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Pressure injury prevention in Aotearoa New Zealand aged care facilities: A case study

Anne Grinlinton[1], MHSc, RN, Wound Care Nurse Specialist for Residential Aged Care, Older Adult Health Team
Eamon Merrick[2], PhD, RN, Senior Lecturer
Sara Napier[2,3], PhD, RN, Senior Lecturer
Stephen Neville[2], PhD, RN, Professor of Wellbeing & Ageing; Head of School

[1]*Waitematā District Health Board, Auckland, Aotearoa New Zealand*
[2]*Auckland University of Technology, Auckland, Aotearoa New Zealand*
[3]Corresponding Author: sara14@xtra.co.nz

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Abstract

High dependency levels and complex care needs increase pressure injury risk for older adults in aged residential care, with devastating consequences for their health and well-being. The prevention of pressure injuries requires comprehensive and skilled care mainly provided by registered nurses and health care assistants. Despite high prevalence of pressure injuries, there is a lack of evidence on their prevention in aged residential care settings in Aotearoa New Zealand. This single case study aimed to identify factors affecting pressure injury prevention in aged residential care. The perceptions of 10 staff from two aged care facilities in Aotearoa New Zealand were obtained from individual interviews along with relevant policy and practice documents. Data were analysed using triangulation and pattern matching. Three themes were identified: 1) staffing; 2) leadership, teamwork, and communication; and 3) assessment and early intervention. Participants were committed to preventing pressure injuries despite the complex, high care needs of residents and challenging contextual factors. The findings contest the notion that pressure injuries occur solely from poor quality care. The association between increasingly difficult work conditions and pressure injury prevalence should be addressed by policy makers. Support and empowerment of health care assistants to take a proactive role in pressure injury prevention could improve outcomes for residents in aged residential care settings. Nurse leaders should continue to advocate for a skilled and knowledgeable nursing workforce and mandated safe staffing levels.

Keywords / Ngā kupu matua:
aged residential care/kāinga noho manaaaki kaumātua; case study/mātai tūāhua; gerontology/te taurima tūroro kaumātua; pressure injury/te ārai māuiui takotoranga tinana; safe staffing/ngā taumata tokomaha kaimahi haumaru

Te Reo Māori translation

Te ārai i ngā māuiuitanga takotoranga tinana i ngā kāinga noho manaaki kaumātua i Aotearoa: He matai tūāhua

Ngā ariā matua

Nā ngā hiahia pūputu me ngā hiahia taurimatanga matatini ka piki ake te mōrea māuiui takotoranga tinana i waenga i ngā pakeke i ngā kāinga noho manaaki kaumātua, me te puta mai o ētahi hua tino taumaha mō tō rātou hauora, toiora hoki i muri. Ko te ara matua hei ārai i ngā māuiui takotoranga tinana ko te taurimatanga mutunga mai o te matatau, mā ngā tapuhi rēhita me ngā kaiāwhina hauora hei kawe. Ahakoa te pūputu o te panga o ngā māuiui takotoranga tinana, he iti tonu ngā taunakitanga me pēhea e āraia ai i ngā whare kāinga noho manaaki kaumātua i Aotearoa. Tā tēnei rangahau tū āhua kotahi he whai kia tautohutia ngā pūtake mō te ārai i ngā māuiui takotoranga tinana i ngā kāinga noho manaaki kaumātua. I whāia ngā whakaaro mai i ētahi kaimahi 10 i ētahi kāinga noho manaaki kaumātua e rua i

Aotearoa, me ētahi uiuinga takitahi, i te taha hoki o ngā tuhinga kaupapa here, tikanga mahi e hāngai ana. I tātaritia ngā raraunga nā te whakamahi pou tuatoru, me te rapu putanga ōrite. E toru ngā tāhuhu i tautohutia: 1) ko ngā kaimahi tōtika; 2) ko te hautū, ko te mahi ā-tira kotahi, me te whakawhiti kōrero; mee 3) te aromatawai me te kōkiri wawe i ngā āwhina e tika ana. I te ū katoa ngā whakaaro o te hunga whai wāhi mai ki te ārai māuiui takotoranga tinana ahakoa ngā hiahia matatini, pūputu hoki o te hunga noho i ō rātou kāinga, me ngā horopaki taumaha i te taha. Nā ngā kitenga nei ka kitea te hē o te kī i takea mai ngā māuiui takotoranga tinana i te taurimatanga ngoikore anake. Me mātua whakatika te pānga tata o ngā āhuatanga mahi uaua me te rahi o ngā māuiui takotoranga tinana, e ngā kaitārei kaupapa here. Mā te tautoko me te whakamana i ngā kaiāwhina hauora kia whakauru wawe ki ngā mahi ārai māuiui takotoranga tinana, ka pai ake ai pea ngā putanga mō ngā tāngata i ngā whare kāinga noho manaaki kaumātua. Kia kaha tonu ngā kaihautū tapuhi ki te kauwhau mō te whakapakaritanga pūkenga mō te kāhui tapuhi, me ngā taumata tokomaha kaimahi haumaru kia whakahautia.

Introduction

Pressure injuries significantly impact on the well-being of older adults living in aged residential care (ARC). These older adults are particularly susceptible due to complex health care needs that increase dependency with respect to mobility, cognitive function, and continence (Carryer et al., 2017). Approximately 55,000 New Zealanders in the general population develop new pressure injuries every year with devastating consequences in terms of pain, infection, altered body image, social isolation, depression, and increased morbidity and mortality (Jackson et al., 2018; Ministry of Health, 2018). The direct financial costs of pressure injuries to Aotearoa New Zealand are substantial at approximately $67,000,000 per annum (KPMG, 2016).

Pressure injuries occur from localised injury to the skin and underlying soft tissue from unrelieved pressure and/or shearing forces, typically occurring over bony prominences (European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel & Pan Pacific Pressure Injury Alliance [EPUAP, NPIAP & PPPIA], 2019). Factors contributing to pressure injuries include high levels of care dependence, incontinence, falls, and malnourishment (Carryer et al., 2017). Most pressure injuries are preventable with risk management and early intervention (Mervis & Phillips, 2019). Consequently, preventing pressure injuries has become a priority for Aotearoa New Zealand's healthcare system (Ministry of Health, 2018).

Aged residential care in Aotearoa New Zealand is provided in long-term care settings ranging from rest homes to continuing care hospitals, the majority of which are privately or corporately owned. The level of dependency and frailty of those living in ARC is increasing internationally and in Aotearoa New Zealand (Ambagtsheer et al., 2020; Connolly et al., 2014; Frey et al., 2017). Because of complex pathophysiology, effective prevention and management of pressure injuries in ARC is multifaceted and requires a collaborative approach, usually led by nurses (Hommel & Santy-Tomlinson, 2018). The link between supportive work environments and fewer pressure injuries in long-term care facilities has received recent attention (White et al., 2020). A higher ratio of qualified nurses was associated with a reduction in pressure injury rates (Whitehead et al., 2015). Recruitment and retention of skilled staff in Aotearoa New Zealand ARC settings have been impacted by pay inequity, lack of career development opportunities, and changes to immigration regulations resulting in shortages of qualified nurses and skilled healthcare workers (Hughes, 2020).

A review of policies guiding management of pressure injuries in different healthcare settings in six countries, including Aotearoa New Zealand, found few policies focused on prevention or the nursing workforce and skill mix of staff (Jackson et al., 2016). Staffing levels in most ARC settings in Aotearoa New Zealand fall below internationally recommended benchmarks prompting the New Zealand Nurses Organisation to call for a review of staffing and skill mix (New Zealand Nurses Organisation, 2017). Although the New Zealand government recommends safe staffing levels linked to quality indicators, these levels are not mandatory.

A recent best-practice guideline for all healthcare settings, developed in collaboration with the Ministry of Health, Accident Compensation Corporation, and the New Zealand Health Quality & Safety Commission, reflects a multidimensional approach to pressure injury prevention (Accident Compensation Corporation [ACC], 2017). The guideline is

underpinned by six key principles: people first; leadership; education and training; assessment; care planning and implementation; and collaboration and continuity of care (ACC, 2017). Evidence clearly supports use of evidence-based guidelines (Edwards et al., 2017), pressure injury prevention education (Murray, 2012), and clear and accurate communication between staff especially during clinical handover meetings (Hada et al., 2018). While studies undertaken in Aotearoa New Zealand ARC settings have identified pressure injuries as indicators of poor-quality care (Carryer et al., 2017; Whitehead et al., 2015), there is lack of evidence on pressure injury prevention. Thus, the aim of this study was to identify factors affecting pressure injury prevention in ARC in Aotearoa New Zealand.

Methodology

A single case study methodology underpinned by a relativist philosophical perspective was utilised. This allowed exploration of the topic from multiple perspectives (Yin, 2018). A relativist philosophical stance enabled insight into participants' actions by allowing them to recount their perceptions and experiences from their own perspective (Yazan, 2015). The phenomenon under investigation or the 'case' was pressure injury prevention in ARC settings in Aotearoa New Zealand. Collecting data from multiple sources contributes to the rigour and quality of case studies (Yin, 2018). Accordingly, the current study explored the perceptions and experiences of clinical managers (CM), registered nurses (RN), and health care assistants (HCA), as well as policy and practice documents relevant to pressure injury prevention.

Setting and Participants

Four facilities were initially approached using a purposive sampling technique by emailing the CMs. Of these, two ARC facilities agreed to participate. Both facilities provided rest home and hospital level care. Clinical managers, RNs and HCAs were included if they were directly involved in pressure injury prevention. The inclusion of two facilities provided more than one participant from each clinical role. Participant information sheets and contact details were supplied to the facilities. Potential participants were invited to contact the researcher directly by phone, email, or through their CM; all participants chose to make contact through their CM who then facilitated the choice of venues and times for interviews.

Ethical considerations

Ethical approval was gained from the Auckland University of Technology (AUTEC 19/225). Participation was completely voluntary. Prior to interviews, all participants were provided the opportunity to read the information sheet and ask the researcher any questions. Before obtaining written consent, the researcher reiterated the right to withdraw from the study or abstain from answering questions at any time. Further, participants were advised the audio recording could be paused at any time. No identifying information about the facilities, residents or staff were collected. The facilities were referred to as 'Facility 1' and 'Facility 2' and participants were assigned a unique code. The risk of harm or discomfort to participants was considered relatively low; however, access to support was made available to participants through the university support services. None of the participants required specific social or cultural support.

Data Collection

Data were collected between October and November 2019 using semi-structured interviews lasting between 35 to 60 minutes. All interviews took place in private meeting rooms at the participants' workplace during scheduled working hours. An interview schedule guided the interviews. Questions relating to pressure injury risk assessment and everyday care practices included "could you talk about how you assess for pressure injury risk?" and "what resources are available to help you assess pressure injury risk?" The flexible and conversational style allowed maximum expression of participant's perspectives. Interviews were digitally recorded and transcribed verbatim by a professional transcriber. Data from relevant documents were also collected. Sources included the facilities' clinical practice guidelines, policies related to pressure injury prevention, the national Age-Related Residential Care Services agreement, the International Resident Assessment Instrument for Long-Term Care Facilities (interRAI-LTCF) and risk assessment tools used by the facilities.

Data Analysis

Data analysis involved identifying patterns of meaning and themes from the data (Yin, 2018). The process began with listening to the audio-recordings, reading and then re-reading all the transcripts and

analytical notes from interviews to gain an in-depth understanding of the data. The qualitative analysis software NVivo version 11 was utilised to manage data from all sources. Each data source was displayed and analysed separately before commencing the coding process. The initial coding framework was derived from theory and evidence-based guidelines used to shape the interview questions. From there, themes and sub-themes were developed during higher-level analysis. Triangulation of all data sources added credibility and dependability to the findings. Two researchers agreed the themes and sub-themes were an accurate reflection of the meanings from the data.

Findings

Ten staff participated in the study five from each of the two facilities. Eight participants were female and two were male. Two were CMs, four were RNs and four were HCAs. All participants had migrated to Aotearoa New Zealand as adults from the Philippines, India, or Fiji, reflecting the ethnicities of staff employed in the geographic area where the facilities were located. Only one RN completed their nursing education in Aotearoa New Zealand. For all RN participants, ARC had provided their first employment in Aotearoa New Zealand. The number of years working in aged residential care in Aotearoa New Zealand ranged from 1 to 12 years.

Three themes captured factors affecting pressure injury prevention: 1) staffing, 2) leadership, teamwork and communication, and 3) assessment and early intervention.

Staffing

All participants perceived reduced staffing had a direct impact on interventions to prevent pressure injuries. Routine interventions such as toileting, pad changes, and re-positioning residents were sometimes missed due to staff shortages. High staff turnover and inability to retain qualified staff raised deep feelings of frustration and powerlessness from both CMs.

> *Most of the senior nurses who worked here left when the new MECA agreement[1] for the DHB was signed [for higher salary]... it is frustrating because we train them and then six months down the line they say, "I'm sorry but I need to go to the DHB".* [CM1]

High staff turnover required constant orientation of new staff. It took time for new staff to recognise subtle changes in individual residents' condition and provide timely intervention to prevent pressure injuries. The RNs expressed weariness from having to train new staff who then left after a short time, "you orient them and when they finish orienting, they don't stay for six months" (RN2). Heavy reliance on bureau staff was considered stressful by HCAs who felt accountable for continuity of care:

> *We never put a new staff member with a bureau … it's stressful because I have to take all the responsibility for the clients and explain everything. It's very hard.* [HCA3]

Increased acuity from high levels of frailty and complexity of care, and proliferated volumes of paperwork had increased the workload for all participants. As one of the CMs explained, there was little time for staff to take scheduled breaks:

> *You have to really tell them to go for their breaks … they're constantly running … there are just too many documents that you need to attend to."* [CM2]

Despite heavy workloads and staff shortages, neither facility had safe staffing levels specified in their policies on pressure injury prevention.

Leadership, teamwork, and communication

Effective leadership, teamwork, and communication supported quality care and pressure injury prevention. The CMs emphasised the importance of oversight and support by making themselves available to discuss concerns around care. Health care assistants felt supported to report any concerns and valued the inclusive style of leadership:

> *Our manager just wants safe handling … he tries different ideas with us … we can walk in the office any time we want.* [HCA3]

Although the RNs assumed overall responsibility for pressure injury prevention, most of the care was delegated to HCAs:

[1] Collective agreement for nurses employed by the district health boards, delivering hospital and community services. The agreement includes terms and conditions of employment and salary. https://www.nzno.org.nz/Portals/0/Files/Documents/Groups/Health%20Sectors/2018-08-23-NZNO-DHB-MECA-2018-2020.pdf

> *The HCAs are the ones who are directly involved and spend more time with the residents so they can see if there are any changes.* [RN2]

Informal communication usually initiated escalation of care:

> *Communication from the HCAs is very, very important … if they tell us as soon as they know there's redness, as soon as they inform us, it would be much better.* [RN2]

Equally, RNs needed to know about the small changes in residents' usual patterns of daily living that could increase the risk for pressure injury:

> *Sometimes they [HCAs] don't tell us like, "oh they refused their breakfast" or, "they refused dinner". We never know that, sometimes. It's a big challenge … it does require a collaborative effort between caregivers and nurses.* [RN1]

On the other hand, when RNs were multitasking and preoccupied, HCAs struggled to communicate concerns about residents': "there are times when it's really busy, you can't even talk to the RN" (HCA3). RNs were expected to assess and review residents' care promptly once alerted to the risk. However, the heavy workloads and conflicting priorities meant RNs were not always able to respond in a timely manner. Health care assistants felt duty-bound to prompt and remind RNs when reported concerns had clearly not been followed up. The CMs supported HCAs to follow up and remind RNs of their concerns:

> *I think I remember correctly, one caregiver said, "we thought the nurses knew" … so I just said, "even if you have to tell the nurse 20 times, 30 times."* [CM1]

Role demarcation also impacted on timely intervention. Policies at both facilities directed HCAs to escalate pressure injury concerns, such as red or broken skin, directly to the RN. Although HCAs were usually the first to identify early signs of pressure injury, they had limited decision-making authority.

> *Any pressure injuries we just hand it to the nurses … it is not our call to say if someone needs an air mattress … it needs to go through the proper channels.* [HCA1]

Thus, lack of autonomy contributed to delayed care. The usual practice in one of the facilities was to consult and gain permission from a physiotherapist before installing a pressure relieving device. This limited the preventative options available to RNs when the physiotherapist was not available as illustrated in the following excerpt:

> *We ask them [the physiotherapist], "look this resident is high risk. I think we need an air mattress. Can you come in, assess if they need an air mattress" … They usually agree and then put an air mattress in. Or sometimes they will say, "oh this one needs some booties". So, if they are off for the weekend, we turn them [resident] every two hours.* [RN 4]

'Stop and watch' forms, utilised at one of the facilities, provided an efficient means of communicating between RNs and HCAs when changes in condition or early signs of pressure injury were detected. It was also a way to encourage accountability.

> *We do have a stop and watch tool. It is a form where if they notice anything wrong with a patient, they can just circle that and give it to the RNs. So, it's one way of documenting as well.* [RN4]

Face-to-face handovers, typically between shifts, provided the opportunity for RNs and HCAs to discuss care and communicate concerns in more depth, "It's usually during handover that most of our communication occurs with the registered nurses" (HCA1). Short, purposeful 'toolbox talks' were also used to communicate information between staff from different disciplines and different shifts. These talks were educationally focused and were scheduled during shift handovers to ensure maximum staff attendance.

Assessment and Early Intervention

All participants agreed risk assessment was the first step in preventing pressure injuries and often started pre-admission with handovers from hospital nurses. A combination of assessment tools and clinical judgement were utilised. Both facilities used the International Resident Assessment Instrument for Long-Term Care Facilities (interRAI-LTCF) to undertake a holistic assessment on admission, at regular intervals, and in response to changes in a resident's condition. Indicators of risks included the condition of skin, physical and mental health status, activity and mobility limitations, nutritional status, moisture, and general well-being. Although the policy for Facility 2 specified use of interRAI-LTCF for pressure injury risk, the RNs viewed the interRAI tool as a more generalised assessment and overly time-consuming to use.

> *The interRAI is not a proper assessment for pressure injury although it will give you a hint that this patient might be at risk for pressure injury. But it doesn't say anything much at all … and you need to do it in between your work, and you can't finish it in one sitting especially if you're busy.* [RN2]

Instead, validated pressure risk assessment tools were preferred by several RNs. The Braden scale was favoured by some RNs as the risk score guided choice of interventions. RN4 preferred the Waterlow score as it provided a way to check all areas of risk, "it covers everything from head to toe … I think it is better" (RN4). While comprehensive documentation that could withstand legal scrutiny was appreciated by all participants, the requirements had become onerous. As CM1 remarked, "there're just too many documents that you need to do".

To prevent pressure injuries, all participants described routine holistic care as fundamental to meeting individual resident's needs. As dependency and cognition among residents in ARC fluctuated, a high level of clinical judgement informed interventions to reduce risks. The following excerpt illustrates how preventative strategies required a multidisciplinary and holistic approach.

> *She went to hospital and lost her confidence walking. She's very, very afraid now … she's 102 years, and because of her dementia she doesn't eat much, so we have consulted a dietitian. We have on-going physiotherapy input who is still trying to do exercises with her … she's already on an air mattress when she is in bed … [and] we give her supplements to increase her weight.* [RN2]

Shared decision-making between residents, families, and the healthcare team informed pressure injury risk management. Informed decision-making included identifying risks and benefits of preventative interventions. Notwithstanding, there was often conflict between resident's perceived wants and needs as explained by CM2: "If they need to be turned or they need to have a good balance of nutrition, then we need to explain to them the purpose". Likewise, informing and involving families in care planning was part of the 'no surprise' policy participants talked of. Agreeing on goals and outcomes was essential especially when a resident refused preventative care:

> *We have to communicate with them that she's not cooperating with us for cares, with eating or drinking. So, a pressure injury might develop.* [RN1]

This was especially important when residents refused care and at the end stages of life when the risk of pressure injury was increased.

Discussion

Three themes captured factors affecting pressure injury prevention: 1) staffing, 2) leadership, teamwork, and communication, and 3) assessment and early intervention. The findings indicated all participants were committed to preventing pressure injuries despite the complex and high care needs of residents and challenging contextual factors. However, systemic and institutional barriers including chronic staff shortages and role demarcation increased the assessment-to-intervention gap. Further, continuity of care was disrupted by high staff turnover and reliance on casual bureau staff. Previous studies found a strong link between pressure injury prevention and increased nursing time per resident (Backhaus, et al., 2014; White et al., 2020). Safe staffing levels and skill mix are advocated in the Aotearoa New Zealand ACC evidence-informed best practice guideline (ACC, 2017). Nevertheless, safe staffing levels and skill mix were not included in either of the facilities' policies.

High staff turnover had affected a sense of resignation and powerlessness among participants; most attributed this to lack of pay equity with district health boards. Pay disparity between nurses in ARC and public hospitals is known to hamper recruitment and retention of staff in this setting (Hughes, 2020). Additionally, there needed to be greater appreciation of gerontology as a specialised field of nursing. The New Zealand Aged Care Association (NZACA) has recommended a multi-pronged approach to attract and retain qualified staff in ARC including anti-stigma campaigns, preceptorship programmes, focused professional development and recognition programmes, and nurse practitioner funding. Further, a review of RN and HCA roles and scopes of practice has been advocated to improve quality of care of residents in ARC in New Zealand (Shannon & McKenzie-Green, 2016).

The findings revealed professional demarcation and escalation of decision-making impacted on timely intervention. Pressure injury prevention policies

should support RNs and HCAs to implement preventative interventions when other members of the multidisciplinary team are not available. While physiotherapy expertise was highly valued by the RNs and HCAs, early intervention should be promoted. Despite providing most of the hands-on care to residents and often being first to notice changes in resident's wellbeing, HCAs had limited autonomy. Further, the HCAs clearly articulated their knowledge about pressure injury risk assessment and preventative interventions, including use of equipment. Registered nurses often had multiple competing priorities and were not always able to respond promptly to HCA's concerns. A recent pressure injury report recommended the caregiver providing care should authorise pressure relieving equipment (KPMG, 2016). More comprehensive assessment should be undertaken once a RN was available. The important role HCAs play in early detection and prevention of pressure injury has been previously established (Carpenter & Thompson, 2008). Greater recognition of this positive contribution should improve the recruitment and career prospects of HCAs in ARC. These findings suggest it was possible to reduce the assessment-to-implementation time by authorising experienced HCAs to access the right equipment at the right time, thereby improving outcomes for residents (EPUAP, NPIAP & PPPIA, 2019).

Participants in the current study exercised a high level of clinical judgement when considering the multiple factors in pressure injury risk assessment. Additionally, fostering therapeutic relationships between staff, residents, and families was vital for shared decision-making and care planning. While both facilities utilised the interRAI-LTCF as their main assessment, RNs in both facilities expressed reservations regarding its utility as a pressure injury risk assessment tool. The effectiveness of interRAI-LTCF for pressure injury risk assessment has not been established in the Aotearoa New Zealand context. A recent study in a Aotearoa New Zealand dementia care setting found the interRAI-LTCF failed to adequately reflect deterioration when residents became bedbound (Vuorinen, 2020). These findings suggest the use of validated pressure injury risk assessment tools, such as the Braden (Jansen et al., 2020) and Waterlow (Moore & Patton, 2019) scales, which provide targeted pressure injury risk assessment, are quick to utilise, and provide bundles of care that all healthcare workers can implement.

This study contributes new knowledge about pressure injury prevention in ARC in Aotearoa New Zealand. The participants were committed to providing quality care despite multiple contextual barriers at the institutional and policy level. The dependency level and complexity of care has increased significantly in ARC; thus, residents are highly vulnerable to pressure injury. The implications of staff shortages and high staff turnover must be recognised as a source of harm. Improving levels of staffing in ARC should be a national priority. This should include addressing pay equity issues and instigating innovative ways to attract and retain RNs. Further, skill advancement and empowerment of HCAs to make rapid assessment and implementation decisions should be reflected in pressure injury prevention policy and practice.

Several limitations must be acknowledged. Firstly, the findings are not generalisable to all ARC settings, although the study may be transferable to other similar settings. Secondly, the study was voluntary at the facility and participant level. Therefore, it should not be assumed the level of commitment and knowledge about pressure injury prevention, identified in the current study, is typical of other ARC facilities. Thirdly, while a strength of the study was triangulation of relevant documents and multiple perspectives, direct observation of practice to confirm self-reported practices was not included in the study design. Future research should focus on intervention studies to evaluate the effectiveness of strategies to prevent pressure injuries in ARC in Aotearoa New Zealand. Furthermore, the current findings identified a need for studies on the effectiveness of the interRAI-LTCF as a tool to assess pressure injury risk.

Conclusion

This case study investigated factors affecting pressure injury prevention in two ARC facilities in Aotearoa New Zealand. The findings contest the notion that pressure injuries occur solely from poor quality care. The association between increasingly difficult work conditions and pressure injury prevalence should be acknowledged and addressed by policy makers. Support and empowerment of HCAs to take a more proactive role in pressure injury prevention could improve outcomes for residents. Nurse leaders should continue to advocate for a skilled and knowledgeable nursing workforce and mandated safe staffing levels.

References

Accident Compensation Corporation. (2017). *Guiding principles for pressure injury prevention and management in New Zealand.* Author. https://www.acc.co.nz/assets/provider/pressure-injury-prevention-acc7758.pdf

Ambagtsheer, R. C., Shafiabady, E. D., Dent, E., Seiboth, C., & Beilby, J. (2020). The application of artificial intelligence (AI) techniques to identify frailty within a residential aged care administrative data set *International Journal of Medical Informatics, 136*, Article 104094. http://doi.org/10.1016/j.ijmedinf.2020.104094

Backhaus, R., Verbeek, H., van Rossum, E., Capezuti, E., & Hamers, J. P. H. (2014). Nurse staffing impact on quality of care in nursing homes: A systematic review of longitudinal studies. *Journal of the American Medical Directors Association, 15*(6), 383-393. https://doi.org/10.1016/j.jamda.2013.12.080

Carpenter, J., & Thompson, S. A. (2008). CNAs' experiences in the nursing home: It's in my soul. *Journal of Gerontological* Nursing, 34(9), 25-32. https://doi.org/10.3928/00989134-20080901-02

Carryer, J., Weststrate, J., Yeung, P., Rodgers, V., Towers, A., & Jones, M. (2017). Prevalence of key care indicators of pressure injuries, incontinence, malnutrition, and falls among older adults living in nursing homes in New Zealand. *Research in Nursing & Health, 40*(6), 555-563. https://doi.org/10.1002/nur.21835

Connolly, M., Broad, J., Boyd, M., Kerse, N., & Gott, M. (2014). Residential aged care: The de facto hospice for New Zealand's older people. *Australasian Journal on Ageing, 33*(2), 114-120. https://doi.org/10.1111/ajag.12010

Edwards, H., Chang, A., Gibb, M., Finlayson, K., Parker, C., O'Reilly, M., McDowell, J., & Shuter, P. (2017). Reduced prevalence and severity of wounds following implementation of the Champions for Skin Integrity model to facilitate uptake of evidence-based practice in aged care. *Journal of Clinical Nursing, 26*(23-24), 4276-4285. https://doi.org/10.1111/jocn.13752

European Pressure Ulcer Advisory Panel, National Pressure Injury Advisory Panel and Pan Pacific Pressure Injury Alliance. (2019). *Prevention and treatment of pressure Ulcers/injuries: Clinical practice guideline.* Author. https://www.internationalguideline.com/static/pdfs/Quick_Reference_Guide-10Mar2019.pdf

Frey, R., Foster, S., Boyd, M., Robinson, J., & Gott, M. (2017). Family experiences of the transition to palliative care (ARC): A qualitative study. *International Journal of Palliative Nursing, 23*(5), 238-247. http://doi.org/10.12968/ijpn.2017.23.5.238

Hada, A., Coyer, F., & Jack, L. (2018). Nursing bedside clinical handover: A pilot study testing a ward-based education intervention to improve patient outcomes. *Journal of the Australasian Rehabilitation Nurses' Association, JARNA, 21*(1), 9-18.

Hommel, A., & Santy-Tomlinson, J. (2018). Pressure injury prevention and wound management. In A. Hommel & J. Santy-Tomlinson (Eds.), *Fragility fracture nursing, perspectives in nursing management and care of older adults* (pp. 85-94). Springer.

Hughes, F. (2020). *Building a sustainable nursing workforce for aged residential care.* New Zealand Aged Care Association. https://nzaca.org.nz/wp-content/uploads/2020/09/250620-Building-a-sustainable-nursing-workforce-for-age-related-residential-care-services.pdf

Jackson, D., Durrant, L., Hutchinson, M., Ballard, C., Neville, S., & Usher, K. (2018). Living with multiple losses: Insights from patients living with pressure injury. *Collegian, 25*(4), 409-414. https://doi.org/10.1016/j.colegn.2017.10.008

Jackson, D., Hutchinson, M., Barnason, S., Li, W., Mannix, J., Neville, S., Piper, D., Power, T., Smith, G., & Usher, K. (2016). Towards international consensus on patient harm: Perspectives on pressure injury policy. *Journal of Nursing Management, 24*(7), 902-914. https://doi.org/10.1111/jonm.12396

Jansen, R. C. S., Silva, K. B. A., & Moura, M. E. S. (2020). Braden Scale in pressure ulcer risk assessment. *Revista Brasileira de Emfermagem, 73*(6), e20190413. http://doi.org/10.1590/0034-7167-2019-0413

KPMG. (2016). *The case for investment in a quality improvement programme to reduce pressure injuries in New Zealand*. Author. https://www.hqsc.govt.nz/assets/Our-work/System-safety/Reducing-harm/Pressure-injury/Resources/KPMG-pressure-injury-report-Jan-2016.pdf

Mervis, J., & Phillips, T. (2019). Pressure ulcers: Pathophysiology, epidemiology, risk factors, and presentation. *Journal of the American Academy of Dermatology, 81*(4), 881-890. https://doi.org/10.1016/j.jaad.2018.12.069

Moore, Z. E. H., & Patton, D. (2019). Risk assessment tools for the prevention of pressure ulcers. *Cochrane Database of Systematic Reviews, 1*. Article No.: CD006471. http://doi.org/10.1002/14651858.CD006471.pub4

Ministry of Health. (2018). *Pressure Injuries in Aged Residential Care: 1 January 2016 to 31 March 2017.* Author. https://www.health.govt.nz/system/files/documents/publications/pressure-injuries-aged-residential-care.pdf

Murray, E. (2012). Bridging the theory-practice gap in pressure injury prevention for assistants in nursing: The impact of a formal education program at St Vincent's Private Hospital. *Wound Practice and Research, 20*(3), 124-128.

New Zealand Nurses Organisation. (2017). *Mandated nursing staff to resident ratios in aged care: Summary of evidence*. https://www.nzno.org.nz/Portals/0/publications/Mandated%20nursing%20staff%20to%20resident%20ratios%20in%20aged%20care%20-%20Summary%20of%20evidence%202017.pdf?ver=sEo-tUwZBZgaa2G9irhrHg%3d%3d

Shannon, K., & McKenzie-Green, B. (2016). Current role challenges in New Zealand aged residential care: The potential consequences for healthcare assistant role expansion. *Contemporary nurse, 52*(2-3), 140-151. https://doi.org/10.1080/10376178.2016.1221322

Vuorinen, M. (2020). Registered nurses' experiences with, and feelings and attitudes towards, the International Resident Assessment Instrument for Long-Term Care Facilities in New Zealand in 2017. *Journal of Research in Nursing*, *25*(2), 141-155. http://doi.org/10.1177/1744987119890651

White, E. M., Aiken, L. H., Sloane, D. M., & McHugh, M. D. (2020). Nursing home work environment, care quality, registered nurse burnout and job dissatisfaction. *Geriatric Nursing, 41*(2), 158-164. https://doi.org/10.1016/j.gerinurse.2019.08.007

Whitehead, N., Parsons, M., Dixon, R., & Robinson, E. (2015). Quality and staffing: Is there a relationship in residential aged care. *Kai Tiaki Nursing Research, 6*(1), 28-35.

Yazan, B. (2015). Three approaches to case study methods in education: Yin, Merriam, and Stake. *The Qualitative Report, 20*(2), 134-152. https://doi.org/10.46743/2160-3715/2015.2102

Yin, R. K. (2018). *Case study research and applications; Design and methods* (Sixth ed.). Thousand Oaks, California

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