Sigma Theta Tau International Foundation for Nursing Final Report

Project title: Can a patient-centred pressure injury prevention care bundle increase patient participation and reduce pressure injuries; An implementation study

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1. Summary of project aims

Preventing hospital-acquired pressure injuries (HAPI) in patients is a key quality of care and safety goal for healthcare organisations and clinicians. Nurses implement numerous pressure injury prevention (PIP) strategies including encouraging patients to participate in their care. However, finding ways to actively engage patients in their PIP care has proved challenging. The study aim was to implement a patient-centred pressure injury prevention care bundle (PPIPCB) intervention in collaboration with patients and nurses, and evaluate its effectiveness relative to the implementation process (feasibility, acceptability and fidelity), patient participation in their PIP care (before and after its implementation), patient satisfaction with the intervention, and changes in HAPI prevalence over an 18-month period.

2. Theoretical/conceptual framework

HAPI are a serious adverse event some hospital patients develop during their care hence, implementing strategies to reduce these injuries is a global healthcare priority (European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel, & Pan Pacific Pressure Injury Alliance, 2019). This study was underpinned by the concept of patient participation. The attributes of patient participation includes collaborative nurse-patient relationships, shared information and decision making, power distribution and the active engagement in physical or intellectual care (Sahlsten, Larsson, Sjöström, & Plos, 2008). Patients who participate in their healthcare experience improved clinical outcomes such as reduced medication errors and fewer surgical complications (World Health Organization, 2013). Known barriers to patient participation include clinicians' willingness to actively engage patients, access to resources that facilitate nurse-patient interactions, and patients' limited knowledge on how to participate in their care (Larsson, Sahlsten, Segesten, & Plos, 2011; Sahlsten et al., 2008). Evidence suggests many hospital patients want some level of involvement in their PIP care (Latimer, Chaboyer, & Gillespie, 2014), however finding ways to engage them has proved challenging (Chaboyer, McMurray, et al., 2016).

Information sharing, in the form of patient education and nurse-patient collaboration is paramount to engaging patient's in their PIP care (Gillespie, Chaboyer, Sykes, O'Brien, & Brandis, 2014). Hence, Gillespie et al. (2014) developed an evidence-informed PPIPCB

intervention consisting of a 6-minute DVD, patient brochure and poster. Available in nine languages, the interactive patient education package has three simple messages for patients: keep moving, eat well, and look after your skin (Gillespie et al., 2014). In 2015, the researchers undertook a cluster randomised trial to test the impact of the PPIPCB intervention on HAPI incidence across Australian eight hospitals (cluster) with 1,600 recruited participants (Chaboyer, Bucknall, et al., 2016). While at the patient level the PPIPCB (intervention) compared to standard PIP care (control) was not statistically significant for decreasing HAPI incidence rates, reductions did occur at the hospital level (Chaboyer, Bucknall, et al., 2016). Possible explanations for the study findings might include an insufficient sample size to detect any HAPI incidence changes between the intervention and control groups, and the intervention group participants only viewed the PPIPCB DVD once on a computer tablet (Chaboyer, Bucknall, et al., 2016), rather than having access to view it multiple times.

Implementing healthcare interventions requires thoughtful planning with key stakeholders (Andersson et al., 2018) and the consideration of potential barriers and enablers (Grimshaw, Eccles, Lavis, Hill, & Squires, 2012). Incorporating these factors into an *a priori* implementation plan, which takes into account specific contextual needs (Andersson et al., 2018), contributes to increasing the intervention acceptability and translation into clinical practice (Wallin, 2009). Patients who are satisfied with their experience of an intervention (Kucukarslan, Lee, Patel, & Ruparelia, 2015) are more likely to engage with the content and their subsequent care (Sidani, Epstein, & Fox, 2017).

3. Methods, procedures and sampling

This three phase multi-methods study gathered quantitative and qualitative data from adult hospital patients and nurses in three medical units (respiratory, medical and infectious disease) at a large Australian hospital. Data were gathered from participants before and after the implementation of the PPIPCB intervention.

The PPIPCB intervention was developed by a team of researchers led by Professor Wendy Chaboyer (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) and with the support of a National Health and Medical Research Council grant. The final versions of these professional developed DVDs, available in nine languages, were uploaded onto the patient bedside touch screen television; providing unlimited access. Colour brochures and A4 posters were also printed for patient use. Using a scaffolded adult learning approach, the three PIP messages (keep moving, eat well, and look after your skin) in the DVD were repeated throughout the presentation to help build patient's PIP knowledge.

Phase 1 was conducted during July-August 2019 with eligible patient and nurse participants who provided an informed consent. We conducted semi-structured interviews, lasting about 30 minutes, with a sample of patients recruited over three-months. Our aim was to recruit three patients from each medical unit (9 in total) or until data saturation was reached at the point of sampling and analysis (Fusch & Ness, 2015). Patients receiving palliative or end-of life-care and those with cognitive impairment were excluded. Purposive sampling was undertaken to garner a range of perspectives was gathered (Marshall, 1996), using maximum variation in terms of patient's gender, age, and mobility (Graneheim & Lundman, 2004). During the digitally recorded interviews, patient participants were asked about how much PIP information they received from nurses on hospital admission and during their ongoing care. They were then shown the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) and we sought their views on its feasibility and acceptability, how to implement the intervention in the medical unit, and how best to meet patients' PIP care needs. Demographic and clinical data were gathered directly from participants.

Three nurse focus groups, each lasting about 30 minutes, were conducted with the aim of recruiting 15 participants (five from each unit). Recruitment continued until 'data saturation' was reached at the point of sampling and analysis (Fusch & Ness, 2015), with participant recruitment ceasing once no new information was elicited (Fusch & Ness, 2015). All nurses employed in the medical units were eligible for recruitment. To ensure a range of perspectives was gathered in the focus groups, purposive sampling of participants was implemented (Marshall, 1996) using maximum variation in terms of nurse gender, age, profession, professional experience and qualifications (Graneheim & Lundman, 2004). Guided by the Theoretical Domains Framework (Cane, O'Connor, & Michie, 2012) we interviewed nurses about the PIP information that provided patients on hospital admission and during their care episode. Nurses viewed the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) and we then examined their views about the intervention feasibility and acceptability, including barriers and facilitators (knowledge, beliefs, optimism, environment, social) to implementing it in their unit. Demographic and professional data were gathered from participants.

Content analysis (Graneheim & Lundman, 2004) was used to analyse the patient semi-structured interview and nurse focus group qualitative data separately. Using an iterative and inductive approach, the data was first coded. Next, the codes were organised into categories, and a definition developed for each category. The research team reached agreement on the analysis by consensus (Graneheim & Lundman, 2004). The patient and nurse quantitative data (demographic, clinical and professional) were descriptively (absolute and relative frequencies) analysed.

Phase 2 was conducted during November-December 2019. Our aim was to recruit adult hospital medical patients aged ≥18 years; with any pressure injury (PI) risk or mobility level; an expected hospital stay ≥48-hours; and able to provide an informed consent. Patients receiving palliative or end of life care and those with visual, hearing or cognitive impairment, were excluded. All participants received the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) and their usual PIP care. Data were collected from participants at two different time points: on study recruitment (Phase 2) and prior to discharge (Phase 3). On study recruitment, the Research Nurse (RN) first administered a validated Patient Participation in Pressure Injury Prevention (PPPIP) scale (Chaboyer et al., 2017), and then delivered the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014). The seven-item PPPIP scale measured patients' participation in their PIP care using a four-point scale (1: strongly agree to 4: strongly disagree); with a possible total score of 7-28; higher scores suggested increased patient participation in their PIP care (Chaboyer et al., 2017).

Phase 3 prior to hospital discharge, the PPPIP scale (Chaboyer et al., 2017) was again administered to participants to determine if there was a change in their participation in their PIP care following engagement with the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014). We also measured patient satisfaction with the intervention using a validated Multi-dimensional Treatment Satisfaction Measure (MDTSM) (Sidani et al., 2017), modified for our study following permission from the developers. The modified MDTSM consisted of 19 items across two domains: process (overall treatment and implementation) and outcome (perceived benefits, discomfort and outcome). Each item was measured using a four-point scale (1: strongly agree to 4: strongly disagree); with a possible total score of 19-76, and higher scores indicating greater intervention satisfaction.

Analysis of the Phase 2 and 3 quantitative data included a paired samples *t*-test to measure the differences in patient participation in their PIP care from study recruitment to hospital discharge following the implementation of the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014). Prior to analysis, total mean scores for the PPPIP scale (Chaboyer et al., 2017) data were first calculated, and a *p* value of <0.05 was used to indicate statistical significance. Descriptive statistics (frequency distribution, mean/standard deviation or median/IQR) were calculated to report the individual PPPIP scale items (Chaboyer et al., 2017) and report on patient satisfaction with the intervention. Internal consistency of the PPPIP scale (Chaboyer et al., 2017) and modified MDTSM (Sidani et al., 2017) was calculated using Cronbach's alpha coefficient.

HAPI prevalence data collected at 26 monthly time points between November 2018-December 2020 from the recruited wards will be used to undertake a statistical process

control analysis. This will help us measure the long-term sustainability and impact of the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) by comparing the pre-implementation HAPI prevalence rates (November 2018-October 2019) with the post-implementation data (December 2019-December 2020).

Prior to study commencement, the required ethical approvals from the participating university and hospital were gained. (GCHHS HREC/2019/QGC/49756; GU HREC: 2019/375).

4. Summary of findings

Phase 1 Nine medical patients were interviewed; three from each unit. Two-thirds ($n = 6$; 66.7%) of the sample were female and participants' age range was 20-83 years ($Md = 71.0$; Interquartile range (IQR): 25% 27.5; 75% 80.0). Seven (77.8%) participants mobilised independently or with a walking stick. No PIs were self-reported. Preliminary analysis of the qualitative data revealed two categories: *early engagement of patients and families in pressure injury prevention education*; and *creating opportunities to engage patients and families in preventing pressure injuries*.

Most participants indicated they received little or no PIP education from nurses during their hospitalisation. Many stated if they had greater access to PIP resources, they would be able to participate in their care. Participants reported the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) format (multiple languages, DVD, poster, brochure) allowed then to select the option that suited their physical and learning style. Furthermore, the intervention strategies (keep moving, look after your skin, eat a healthy diet) were easy for them to implement. Some participants reported their fear of viewing 'disturbing PI images' would be a barrier to engaging with the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014). Participants wanted greater nurse-patient engagement in PIP education and resources, with many expressing this would provide them with the knowledge to prevent PIs.

Twenty nurses participated in the three focus groups; most of whom were female ($n = 15$; 75.0%) with an average age of 39.5 years (*SD*: 13.5). The sample mostly comprised of Registered Nurses ($n = 17$; 85.0%) with years of clinical experience ranging from 1-20 years (*Md*: 7.0; IQR: 25% 3.25; 75% 10.75). Preliminary qualitative data analysis revealed two categories: *increasing patients' awareness of pressure injuries and their prevention*; and *facilitating pressure injury prevention patient education helps to empower them to participate in their care.*

On hospital admission, nurses educated patients about pressure injury prevention. However, they acknowledged patients could experience information overload which might impact their ability to process and implement care instructions. Providing patients with easy to understand information in a variety of formats helps to raise their awareness of pressure injuries and the importance of prevention. The intervention was considered useful in facilitating nurse-patient education sessions and delivering complex information in simple language. Many nurses stated the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) could be used to prompt them to deliver patient education on admission. Nurses acknowledged most patients and their families would be able to use some of the information in their care.

Phase 2 and 3 In total, 80 patients were recruited (respiratory: $n = 32$; 40.0%; medical: $n = 28$; 35.0%; infectious disease: $n = 20$; 25.0%) with the sample comprising of slightly more females ($n = 42$; 52.5%), and having an average age of 67.2 years ($SD = 18.3$). Following phase 2 recruitment, most participants ($n = 69$; 86.3%) independently accessed the DVD once during their hospitalisation. Three (3.75%) participants accessed the PPIPCB intervention in a language other than English (Croatian: $n = 2$; 2.5%; Greek: $n = 1$; 1.25%). Following engagement with the PPIPCB intervention, there was an increase in participants' total mean scores for the PPPIP scale from study recruitment ($M = 18.6$; $SD = 2.8$) to prior to discharge ($M = 22.5$; $SD = 1.9$), with an overall effect size of 3.9 ($p < 0.001$). This suggests participants knew more about PI risk and prevention after their engagement with the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) and perceived their level of participation in their PIP care improved. Although the Cronbach's alpha for the 7-items in the PPPIP scale was $<.70$ (_before_: α = 0.524, _after_: α = 0.616) suggests a low internal consistency reliability for the scale, a large effect size (eta squared statistic = 0.63) was found, indicating a considerable difference in the _before_ and _after_ intervention scores. Almost all participants ($n = 79$; 98.7%) were satisfied with the PPIPCB intervention (Chaboyer & Gillespie, 2014; Gillespie et al., 2014) and its ease of use.

HAPI prevalence statistical process control data analysis will be finalised in April 2021, with the results to be published in a peer-reviewed healthcare journal.

5. Recommendations

Our findings suggest that at hospital admission, patients wanted more PIP information from nurses. Yet, nurses perceived they were meeting the PIP education needs of patients. This demonstrates more should be done to encourage nurses to engage with patients about their PIP care, so patients have the required knowledge and understanding to participate. Patients and nurses deemed our PPIPCB intervention was feasible and acceptable in terms

of its clear and simple messaging, format and ease of use. Participants described the intervention as a valuable education tool that would facilitate important PIP care conversations between patients, families and nurses, and empower patients to participate in their PIP care. Early engagement in nurse-patient PIP education is vital and nurses have a crucial role in facilitating this. So, finding ways to embed this freely available, evidence-based intervention into nurses' hospital admission clinical practice and processes is recommended. An implementation toolkit is also available to provide guidance on how this could occur.

Our study found a significant increase in patients PIP knowledge following their engagement with the PPIPCB intervention. Factors such as simple messaging, accessibility, and satisfaction might explain patient's decision to engage with the intervention. Most patients and their families reported the three simple messages (keep moving, eat well, and look after your skin) within the PPIPCB intervention were easy for them to understand and incorporate into their daily PIP care. Patients particularly liked the DVD's 'repeated messaging' design because it made it easier to remember the PIP strategies. In contrast, nurses perceived that patients would become 'bored' with this learning approach because repeated messaging was 'too simplistic'. Patients and nurses agreed the PPIPCB intervention, uploaded onto the beside television, was easy to access, although nurses reported cognitively impaired or unwell patients would experience access difficulties. Patients enjoyed accessing the intervention when they felt motivated to engage with the content. Finally, patients were very satisfied with the PPIPCB intervention quality and the 'perceived benefits' of the three key messages for PIP. Evidence suggests that patients are more likely to engage with an intervention when clear and simple messages are delivered in an accessible format that they are satisfied with (Kucukarslan et al., 2015; Sidani et al., 2017). It is recommended that healthcare organisations provide patients with PIP information in multiple formats so that patients and their families can select the approach that best suits their learning style and needs. These factors might also encourage nurses to engage with patients about how to increase their participation in their PIP care.

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