been published for more than two
44 decades now, and yet the implementation of these recommendations to clinical practice remains
45 limited.^{4,11} Pressure injury prevention consists of risk identification and risk mitigation.¹ A range of
46 validated risk assessment tools, such as Waterlow, Norton and Braden scales,^{1,3} are available and
47 can be used to identify an individual patient's needs. Following assessment, tailored interventions
48 such as skin inspection, nutrition and education, frequent repositioning and use of special support
49 surfaces and equipment can then be implemented to mitigate the risk.^{1,12,13} The implementation of
50 these strategies require a complex interaction that involves the health organization, health
51 practitioners and patients and their caregivers, and also depends on a number of contextual and
52 organizational factors such as leadership, culture, teamwork and communication.¹⁴⁻¹⁶ For example, in
53 a quality improvement program aiming to reduce pressure injuries in an acute hospital setting in
54 England, the approach was multifaceted and involved high-level support from the hospital board and
55 nursing director. The program required engaging with key change agents, teamwork and a
56 collaborative approach, setting up data collection and communication mechanisms, continuous
57 training and education for relevant staff, using real patient stories, establishing of an implementation
58 team, developing of resources, and organizing events to promote awareness and commitment to
59 practice changes.¹⁵ Because of the complexity involved in the process, it is not surprising that despite

60 substantial research on effective preventative interventions and quality improvement initiatives for
61 “zero incidence”, pressure injury outcomes remain less than ideal.

62 The National Safety and Quality Health Service Standards were developed by the Australian
63 Commission on Safety and Quality in Health Care to improve the quality of health service provision in
64 Australia. A key component of these standards is the implementation of systems and processes for
65 preventing hospitalized patients from developing pressure injuries and effectively managing them
66 when they occur.¹⁷ Internationally, pressure injury prevention has also been identified as an important
67 healthcare quality indicator and similar initiatives for implementation of pressure injury prevention
68 programs have been reported.^{4,6,10} Numerous studies have been undertaken to describe strategies for
69 HAPI prevention,^{12,14,15} the varied uptake of these strategies by health practitioners,⁵ the role and
70 influence of senior or executive staff,¹⁸ and patients’ readiness and compliance to prevention
71 practices.⁵ A study conducted by Coyer *et al.* revealed that nurses have a positive attitude towards
72 HAPI prevention; however, high patient acuity and competing work demands emerged as significant
73 barriers to implementing appropriate and timely prevention strategies, particularly in the intensive care
74 unit.¹⁹ In another study, patients’ cognitive impairment, patients’ attitudes (i.e. taking a passive
75 approach to healthcare) and undervaluing of prevention strategies were described as barriers to
76 patient engagement in HAPI prevention programs.²⁰ Good leadership, effective communication,
77 knowledge of prevention strategies, and simple and easy-to-deliver interventions were identified as
78 likely to facilitate implementation of HAPI prevention.²⁰ Experts in the field of evidence implementation
79 suggest that planned initiatives for improving the quality and safety of healthcare are likely to be
80 successful if they are informed by an assessment of barriers and enablers that exist at various levels
81 of healthcare (i.e. consumer, health professional, social context, organizational context, economic
82 context).^{21,22} It is therefore important to understand the different factors that support (enablers or
83 facilitators) and inhibit (barriers) the implementation of HAPI prevention from different perspectives
84 (e.g. patients, health practitioners, managers) so that targeted strategies can be incorporated into
85 implementation plans.

86 A preliminary search of PubMed, *JBIC Database of Systematic Reviews and Implementation Reports*
87 and the Cochrane Database of Systematic Reviews failed to identify a systematic review pertaining to
88 barriers and enablers to the implementation of HAPI prevention. Stadnyk *et al.* published a critical
89 literature review, rather than a systematic review, to identify factors that facilitated pressure injury
90 prevention among older adults in different healthcare facilities.⁴ The review focused only on
91 components of organizational culture associated with pressure injury prevention. Although the review
92 described a number of factors that can assist in understanding culture change, it did not provide a
93 comprehensive picture of factors affecting the adoption of HAPI prevention practices. Therefore the
94 objective of this systematic review is to synthesize the quantitative, qualitative and mixed-methods
95 evidence on barriers and enablers to HAPI prevention from different perspectives and at both
96 individual and organizational levels. The use of different types of evidence for this systematic review
97 allows a more comprehensive and in-depth exploration of the different factors associated with HAPI
98 prevention than could be offered by only one type of evidence.²³

99 **Review question**

100 What are the barriers and enablers (or facilitators) to the implementation of pressure injury prevention
101 among hospitalized adults?

102 **Inclusion criteria**

103 **Participants**

104 The review will consider studies that include hospitalized adult patients (at least 18 years old) with any
105 condition and/or their family or unpaid caregivers, healthcare practitioners (i.e. doctors, nurses or
106 allied health professionals), hospital managers or any senior/executive personnel, or health policy-
107 makers.

108 **Phenomena of interest**

109 The review will consider studies that investigate barriers and/or enablers in relation to HAPI
110 prevention. Barriers and enablers (or facilitators) are individual, organizational or contextual factors
111 that impede or facilitate the implementation of strategies for the prevention of pressure injuries.

112 **Context**

113 The review will only consider studies that focus on pressure prevention in the inpatient hospital setting
114 including wards, acute-care units or critical-care units, conducted in any country. Studies in which
115 pressure prevention was examined in the community setting or assisted living facilities (e.g. nursing
116 homes) will not be included.

117 **Types of studies**

118 This review will consider quantitative, qualitative and mixed-methods studies. Quantitative studies will
119 include analytical or descriptive observational study designs. Qualitative studies will include, but not
120 be limited to, designs such as phenomenology, grounded theory, ethnography, qualitative description
121 and action research.

122 Studies published in the English language will be included, with no publication date restrictions.

123 **Methods**

124 The proposed systematic review will be conducted in accordance with the JBI methodology for mixed-
125 methods systematic reviews (MMSR).²³

126 **Search strategy**

127 The search strategy will aim to find both published and unpublished studies. An initial limited search
128 of PubMed (National Library of Medicine [NLM]) and CINAHL (EBSCOhost) was undertaken to
129 identify articles on the topic. The text words contained in the titles and abstracts of relevant articles,
130 and the index terms used to describe the articles, were used to develop a full search strategy for
131 PubMed (see Appendix I). The search strategy, including all identified keywords and index terms, will
132 be adapted for each included information source. The reference lists of all studies selected for critical
133 appraisal will be screened for additional studies.

134 **Information sources**

135 The databases to be searched include PubMed (NLM), CINAHL (EBSCOhost), Embase (Elsevier),
136 PsycINFO (Ovid) and Scopus (Elsevier).

137 The search for unpublished studies and gray literature will include Trove, The Networked Digital
138 Library of Theses and Dissertations (NDLTD), and Proquest Dissertations and Theses (Global).

139 **Study selection**

140 Following the search, all identified citations will be loaded into EndNote X8.2 (Clarivate Analytics, PA,
141 USA) and duplicates removed. Titles and abstracts will then be screened by two independent
142 reviewers for assessment against the inclusion criteria for the review. Potentially relevant studies will
143 be retrieved in full and their citation details imported into the Joanna Briggs Institute's System for the
144 Unified Management, Assessment and Review of Information (JBI SUMARI; JBI, Adelaide,
145 Australia).²⁴ The full text of selected citations will be assessed in detail against the inclusion criteria by
146 two independent reviewers. Reasons for exclusion of full-text studies that do not meet the inclusion
147 criteria will be recorded and reported in the systematic review. Any disagreements that arise between
148 the reviewers at each stage of the study selection process will be resolved through discussion, or with
149 a third reviewer. The results of the search will be reported in full in the final review and presented in a
150 Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram.²⁵

151 **Assessment of methodological quality**

152 Quantitative papers (and the quantitative component of mixed-methods papers) selected for retrieval
153 will be assessed by two independent reviewers for methodological validity prior to inclusion in the
154 review, using standardized critical appraisal instruments from JBI SUMARI.²⁴

155 Qualitative papers (and the qualitative component of mixed-methods papers) selected for retrieval will
156 be assessed by two independent reviewers for methodological validity prior to inclusion in the review,
157 using the standardized critical appraisal instrument from JBI SUMARI.²⁴

158 Any disagreements that arise between the reviewers will be resolved through discussion, or with a
159 third reviewer. The results of critical appraisal will be reported in narrative form and in a table.

160 All studies, regardless of the results of their methodological quality, will undergo data extraction and
161 synthesis (where possible) and the impact of methodological quality will be considered when
162 developing conclusions and recommendations for practice.

163 **Data extraction**

164 Quantitative and qualitative data will be extracted from studies included in the review by two
165 independent reviewers using the standardized JBI data extraction tools.²³ The data extracted will
166 include specific details about the populations, study methods, phenomena of interest, context and
167 outcomes of relevance to the review question. Specifically, quantitative data will comprise data-based
168 outcomes of descriptive and/or inferential statistical tests. In addition, qualitative data will comprise
169 themes or subthemes with corresponding illustrations, and will be assigned a level of credibility.²³

170 Any disagreements that arise between the reviewers will be resolved through discussion, or with a
171 third reviewer. Authors of papers will be contacted to request missing or additional data, where
172 required.

173 **Data transformation**

174 Extracted quantitative data will be converted into qualitized data. This will involve transformation into
175 textual descriptions or narrative interpretation of the quantitative results in a way that answers the
176 review question.

177 **Data synthesis and integration**

178 This review will follow a convergent integrated approach according to the JBI methodology for mixed-
179 methods systematic reviews.²³ This will involve assembling the qualitized data with the qualitative
180 data. Assembled data are categorized and pooled together based on similarity in meaning to produce
181 a set of integrated findings in the form of line of action statements.

182 **Funding**

183 No funding has been received to undertake this review.

184 **Conflicts of interest**

185 All listed authors are members of the JBI Mixed Methods Methodology Group.

186 CS is a Senior Associate Editor of the JBI Database of Systematic Reviews and Implementation
187 Reports.

188 JC and CG are Associate Editors of the JBI Database of Systematic Reviews and Implementation
189 Reports.

190 SS is a member of the Editorial board of the JBI Database of Systematic Reviews and Implementation
191 Reports.

192 None of these authors had any influence on the peer-review or editorial processes.

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263 **Appendix I – PubMed search strategy**

Search	Query
#1	pressure ulcer [mh] OR pressure ulcer* [tw] OR decubitus ulcer [mh] OR decubitus ulcer [tw] OR bed sore* [tw] or pressure sore* [tw] OR pressure injur* [tw]
#2	barrier* [tw] OR obstacle* [tw] OR hurdle* [tw] OR hindrance* [tw] OR impediment* [tw] OR preventer* [tw] OR challenge* [tw] OR disincentive* [tw] OR incentive* [tw] OR motivation [mh] OR motivat* [tw] OR enabler* [tw] OR facilitator* [tw] OR belief* [tw] OR perception* [tw] OR perception [mh] OR perspective* [tw] OR view* [tw] OR attitude* [tw] OR attitude [mh]
#3	Prevent*[tw] OR Primary prevention [mh]
#4	#1 AND #2 AND #3

264 Search retrieved 985 records on 15/07/2019.