## Research

# Systematic review of aged care interventions for older prisoners

## Bruce A Stevens



Charles Sturt University, Canberra, Australian Capital Territory, Australia

#### Rhonda Shaw

Charles Sturt University, Port Macquarie, New South Wales, Australia

#### Peter Bewert and Mavis Salt

Aged Care Plus Support Services, The Salvation Army, Sydney, New South Wales, Australia

#### Rebecca Alexander and Brendan Loo Gee

Charles Sturt University, Canberra, Australian Capital Territory, Australia

**Objective:** The care of older prisoners is a growing problem. This review examined aged care interventions in prisons.

**Methods:** A systematic review was conducted following preferred reporting items for systematic reviews and metaanalyses guidelines. A total of 1186 abstracts were screened for inclusion. Quantitative and qualitative studies were included.

**Results:** Two quantitative studies and five qualitative studies examined aged care interventions (n = 7). An intervention involving physical health activities was not effective in reducing distress compared to a control, and an intervention of psychosocial, physical and spiritual health activities for veterans was not effective when compared to a comparison group. Qualitative analysis generated themes that apply to best practices: addressing older prisoners' needs, identifying barriers for older prisoners and staff, considering the prison culture, program delivery and cultivating older prisoners and staff attitudes.

Conclusion: This review found no significant interventions in prisons. However, the qualitative findings showed evidence of best practice.

Policy Impact: This systematic review of aged care in prisons, both in Australia and internationally, has many policy implications. This population is growing quickly, with many unaddressed needs.

**Practice Impact:** The care of older prisoners is a growing and significant problem. This systematic review indicates a need for better informed practices to meet a

Correspondence to: Professor Bruce A Stevens, Charles Sturt University. Email: bstevens@csu.edu.au

range of prisoner needs. Some examples of creative responses are given in the review.

**Key words:** aged, ageing, intervention, prisoners, prisons.

#### Introduction

The number of prisoners aged 50 years and over increased by 33% between 2010 and 2015 in Australia [1] and by 23% between 2009 and 2013 in the United States [2]. Further, prisoners aged 50 years and over increased as a proportion of the total prison population by 101% between 2003 and 2014 in Canada [3], while prisoners aged 60 years and over increased as a proportion of the total prison population by 120% between 2002 and 2013 in the United Kingdom (UK) [4]. Prisoners aged 70 years and over tripled between 2004 and 2014 in New Zealand [5].

Definitions of an 'older prisoner' range from 45 to 65 years and over [6,7]. There has been some agreement about classifying older prisoners as 50 years and over [8], because older people in prison are more susceptible to an acceleration of the biological ageing process compared with the general population [7]. This may result in the early onset of chronic health problems and geriatric syndromes, such as incontinence, hearing and visual impairment and risk of falls [9]. Furthermore, up to 40-50% of older prisoners will experience mental health problems, with a high prevalence of depression reported [10,11]. Overall, this acceleration of ageing results in poorer health-related outcomes for older prisoners [8]. The broad range of health and social issues raises questions about how care is provided to older prisoners.

#### Aged care issues in older prisoners

A number of factors impact the management of older prisoners. First, the physical environment is limited in providing access to prison facilities such as libraries and showers for older inmates [9,12]. Additionally, room ventilation and noise pollution can contribute to poor health [6,9,13–15]. Second, older prisoners are vulnerable to victimisation [14,16–18], with some evidence to suggest that older prisoners are bullied by younger prisoners [14,17]. Also there can be unintentional neglect by prison staff due to insufficient training and knowledge of aged care needs [6,19]. Third, older prisoners receive poorer health education and access to medical care compared with people in the general community [9,19]. Additionally, healthcare costs in this population are exacerbated by a reliance on specialised health services [8,17,19-23]. High levels of physical and cognitive debilitation experienced by older

prisoners (e.g. chronic illness, dementia, acquired brain injury and intellectual disability) impact both health-care costs and effectiveness of aged care services in prison settings [24–29]. Reliance on specialised services places pressure on the current budgets of correctional services [9]. Fourth, the mental health problems of older prisoners are often overlooked [11], with the older prison population being at greater risk of suicide [30] and drug overdose [31] compared with the general population. Fifth, older prisoners are prone to experiencing loneliness and isolation due to lack of stimulation and limited access to educational and vocational programs [6,14,19]. Lastly, they tend to have poor access to medical and social support when released back into the community [32,33].

## Aged care interventions for older prisoners

Prison hospice services are provided in countries such as the United States in an attempt to meet the needs of older prisoners [34]. Nursing home prisons in the United States [35–37] and Germany [38] provide specialised aged care services to prisoners. There are also specialised aged care units in mainstream prisons in the UK [6] and Australia [19] which provide suitable facilities for older prisoners. Specialist aged care staff have also been hired to respond to the specific needs of older prisoners [6,8,17–20,39,40].

Other non-health-related interventions and policies have resulted in changes to the physical environment of the prison facility, including the instalment of safety aids, mobility support, visual and hearing aids and hygiene management facilities [6,17,19]. Individual- or group-delivered programs have focused on improving physical activity, psychosocial support and postrelease support for older prisoners [41,42]. Programs include advocacy training for prisoners to express their needs [42].

#### Previous literature reviews

Prior review papers have examined the literature on a range of aged care issues in prisons, such as the impact of prison culture [43], health status [44,45], mental health problems [46,47] and access to health services [48]. However, to our knowledge there have not been any systematic reviews on the efficacy of aged care interventions in prisons. The objective of this study was to systematically identify and evaluate quantitative and qualitative studies of aged care interventions aimed at improving health and social outcomes for older prisoners. The review findings are intended to inform future planning and provide best practice guidelines for aged care services in correctional settings.

## Methods

## Identification and inclusion of records

A systematic review was conducted using preferred reporting items for systematic reviews and meta-analyses

guidelines. A search was undertaken using the search terms 'Prison\* OR Correction\* OR Jail AND Old\* OR Elder\* OR Age\* AND Aged care OR Intervention' across multiple databases. The titles and abstracts of 1186 records identified during the search process were screened to determine their eligibility for inclusion in the review. Records that were irrelevant to the review topic were excluded (n=26), as were duplicate records (n=760), book reviews (n=6) and articles outside the inclusion criteria date range of 2006–2016 (n=1). A second round of the titles and abstracts of 393 records were screened to determine eligibility, of which 46 papers were examined for inclusion. Seven articles were identified as meeting criteria for analysis in the review.

Inclusion criteria were: (i) that the study examined an *aged care intervention* in a prison or correctional facility targeted at: physical environment, medical/pharmaceutical, health services/aids, psychosocial/spiritual or education/ training opportunities; (ii) that the study targeted 'older prisoners', where 'older' was defined as 50+ years for the general inmate population and 45+ years for indigenous populations; (iii) that the study be either qualitative, case study-based or quantitative; and (iv) that the study have been reported in the preceding 10 years (i.e. 2006–2016).

Studies were excluded from consideration if they did not report the outcomes of an aged care intervention in a prison or correctional setting, were not targeted at the older prisoner population, did not fall within the prescribed date range or were not in the English language (or have a readily available English language translation). No restrictions were placed on type of intervention or on method of delivery.

#### Data extraction

Literature that met the inclusion criteria was extracted for relevant information, including the following: (i) Background information; (ii) demographic information; (iii) methodology; and (iv) results. The quantitative studies were subjected to rigorous assessment of bias using the Cochrane Collaboration's assessment of risk of bias tool [49]. Risk of bias in each category was assessed as low risk, high risk or unclear risk.

Qualitative literature was assessed using quality criteria proposed by Dixon-Woods et al. [50]. Quality was assessed based on five criteria, including: (i) clarity of the aims and objectives of the research; (ii) clarity, specificity and appropriateness of the research design; (iii) clear account of the research process; (iv) amount of data reported to support the interpretations and conclusions of research; and (v) appropriate and adequate use of a method for the analysis of research results. Quality assessment in each category was defined as low, high or unclear quality.

Quantitative data were synthesised by measuring the effects of various interventions on major health outcomes (i.e. using Cohen's *d*). Qualitative data were synthesised using

interpretative phenomenological analysis (IPA) [51], in which the analysis generated themes from the literature with the intention of informing future best practice.

#### Results

Seven papers were identified for final analysis, two quantitative studies and five qualitative studies.

#### **Quantitative studies**

#### Study characteristics

Table 1 presents the characteristics of each of the studies, as well as outcomes for psychological distress, depression, anxiety, somatisation, health status, mobility, physical functioning, adjustment to prison life and overall life satisfaction. One study employed a randomised controlled trial (RCT) design with a waitlist control group [52], and the other employed a quasi-experimental study design with no control group [48]. The RCT study was conducted in Australia in a maximum-security facility [52], and the quasi-experimental study was conducted in a medium-security prison facility in the United States [48]. A total of 121 participants were recruited across both studies. The mean age of participants across the studies ranged from 48.2 to 67.7 years, with only male participants included. The RCT study recruited participants through advertisement in the correctional health clinic and word of mouth via nurses and prison staff [52]. It was unclear how participants from Kopera-Frye et al. [48] were recruited, as the intervention was already in place for all older prisoners before the study was conducted. The target subgroups for each intervention included older prisoners with chronic illness [52] and older veteran prisoners [48].

## Intervention characteristics

A range of health and well-being interventions for older prisoners were identified: a structured education-based fitness program for older prisoners [52], and a structured psychosocial, spiritual and physical health program [48]. Nurses and 'inmate peer leaders' led the intervention for the RCT study [52], while researchers at the nearby university and prison staff delivered the intervention in the quasi-experimental study [48].

#### Key findings

Overall, the two quantitative studies reported no significant results of the outcome measures: psychological distress, depression, anxiety, somatisation, health status, mobility, physical functioning, adjustment to prison life and overall life satisfaction, when compared between groups. Specifically, the RCT study with a fitness program reported no significant difference in reducing psychological distress relative to the waitlist control group after 12 weeks (d = 0.93 at post-test) [52]. The quasi-experimental study reported no significant differences in any outcome measures between veteran older prisoners compared with non-veteran older prisoners [48]. Variables included depression, anxiety and somatisation

(d = 0.00-0.28 at post-test), health status, mobility and level of physical functioning (d = 0.25 at post-test), adjustment to prison life (d = -0.14 at post-test) and overall life satisfaction (d = 0.20 at post-test) [48]. Neither study included follow-up.

#### Quality assessment of quantitative studies

Table 2 presents the quality ratings for both quantitative studies. The RCT study was assessed as 'low risk' of bias according to generation of the allocation sequence, concealment of allocation sequence, the selective reporting of outcome measures and other sources of bias [52]. The quasi-experimental study was deemed as having a 'low risk' of bias according to the selective reporting of outcome measures [48]. Neither study received a 'low risk' rating across all five criteria.

#### **Qualitative studies**

The five qualitative studies looked at the development and evaluation of health and well-being interventions/assessments or training programs in correctional settings [53–57]. The IPA revealed 12 themes mapped across five categories (Table 3).

#### Key findings

Category 1: Addressing older prisoners' needs

Theme 1.1: Health and well-being

A range of prisoner needs were identified across studies, including physical health, mental health, social care and spiritual needs [54,57]. Walsh et al. [53] focused on social needs through an action-learning group, while the program developed by Meeks et al. [55] aimed to increase activity levels through the use of leisure activities. The mental well-being of older prisoners was addressed in a training program developed by Cianciolo and Zupan [57]. Furthermore, behavioural treatment to increase pleasant events through leisure activities and art therapy activities was used in some studies [55,56]. These programs focused on promoting emotional expression to enhance well-being.

Results of the analysis suggested that programs and interventions are needed to address the mental and physiological needs that are unique to older prisoners [53–55,57]. Furthermore, programs are needed to address the disparities in specific health problems and access to health care between older female and male prisoners [56,57].

#### Theme 1.2: Loneliness and isolation

Loneliness and isolation are well-being issues that need to be addressed when providing social care for older prisoners. One attempt to address loneliness was the assessment of 'social care' needs with prison staff [53] and the development of an intervention that lead to better engagement of prison staff with health providers [54,55]. Furthermore, there is evidence to suggest the benefit of shared group activities to counter isolation in older prisoners [54,56].

	id hey illidings of illor						
Study, country,	Participants (no. groups)	Age (M, SD),	Intervention characteristics	acteristics		Follow-up	Outcomes
prison facility (security level)	(no. completer analysis), subgroup and recruitment	Sex (%)	Description	Delivery format	Program provider		(mervention vs comparison)
Study design Randomised controlled trial Cashin et al. [52] Australla	Groups: $n = 20$ , INT = 10, CON = 10 Analysis: $n = 13$ , INT = 5, CON = 8	INT: M = 53.9 SD = NR Male = 100% CON: M = 48.2 SD = NR Male = 100%	INT: A 12-week structured exercise program. Peer inmates studied a Certificate in Fitness Training. It involves regimes for cardiorespiratory endurance, and strength	Individual + group	Nurse, inmate peer leader	<u>8</u>	12 weeks post-test: No significant difference in K10
Lithgow correctional centre (Maximum security facility)	Subgroup: Individuals with a chronic illness Recruitment: Advertisement in the correctional health clinic, and word of mouth by nurses and prison staff		and flexible exercise training. Two sessions per week based on an individualised fitness plan were carried out followed by mixed training session CON: Waitlist				K10: INT versus CON ( $d=0.93$ )
Quasi-exnerimental study							
Kopera-Frye et al. [48] United States Northern Nevada Correctional Centre (Medium security facility)	Groups: n = 111, G1 = 53–55, G2 = 50–56 Analysis: No baseline conducted Subgroup: Targeting veterans that are incarcerated in US prisons	G1 and G2: $M = 67.7$ SD = 6.15 Male = 100%	INT: Program consisted of recreational and physical therapeutic activities, groups and individual therapy with self-help material, and spiritual health with the prison chaplain and volunteers. Specific activities included dog therapy once a month, craft activities, wheelchalf softball and basketball games, a	Individual + group	Researchers, and prison staff	9	Post-test: No significant difference in BSI-18, ADLS, PAS or LSI
	Recruitment: Unclear how participants were recruited however it states that		walking program, inmate-based theatre production, and group activities G1: A structured living program as				BSI-Depression: G1 versus G2 $(d=0.00)$
	voluntary participation was communicated prior to the project		described in in with older <i>vertari</i> phisories of 22. A structured living program as described in INT with older <i>non-veteran</i> prisoners				BSI-Anxiety: G1 versus G2 ( $d = 0.16$ ) BSI-Somatic: G1 versus G2 ( $d = 0.28$ ) ADLS: G1 versus G2 ( $d = 0.25$ ) PAS: G1 versus G2 ( $d = -0.14$ ) LSI: G1 versus G2 ( $d = 0.20$ )

ADLS, Activities of Daily Living Scale; BSI-18, Brief Symptom Inventory-18; CON, control group; G1, group 7; INT, intervention; K10, Kessler 10; LSI, Life Satisfaction Inventory; M, mean; PAS, Prison Adjustment Scale; SD, standard deviation.

Table 2: Quality of included quantitative studies

Studies	Allocation generation	Allocation concealment	Baseline measures	Baseline characteristics	Incomplete data addressed	Knowledge of allocation	Contamination protected	No selective outcome reporting	Free of other risks of bias
Cashin et al. [52] Kopera-Frye et al. [48]	?	?	×	? X	X ?	?	X ?	1	<b>1</b>

Low risk; ?, unclear risk; X, high risk.

Table 3: Main categories and themes from interpretative phenomenological analysis of included qualitative studies

1: Addressing older prisoners' needs	2: Barriers to participation for older prisoners	Facilitating engagement with older prisoners	4: Effective program delivery
1.1: Health and well-being	2.1: Prison staff–older prisoner relationships	3.1: Older prisoner agency	4.1: Personnel involved in programs
<ul><li>1.2: Loneliness and isolation</li><li>1.3: Anxiety and avoidance</li></ul>	2.2: Prison physical environment 2.3: Budget restrictions	3.2: Creativity in older prisoners 3.3: Peer support among older prisoners	4.2: Supporting evidence for programs 4.3: Legitimacy of program

## Theme 1.3: Anxiety and avoidance

Research found that prisoners tended to be anxious about parole hearings and ongoing life stressors, such as family-related problems [55]. There was also evidence of prisoners and prison staff finding it difficult to discuss issues relating to the development of aged care policies [53,54]. Similarly, in planning the True Grit program, participants 'shied away' from medical facilities in prisons due to an association of such facilities with death [54].

#### Category 2: Barriers to participation for older prisoners

## Theme 2.1: Prison staff-older prisoner relationships

A number of studies focused on the relationships among health-care staff, prison staff and older prisoners. Cianciolo and Zupan [57] reported non-medical prison staff was mostly concerned with the safety and security of the prison facility, and less focused on the needs of older prisoners. Walsh et al. [53] discovered the prison environment to be an issue in terms of generating honest communication between prison staff and prisoners. The older prisoners in the action-learning group were found to lack an understanding of group discussions because of ineffective communication between staff and prisoners. As other studies have found, prison staff sometimes minimised the special needs of older prisoners, making it more difficult to institute aged care interventions [16,58–60].

## Theme 2.2: Prison physical environment

The analysis suggested that the physical environment of prisons is an important consideration in the care of older prisoners. Current limitations in the physical spaces of prisons were also shown to limit health-care professionals, staff and older prisoners from developing meaningful relationships with each other. One study found that a

therapist had experienced difficulties in finding private spaces within the prison environment to conduct therapy [55]. The prison environment was also limited in terms of providing suitable spaces to run creative activities for older prisoners [48,50,52,53]. During the planning process of the True Grit program, planning sessions had to be moved in order to find appropriate spaces to conduct the meetings [54]. As part of the training program conducted by Cianciolo and Zupan [57], the authors suggested various ways to change the prison environment to prevent falls in older prisoners.

#### Theme 2.3: Budget restrictions

A lack of resources in prisons can impact on the effectiveness of programs for older prisoners [53,55]. Such restrictions include limited access to health-care professionals and fewer activities for prisoners. However, there was some evidence that donations, volunteers and the use of minimal materials were sufficient to provide an effective program. Harrison [54] found donations from prison staff and the local community reduced costs. The True Grit program utilised volunteers from within the prison, local businesses and community organisations, thus reducing the need for state funding. Similarly, Hongo et al. [56] suggested that art therapy programs can be a 'simple' and cost-effective way to deliver therapy for older female prisoners, using minimal materials such as crayons and paper.

## Category 3: Facilitating engagement with older prisoners

## Theme 3.1: Older prisoner agency

Giving a sense of control and agency to older prisoners can reduce frustration, increase engagement with the program and improve positive feelings [53,55]. Strategies to counter the power imbalances between prison staff and older

prisoners were successful in encouraging older inmates to express concerns and gain agency [53]. Hongo et al. [56] found older female prisoners lost a sense of identity when they were allocated an identification number. However, art therapy assisted these female prisoners in regaining a sense of control.

## Theme 3.2: Creativity in older prisoners

Evidence suggested highly creative activities for older prisoners promoted pleasure and positive affect [54,55]. For example, an art therapy program provided a way for older female inmates to cope with trauma and facilitated personal growth during long incarceration [56]. Promoting creativity in older prisoners may assist in rehabilitation efforts and encourage engagement in aged care interventions.

#### Theme 3.3: Peer support among older prisoners

Increasing the social interaction of older prisoners was important. Evidence suggested that programs that increased interactions between prisoners allowed older prisoners to share emotions, experiences and stories of past trauma [54,56].

#### Category 4: Effective program delivery

#### Theme 4.1: Personnel involved in programs

Some involvement of specialist health-care staff and prison staff in the development of assessments and interventions for older prisoners was evident. Meeks et al. [55] included health-care staff in developing and delivering an intervention. In some studies, prison staff and older prisoners were included in the development process [53,54]. A staff psychologist was involved in assessment in the True Grit program [54], while social workers and family therapists delivered art therapy to older female prisoners [56].

#### Theme 4.2: Supporting evidence for programs

Interventions and assessments for older prisoners differed in drawing on existing evidence. Some of the studies used evidence to support the intervention [53,55]. An interdisciplinary team of experts from social work and justice studies developed a training program for prison staff on health care for older prisoners [57].

Theme 4.3: Legitimacy of programs

Some of the evidence suggests the need to justify an intervention to gain legitimacy among older prisoners and prison staff. While legitimacy can be gained using authoritative sources [55–57], some studies found that including prisoners and staff in the development of the program was more relevant in terms of gaining acceptance from both groups [54,55].

#### Quality assessment of qualitative studies

Table 4 presents the quality assessment of qualitative studies included in the review. Most of the studies were of high quality in study objectives, research design and research process. However, most of the studies were of low quality in displaying enough data to support interpretation and conclusion, and in adequately deploying methods for analysis of findings.

#### Discussion

The systematic review identified two quantitative studies of the efficacy of aged care interventions in prisons and five qualitative studies of aged care interventions for older prisoners. The quantitative studies that examined health and well-being interventions for older prisoners demonstrated no significant reduction in stress, depression, anxiety or somatisation compared with control or comparison groups. Both quantitative studies examined aged care interventions that included physical activities for older prisoners; however, the study conducted by Kopera-Frye et al. [60] also included psychological and spiritual activities. This study did not find any improvement with older veteran prisoners in daily living, prison adjustment or life satisfaction compared with older non-veteran prisoners. Overall, the current quantitative results suggest aged care interventions are not effective for older prisoners in prison settings. However, given the small number of quantitative studies identified in this review, further RCT studies are needed to generate conclusive findings on physical health, well-being and educational outcomes for older inmates following aged care interventions.

Table 4: Quality of included qualitative studies

Studies	Are the aims and objectives of the research clearly stated?	Is the research design clearly specified and appropriate for the aims and objectives of the research?	Do the researchers provide a clear account of the process by which their findings can be reproduced?	Do the researchers display enough data to support their interpretations and conclusions?	Is the method of analysis appropriate and adequately explicated?
Cianciolo and	~	<b>/</b>	<b>V</b>	<b>V</b>	?
Zupan [57] Harrison [54]	Χ	Χ		Χ	Χ
Hongo et al. [56]			1	?	
Meeks et al. [55]					Χ
Walsh et al. [53]			<b>~</b>		?

<sup>,</sup> High quality; ?, unclear quality; X, low quality.

Conversely, review findings from the five qualitative studies suggested aged care interventions can have a positive influence on health and social outcomes for older prisoners, as well as on the development of aged care policies and programs. Results suggested that future programs and assessments need to specifically address the physical and mental health needs of the older prison population. This argument is consistent with health-related research on older prisoners [61]. However, other factors such as social, spiritual and cultural needs are important for addressing poor outcomes for older prisoners, especially within special populations, such as among females and cultural minorities [62–64].

The review of qualitative studies identified barriers for older prisoners and prison staff in implementing aged care programs within prisons. These findings suggested that aged care programs need to consider some of the cultural and physical aspects of the prison environment, such as the relationship between staff and prisoners, the restrictions of the physical environment and budget restrictions in operating aged care programs in prisons. These findings are consistent with other reviews on the impacts of the prison culture and environment on older prisoners [43,65].

Interestingly, the qualitative findings suggested acceptance of aged care interventions can be determined by the way the program is delivered to older prisoners and prison staff. Whether an aged care program is delivered by prison staff or by other prisoners, the involvement of both groups can improve overall engagement. Aged care interventions with a strong evidence base in the aged care field increase acceptance by prison staff.

There is some evidence to suggest that aged care interventions that cultivate the creativity of older prisoners and provide these prisoners more control over decisions about their health reduce frustration, increase engagement with an intervention and improve positive feelings and thoughts. Providing physical space or vocational activities that stimulate creativity and social interaction impacts the efficacy of a program. Further empirical investigation on creative expression in aged care interventions in prisons is warranted.

A few limitations exist in the current review. First, the quantitative studies produced low quality scores. The True Grit program in the study did not employ a randomised allocation of participants. Second, small sample sizes were identified for the quantitative studies. Third, the interventions and assessments that were examined in qualitative studies differed in content and study design; therefore, this led to difficulties in synthesising solid and cohesive themes.

#### Conclusion

The current systematic review found no significant effects of aged care interventions in prisons. However, qualitative findings showed aged care interventions to have a beneficial impact on older prisoners when the intervention targeted the specific health and well-being needs of this population, while simultaneously addressing barriers to participation and facilitating engagement among older prisoners.

Recommendations arising from this review include targeting aged care interventions in prisons to the unique physical health, mental health, social care and spiritual needs of older prisoners. For example, chronic disease, geriatric symptoms, intellectual capacity and mental health issues will need to be considered in preparing the content and delivery of aged care interventions. The review also showed that prison-based interventions should specifically aim to address the isolation and anxiety of older prisoners to ensure engagement with a program.

The review findings also centre recommendations on addressing certain barriers to aged care in the prison environment. Importantly, relationships between older prisoners and prison staff need to be cultivated to establish trust and mutual goal setting. Furthermore, aged care interventions should take into account and work within the limitations of the prison environment and prison budget restrictions to ensure sustainability of a program.

Review findings also indicated that interventions facilitating creative expression in older prisoners, along with personal agency and an opportunity to connect with peers, provided prisoners with a sense of meaningful control over their lives and environment. Aged care interventions that offer these opportunities are more likely to garner engagement and facilitate rehabilitation for older prisoners.

Finally, review recommendations for efficacious program delivery centre on intervention legitimacy for engaging both older prisoners and prison staff. Legitimacy will necessarily involve evidence-based interventions and input from health specialists within the aged care field. However, perhaps of equal importance in a prison setting is involving older prisoners and prison staff in the program development process. The review found that involving stakeholders in the development process provided justification for an intervention and bestowed legitimacy on it, while also encouraging engagement. Further research is needed to better understand how aged care interventions can be developed, delivered and effectively evaluated in the prison setting.

## Acknowledgements

This project was funded by Aged Care Plus of The Salvation Army. The chair of Professor Stevens is funded by the JO and JN Wicking Trust. The authors declare no conflicts of interest.

#### References

- Australian Bureau of Statistics. Prisoners in Australia. Canberra: The Bureau: 2015.
- 2 United States Department of Justice. The Impact of an Aging Inmate Population on the Federal Bureau of Prisons. Washington, DC: Office of the Inspector General, United States Department of Justice; 2015.
- 3 Sapers PH. Aging and Elderly Offenders in Federal Corrections. Montreal: Association Des Services De Réhabilitation Sociale Du Québec; 2014. [Cited 30 September 2016.] Available from URL: http://www.asrsq.ca/fr/salle/porte-ouverte/1402/salle\_por\_140202.php
- 4 House of Commons Justice Committee. Older Prisoners: Fifth Report of Session 2013–14. London: The Committee; 2013.
- 5 New Zealand Department of Corrections. Trends in Offender Population 2014/15. Wellington: The Department; 2015.
- 6 Her Majesty's Inspectorate of Prisons. 'No Problems Old and Quiet': Older Prisoners in England and Wales: A Thematic Review. London: Department of Health; 2004.
- 7 Stojkovic S. Elderly prisoners: A growing and forgotten group within correctional systems vulnerable to elder abuse. *Journal of Elder Abuse and Neglect* 2007; 19: 97–117.
- 8 Grant A. Trends and Issues in Crime and Criminal Justice: No. 115: Elderly Inmates: Issues for Australia. Canberra: Australian Institute of Criminology; 1999.
- 9 Turner S, Trotter C. Growing old in Prison? A Review of National and International Research on Ageing Offenders. Melbourne: Corrections Victoria; 2010.
- 10 Allen R. Predicting positive and negative affect among older male prison inmates. The Gerontologist 2008; 48: 677.
- McCandless LC, Stewart LC, Rempel ES, Venners SA, Somers JM. Criminal justice system contact and mortality among offenders with mental illness in British Columbia: An assessment of mediation. *Journal of Epidemiology and Community Health* 2015; 69: 460–466.
- 12 Agozino B, Volpe SL. Health inequalities in correctional institutions: Implications for health inequalities in the community. *Journal of Correctional Health Care* 2009; 15: 251–267.
- 13 Birmingham K. The swelling numbers of older prisoners in Japan's prisons. Nursing Older People 2008; 20: 5.
- 14 Dawes J. Ageing prisoners: Issues for social work. Australian Social Work 2009; 62: 258–271.
- Williams C. PRT: Government must clarify responsibility for prison social care. Community Care 2008; 7 Jul. [Cited 30 September 2016.] Available from URL: http://www.communitycare.co.uk/2008/07/07/prt-government-must-clarify-responsibility-for-prison-social-care/
- Baidawi S, Browning C, Collier P, O'Connor D, Trotter C, Turner S. Older prisoners: A challenge for Australian corrections. *Trends and Issues in Crime and Criminal Justice* 2011; 426: 1–8.
- 17 Prison Reform Trust. *Doing Time: The Experiences and Needs of Older People in Prison.* London: The Trust; 2008.
- 18 Kerbs JJ, Jolley JM. Inmate-on-inmate victimization among older male prisoners. Crime and Delinquency 2007; 53: 187–218.
- 19 New South Wales Department of Justice. Old and Inside: Managing Aged Offenders in Custody. Sydney: The Department; 2015.
- 20 Crawley E. Release and resettlement: The perspectives of older prisoners. Criminal Justice Matters 2004; 56: 32–33.
- 21 Her Majesty's Inspectorate of Prisons. Older Prisoners in England and Wales: A Follow-up to the 2004 Thematic Review. London: Department of Health; 2008.
- 22 Maschi T, Marmo S, Han J. Palliative and end-of-life care in prisons: A content analysis of the literature. *International Journal of Prisoner Health* 2014; 10: 172–197.
- Williams BA, Lindquist K, Hill T et al. Caregiving behind bars: Correctional officer reports of disability in geriatric prisoners: Ethnogeriatrics and special populations. *Journal of the American Geriatrics Society* 2009: 57: 1286–1292.
- 24 Baldry E, Dowse L, Clarence M. People with Intellectual and Other Cognitive Disability in the Criminal Justice System: Report for NSW Family and Community Services, Ageing, Disability and Home Care. Sydney: Department of Family and Community Services NSW, Ageing, Disability and Home Care; 2012.
- McCausland R, Baldry E, Johnson S, Cohen A. People with Mental Health Disorders and Cognitive Impairment in the Criminal Justice System: Cost-Benefit Analysis of Early Support and Diversion. Sydney: Australian Human Rights Commission; 2013.

- 26 McAlpine J, Hilgeman M, Allen R. Cognitive incapacity in the prison system: Attitudes toward sentence completion and compassionate release. *Gerontologist* 2008; 48: 65.
- 27 Bai JR, Befus M, Mukherjee DV, Lowy FD, Larson EL. Prevalence and predictors of chronic health conditions of inmates newly admitted to maximum security prisons. *Journal of Correctional Health Care* 2015; 21: 255–264.
- 28 Binswanger IA, Krueger PM, Steiner JF. Prevalence of chronic medical conditions among jail and prison inmates in the USA compared with the general population. *Journal of Epidemiology and Community Health* 2009; 63: 912–919.
- 29 Harzke AJ, Baillargeon JG, Pruitt SL, Pulvino JS, Paar DP, Kelley MF. Prevalence of chronic medical conditions among inmates in the Texas prison system. *Journal of Urban Health* 2010; 87: 486–503.
- 30 Pratt D, Appleby L, Piper M, Webb R, Shaw J. Suicide in recently released prisoners: A case-control study. *Psychological Medicine* 2010; 40: 827–835.
- Farrell M, Marsden J. Acute risk of drug-related death among newly released prisoners in England and Wales. *Addiction* 2008; 103: 251–255.
- 32 Dyer W, Biddle P. Prison health discharge planning Evidence of an integrated care pathway or the end of the road? Social Policy and Society 2013; 12: 521–532.
- 33 Fazel S, Baillargeon J. The health of prisoners. *The Lancet* 2011; 377: 956–965.
- 34 Gaseau M. Caring for the elderly behind bars. The Corrections Connection News Centre 2001; 19 Nov.
- 35 Green F. Growing old behind bars. Tribune Business News 2009; 4 Jan.
- 36 Gaseau M. Managing elderly inmates. *The Corrections Connection News Centre* 2001: 19 Feb.
- 37 Pennsylvania Department of Corrections. SCI Laurel Highlands. Somerset, PA: The Department; 2009. [Cited 23 September 2016.] Available from URL: http://www.cor.pa.gov/Facilities/StatePrisons/Pages/Laurel-Highlands.aspx#.V-iVtPB97IU
- Kucharz C. Germany: Prison specializes in older prisoners. Seniors World Chronicle 2008; 20 Mar.
- 39 Kerbs JJ, Jolley JM. A commentary on age segregation for older prisoners: Philosophical and pragmatic considerations for correctional systems. *Criminal Justice Review* 2009; 34: 119–139.
- 40 Ove T. Prison population growing older, sicklier, costlier. Pittsburgh Post-Gazette 2005; 6 Mar.
- 41 Evans C. Age concern Leicestershire and Rutland-HMP Gartree older prisoner's advocacy and support project. *Prison Service Journal* 2005; 160: 9–10
- 42 Her Majesty's Prison Service. Changing lives of disabled and elderly. Prison Service News 2009; Feb/Mar. [Cited 28 September 2016.] Available from URL: http://webarchive.nationalarchives.gov.uk/20100 612111704/http://staging.hmprisonservice.gov.uk/prisoninformation/ prisonservicemagazine/index.asp?id=9609,18,3,18,0,0
- 43 Cervello MR. The Experience of Older Incarcerated Men [M.S.I.G.]. Ann Arbor, MI: Bowling Green State University; 2015.
- 44 Kouyoumdjian FG, Schuler A, Hwang SW, Matheson FI. Research on the health of people who experience detention or incarceration in Canada: A scoping review. *BMC Public Health* 2015; 15: 419.
- 45 Loeb SJ, Steffensmeier D. Older male prisoners: Health status, self-efficacy beliefs, and health-promoting behaviors. *Journal of Correctional Health Care* 2006; 12: 269–278.
- 46 Maschi T, Dennis KS, Gibson S, MacMillan T, Sternberg S, Hom M. Trauma and stress among older adults in the criminal justice system: A review of the literature with implications for social work. *Journal of Gerontological Social Work* 2011; 54: 390–424.
- 47 Maschi T, Suftin SL, O'Connell B. Aging, mental health, and the criminal justice system: A content analysis of the literature. *Journal* of Forensic Social Work 2012; 2: 162–185.
- 48 Kopera-Frye K, Harrison MT, İribarne J et al. Veterans aging in place behind bars: A structured living program that works. *Psychological Services* 2013; 10: 79–86.
- 49 Higgins JPT, Altman DG, Gøtzsche PC et al. The Cochrane Collaboration's tool for assessing risk of bias in randomised trials. *British Medical Journal*. 2011; 343: d5928.
- 50 Dixon-Woods M, Cavers D, Agarwal S et al. Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. BMC Medical Research Methodology 2006; 6: 35.

- 51 Eatough V, Smith JA. Interpretative phenomenological analysis. In: Willig C, Stainton Rogers W, eds. *The SAGE Handbook of Qualitative Research in Psychology*. London: Sage Publications Ltd, 2017: 193–211.
- 52 Cashin A, Potter E, Stevens W, Davidson K, Muldoon D. Moving and thinking behind bars: The effectiveness of an exercise and health education program on psychological distress of incarcerated people with, or at risk of developing, a chronic illness. *Australian Journal of Primary Health* 2008; 14: 9–16.
- 53 Walsh E, Forsyth K, Senior J, O'Hara K, Shaw J. Undertaking action research in prison: Developing the older prisoner health and social care assessment and plan. *Action Research* 2014; 12: 136–150.
- 54 Harrison MT. True Grit: An innovative program for elderly inmates. Corrections Today 2006; 68: 46–49.
- 55 Meeks S, Sublett R, Kostiwa I, Rodgers JR, Haddix D. Treating depression in the prison nursing home: Demonstrating research-topractice translation. *Clinical Case Studies* 2008; 7: 555–574.
- 56 Hongo A, Katz A, Valenti K. Art: Trauma to therapy for aging female prisoners. *Traumatology* 2015; 21: 201–207.
- 57 Cianciolo PK, Zupan LL. Developing a training program on issues in aging for correctional workers. *Gerontology and Geriatrics Education* 2004; 24: 23–35.
- 58 Trotter C, Baidawi S. Older prisoners: Challenges for inmates and prison management. Australian and New Zealand Journal of Criminology 2015; 48: 200–218.

- 59 Baidawi S. Older prisoners: Psychological distress and associations with mental health history, cognitive functioning, socio-demographic, and criminal justice factors. *International Psychogeriatrics* 2016; 28: 385–395.
- 60 Kopera-Frye K, McMullen T, Harrison MT, Dodson BD, Tiano N. Nevada's True Grit program: A healthy aging approach for elderly prison inmates. *Gerontologist* 2009; 49: 434–435.
- 61 Loeb SJ, AbuDagga A. Health-related research on older inmates: An integrative review. *Research in Nursing and Health* 2006; 29: 556–565.
- 62 Kariminia A, Butler T, Levy M. Aboriginal and non-Aboriginal health differentials in Australian prisoners. *Australian and New Zealand Journal of Public Health* 2007; 31: 366–371.
- 63 Butler T, Allnutt S, Kariminia A, Cain D. Mental health status of Aboriginal and non-Aboriginal Australian prisoners. *Australian and New Zealand Journal of Psychiatry* 2007; 41: 429–435.
- 64 Maschi T, Morgen K, Westcott K, Viola D, Koskinen L. Aging, incarceration, and employment prospects: Recommendations for practice and policy reform. *Journal of Applied Rehabilitation Counseling* 2014; 45: 44–55.
- 65 Potter E, Cashin A, Chenoweth L, Yun-Hee J. The healthcare of older inmates in the correctional setting. *International Journal of Prisoner Health* 2007; 3: 204–213.