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Co-designing and evaluating a brief health promotion leaflet for young men in prison

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Abstract

Prisons are an important setting to reach an underserved group and reduce health inequalities. This study describes a co-design approach to developing a health promotion leaflet for young men in prison with the aim to evaluate the effects of the leaflet on behaviours in the wider prison population. We successfully co-designed a leaflet with a group of young men in a prison through a series of workshops. The leaflet was evaluated through a cluster randomised controlled trial, where it was distributed to young men in half the wings in the prison (with the other half as a control wings) and followed-up a week later with a short evaluation survey across all the wings. Although the leaflet was rated as highly acceptable with some significant shifts in attitudes, there were no significant differences in behaviours between the leaflet and control groups. Free text responses from participants highlighted the material and social constraints in adopting healthy behaviours, including the challenges of being locked up for long periods, limited opportunities to take-up healthy activities and choices, and restrictions to personal finances and support. The study highlights the value in the co-design approach but wider structural and policy support is required to create health promoting environments.

Introduction

Health Psychologists work in a range of multidisciplinary teams, settings and population groups, with value to offer in applying research and practitioner skills to improving health and health behaviours. The ongoing Covid-19 pandemic has firmly placed the population's health, and health psychology, at the forefront of the political

agenda, with a focus on reaching out to underserved groups and reducing health inequalities (Chief Medical Officer, 2020). Health Psychologists have much to offer this evolving landscape, and prisons are one such context which have been woefully neglected – yet offer huge dividends in terms of improving health outcomes, reducing inequalities, and supporting community cohesion (Revolving Doors Agency, 2017). This article shines a light on the potential for Health Psychologists to work in these typically 'unconventional' prison contexts and presents a study which formed part of a doctoral research project (supported by NHS England) and Health Psychologist practitioner training focused on promoting and strengthening knowledge, skills and behaviours for health in young adult men within a single English prison (see Mehay et al., (2020) for overview of wider project). This article outlines the case for considering prison health and the approach taken to develop and evaluate a health promotion leaflet.

Supporting prisoner health for population health and reducing inequalities

Whilst the primary aim of incarceration is not health improvement, prisons are an important setting to support population health and reducing inequalities. Prisoners largely come from marginalised and socially disadvantaged sections of society with increased rates of ill-health compared with the general population – much of this linked to social exclusion and compounded complex health and social needs (O'Moore & Sturup-Toft, 2019). Prisons provide an opportunity to access and support a vulnerable and underserved population, with the ambition that they will return back to their communities in better health than when they entered as part of wider rehabilitation efforts. The prison population is vast with around 80,000 people in prisons in England and Wales (Ministry of Justice, 2020) and young adult men aged 18 – 21 years old are a particularly vulnerable group with high levels of health needs (Williams, 2015) and vulnerabilities relating to histories of violence, bereavement relating to the deaths of relatives, abuse and neglect, and time spent in local authority care (Bradley, 2009; Harris, 2015; House of Commons Justice Committee, 2016). Many young men in prison have been excluded from some of the valuable life experiences and learning opportunities such as formal education, positive peer learning, and navigating health systems which are important to support transition into healthy adulthoods. The World Health Organisation's (WHO) Health in Prisons Project advocates for prisons as 'healthy settings' (much like schools,

hospitals and workplaces) which are ‘safe, secure, reforming and health promoting’. Their setting approach highlights the importance of a whole system approach which addresses the physical and social environments of the settings, with health promotion a feature of a healthy prison. Current policy in England and Wales also emphasises the importance of improving the health of the prison population with a focus on adopting healthy behaviours (NHS, 2019; NHS England, 2016).

The paradox of healthy living in prison

Prisons are clearly very different contexts compared with other settings. The paradox is that prisons are largely regarded as unhealthy places (de Viggiani, 2007) which is more likely to be a ‘health depleting experience’ (Burgess-Allen et al., 2006, p. 300) rather than health promoting. Prisoners’ health is influenced by a complexity of both the health status and behaviours they ‘import’ into prison as well as the compounding effect of the ‘deprivation’ factors on their health (de Viggiani, 2007). Structurally, prisoners face barriers to accessing and engaging with prison-based and community-based health services (Herbert et al., 2012), as well as limited exposure to a variety of healthy food, physical activity and fresh air, green and blue spaces (Jewkes et al., 2019). Psychologically, living in close proximity with others, places prisoners under considerable pressures relating to the loss of freedom and isolation from friends and family (de Viggiani, 2007). Prisons have complex social hierarchies based on power relations, where bullying and violence are common and have a negative impact on health and wellbeing (de Viggiani, 2003; HM Chief Inspector of Prisons, 2018; Jewkes, 2005). People in prison have limited access to build their knowledge, skills and confidence for the benefit of their health with limited opportunity to build their ‘health literacy’ in navigating health services, accessing social support, and utilising information to inform health-promoting behaviours (Crewe et al., 2020; Woodall et al., 2014). Initial findings from a cross-sectional survey conducted as part of this research, confirmed that large proportions of a young adult prison population experienced limitations in their health literacy, with 72% scoring within a limited range with particular challenges in skills for health promotion (Mehay et al., 2021). These limitations were significantly associated with characteristics of the prison structures and limitations, rather than the characteristics of the prisoners themselves suggesting that prisons are not providing the full opportunities for building health literacy and supporting behaviour change.

Social and material contexts of prisoner lives

Prisons seem far from a place for healthy living, and health improvements efforts need to focus on the behavioural, social and structural factors associated with health. Our initial survey demonstrated that although 72% scored within a limited range of health literacy, 28% had scored within an adequate range – with 5% of those scoring as 'excellent' (Mehay et al., 2021). There are examples of prisoners' findings positive meaning and gaining some sense of control and choice within the complex social environment, which can be important in maintaining and supporting their overall health (Woodall et al., 2014). In this sense, although the hardships of imprisonment are unavoidable, some prisoners can mitigate and maintain their health which relies heavily on how they respond, adapt and adjust to this prison context (Crewe, 2009; Harvey, 2012; Van Ginneken, 2015) and the ability to use the available resources and support in pursuit of a better future (Crewe, 2009; Mehay et al., 2019; Van Ginneken, 2015). Prison health promotion efforts which take into account the conditions, the real material situation and the structures of power enable us to fully utilise the public health opportunity (Woodall, 2016). Although there are some clear attempts to support health promotion interventions within the social contexts of prisoner lives, motivations, and needs (NICE, 2016), practice has largely neglected the importance of supporting people to maintain and promote health within these particular spaces. Health Psychologists can provide a wealth of expertise in developing interventions to support attitudes and behaviours for healthy living which are both context and population specific.

This article describes a study which sought to develop a brief health promotion intervention to support young men in prison, within the real material and social context of their lives in prison. Specifically, the study aims to:

(1) Describe the approach to developing a health promotion leaflet
(2) Examine the short-term effect on behaviours
(3) Examine the role of attitudes in predicting uptake in behaviours
(4) Explore the overall acceptability and use of the leaflet

Intervention development: a health promotion leaflet

Health Psychologists use their skills in a variety of ways including direct face-to-face and non-face-to-face interventions. Leaflets are widely used as part of health

promotion activities and are particularly common in prisons contexts as a cost-effective approach to reach a large target population whilst they are a 'captive audience'. Despite their ubiquitous use, independent inspections of prisons frequently reported that health literature is underdeveloped, underutilised and overly complex for much of the young adult prison population (Her Majesty's Inspectorate of Probation, 2016). We therefore chose to develop a health promotion leaflet for the benefits it brings in cost-efficiency and broad reach, whilst also providing value through applying an evidence-based approach and evaluation. This section briefly describes the development of the leaflet.

Social Cognition Theory and co-design

We developed a leaflet as informed by principles from Social Cognitive Theory (SCT) (Bandura, 1985). SCT has been hugely influential in health promotion given the emphasis on the individual's health beliefs and perceived confidence and control within the social environment. Central to SCT is self-efficacy, a person's confidence in one's ability to successfully perform a behaviour, where interventions based on SCT seek to increase self-efficacy though setting achievable goals, peer modelling, and use of rewards (Bandura, 1977). SCT seemed particularly relevant for health promotion efforts in prison since previous work highlighted the importance of prisoners' sense of control and choice in maintaining health within the complex social world. We were keen to develop a leaflet to support healthy behaviours through strengthening young men's attitudes where they felt confident and in control of their health by learning from the positive behaviours from other prisoners. In this sense, the behaviours were authentic and realistic to their real material and social contexts. To achieve this authenticity, we took a co-design approach through working with a group of young men in the prison to identify important healthy behaviours in the prison and co-design and develop the leaflet to ensure that it was specific to the material and social contexts of prisoner lives, motivations, and needs. As prisons are complex and hierarchical environments, we wanted to ensure a co-design process based on trust and reciprocity to allow honest and authentic voices to guide development. We chose to develop and run a short set of workshops with a group of young men to engage in critical discussions about health and build rapport and trust in the group, whilst also developing a leaflet for distribution in the prison.

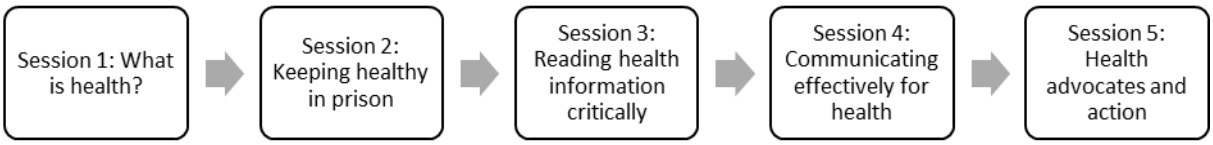
Workshop design and delivery

We developed a short course consisting of five weekly workshop sessions lasting two-hours each which was undertaken with a group of nine young men in a single prison. The five-session, weekly structure was established to account for the churn within prison estates where there is potentially limited time with prisoners before they might be released or transferred to other prisons. As such, we anticipated the workshops would be feasible and effective in reaching a stable cohort of prisoners with low attrition in the workshops. The prison is specifically designated for young people (aged 13 – 17 years old) and young adult men (aged 18 – 20 years old). A group of nine young men were identified as suitable participants to take part in the course as they were enrolled in a marketing and design course run by the prison education department. The first author approached the group of young men and explained the course and objective to design a leaflet to allow them the change to ask questions and consider both individually and collectively if they wanted to take part in the course. All the young men in the group agreed.

The course itself covered key topics related to health promotion including definitions of health, reading and understanding health information, communicating with health professionals and friends and family about health information. We drew on findings from a previous qualitative study which explored how young men adapt to respond to the challenges in managing their health and wellbeing and mitigating some of the negative health effects of imprisonment (see Mehay et al., (2019)). These findings formed the initial basis for discussions during the workshops, where young men's own experiential knowledge and personal reflections were encouraged. Over the workshops, young men applied their reflections and learnings to co-design a leaflet, which served as both an artefact of their own learning and a tangible output to disseminate within the wider prison (see

Figure 1 for individual session structure).

Figure 1: Session structure of the health literacy workshops



Progress in the workshop

Young men demonstrated that they were keen to work together as a group to collate and amass critical knowledge about living in prison which was critical in developing a leaflet for the benefit of others. The leaflet was an artefact of the discussions to both visually demonstrate their individual and group learning as well as create something they could reflect on and take pride in at the end of the course. The final leaflet (see **Error! Reference source not found.**) was developed to build health beliefs and perceived confidence and control for those who engage with the leaflet with key notable features, including; a range of behaviours which are appropriate to the social and material context of prison, supportive quotes 'for prisoners, by prisoners', avoidance of pathogenic language and preference to holistic health promotion (i.e. keeping well), and visually appealing cover and cognitive activity (i.e. word search) to aid engagement. The leaflet include 24 discrete health promoting behaviours, which included ways to keep your mind active for mental wellbeing, tips on choosing healthy food items and ideas for healthy recipes, and speaking to healthcare about smoking cessation support (which collectively fit into four categories of mental health and wellbeing, physical health, dietary choices, and maintaining relationships).

In the final workshop session, participants were also asked to reflect on their progress during the course where participants stated that they had gained increasing knowledge, skills, and confidence about their own health. One of the workshop participants described the whole progress through the course and developing the leaflet as "*proper storm*" (a colloquial term used by young men to describe something positive and exciting). Although there is a wealth of evidence demonstrating that prisons are violent places with high levels of bullying and victimisation between prisoners, the young men in our group were highly motivated to use their experience to help others. This is rarely presented in the literature (and media), particularly for young men in prison, who are often labelled and stigmatised solely as risky and violent men. Contrary to this, the young men were keen to progress onto further training as peer-health workers, representing their motivation and intentions to engage in broader collective action for health promotion (see Mehay and Meek (2016) which details developments towards establishing these peer-health worker roles at the prison).

Figure 2: Intervention leaflet

Introduction

This leaflet gives you some tips on how to stay healthy and well at [redacted] The tips came from interviewing over 100 young men at [redacted] who told a University researcher what helped with their general health.

This leaflet was then put together by the University researcher and a group of young men at [redacted]

What other prisoners say

Don't think about things that you can't change – occupy your time instead

Don't count the days – make the days count!

You will get used to things and it gets easier in here

Thinking too much gets you stressed – so best to keep busy so write letters, do work-outs, listen to music – whatever it takes

Think positive and set yourself goals – even though you're in prison you should set goals as it keeps you going

We are interested in what you think about this leaflet so please give feedback to healthcare staff.

[redacted]

Healthy canteen ideas

- Instead of crisps, chocolate and biscuits - try popcorn or Ryvita
- Mash up dates or bananas or use another spread on Ryvita
- Instead of noodles – try cous-cous add some hot sauce!)
- Don't skip breakfast – get some oats or shredded wheat (also good for snacks too)
- Try adding nuts, fruit and honey to porridge and cereal for more taste and protein
- Buy stamps and blank cards to keep connected
- Buy sketch pad, writing pad, pencil, coloured pencils to occupy your mind

Word Search

W B Y A D A E V I F
O S R R C I S U M T
R U L E M N T G C T
K O I L A R R E Y R
O C S L A K N A Y M
U S T I R N F V E S
T U E H O E I A L L
I O N C A T A A S H
U C E I A F O D U T
Q A R H Y G I E N E

AIR
ART
BREAKFAST
CHILL
CONNECT
COUSCOUS
FIVEADAY
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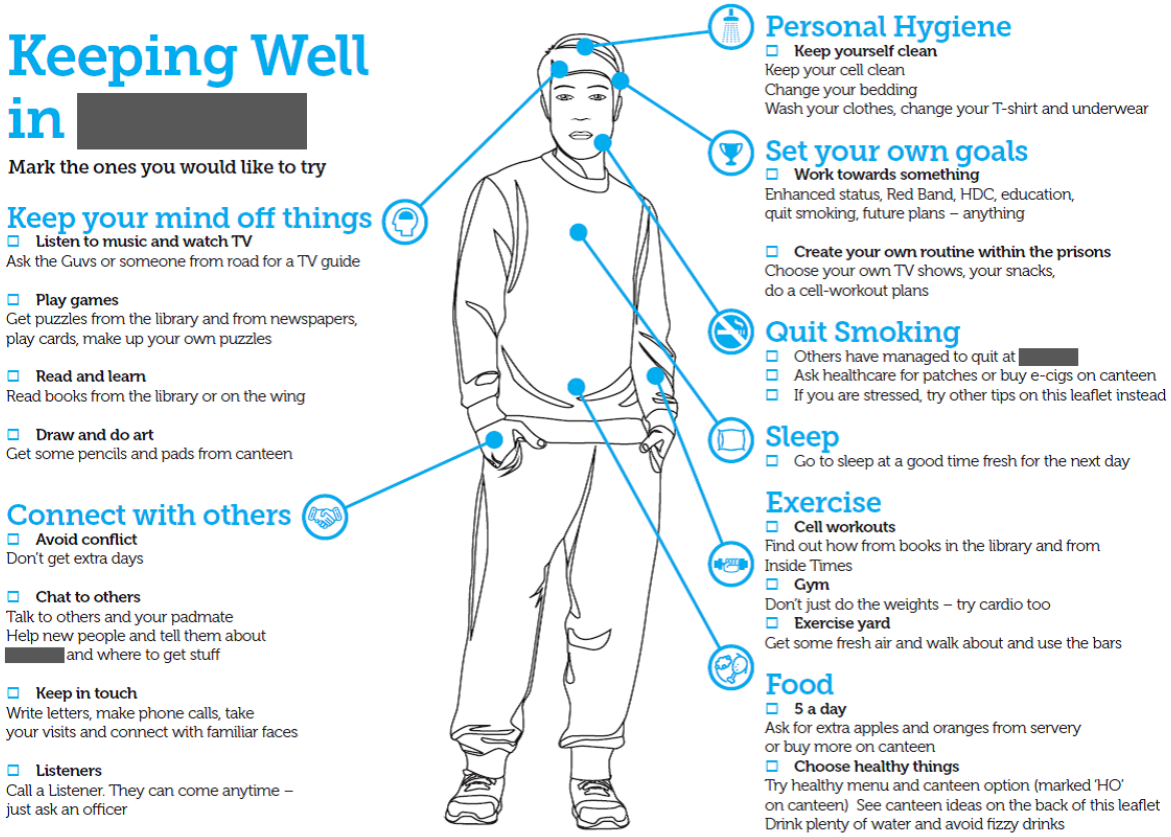


Evaluation within the wider prison population

Having demonstrated the success in co-designing a leaflet and the immediate benefit to young men involved in the workshop, we were next focused on evaluating the effect of the leaflet within the wider prison population and this section describes the evaluation method and findings.

Method

Design

We adopted a cluster randomised controlled trial (CRCT) design to evaluate the difference in outcomes between a group who received the leaflet with a control group who did not. CRCT's involve the randomisation of groups ('clusters') of individuals to a control or intervention arm rather than randomisation at an individual level. We discounted randomisation at the individual level as this would have presented a number of challenges in a prison setting for a leaflet intervention. Firstly, young adult men spend long periods of time together on their wing with little movement outside of the wings. It is highly likely that a leaflet distributed to young men will be shared, discussed or distributed to other young men on the same wing who may be in a control arm. In contrast, CRCT are useful for controlling for contamination and

confounding factors where prison wings become the unit of randomisation. Furthermore, the leaflet was designed to have both a direct effect on individual behaviours as well as an indirect effect through the social interaction and discussions such a leaflet may have within a wider group. Therefore, a CRCT was deemed appropriate as a way to consider the effects of an intervention delivered within groups as intended.

Clusters and participants

We evaluated the leaflet at the prison site where the leaflet was initially developed. The CRCT focused on the general young adult prison population of approximately 390 young adult men. Only wings detaining the general prison population were included in the CRCT. These were wings which had similar number of young adults and distributions of age, ethnicities, staff ratios, and regulations and regimes. The excluded wings were those which were smaller, subject to different regulations and regimes, and contained young adult men based on a specific need (i.e. those on an in-patient health care, segregation wing or induction wing). The nine young men involved in the initial development of the leaflet were also excluded from the evaluation.

Outcomes

Outcomes were measured through a self-complete survey, one-week post intervention delivery. We did not conduct a baseline measure as we were concerned that this would produce a priming effect, where participants across both the leaflet intervention and control groups would be exposed to items which could be enough to affect thoughts, feelings and behaviours. Excluding a baseline measure allowed a more robust examination of any effects of the intervention through a single post-intervention outcomes survey.

The primary outcome was the overall number of behaviours adopted from the leaflet, where all young men were asked to select from a list the 24 behaviours they had undertaken in the past seven days. Secondary outcomes also included the number of behaviours adopted within four categories of healthy living: mental health and wellbeing, physical health, dietary choices, and maintaining relationships.

We also wanted to examine attitudes in predicting uptake of behaviours in the leaflet. This was measured through a series of statements for young men (see Table

1) to rate their agreement (from completely disagree to completely agree) across a 1 – 10 point Likert scale. An additional section consisting of 13 items were also included at the end of the survey for those in the leaflet arm to further evaluate the acceptability of the health leaflet. A free text section was provided at the end for young men to write any other comments they wished to provide, as relating to the leaflet.

Table 1: Statements to examine attitudes and acceptability of the leaflet

Statement	**Response option**
It is important for me to keep well in [name of prison	1 – 10 point Likert scale
I feel that I am in control of managing my physical health in [name of prison]	1 – 10 point Likert scale
I feel that I am in control of managing my mental health in [name of prison]	1 – 10 point Likert scale
I am confident that I can keep myself well in [name of prison]	1 – 10 point Likert scale
I have made plans of how I can manage my physical health in [name of prison]	1 – 10 point Likert scale
I have made plans of how I can manage my mental health in [name of prison]	1 – 10 point Likert scale
Do you remember getting the leaflet?	Yes/No
Did you read the leaflet?	Yes/No
How much did you read?	None of it Some of it All of it
Did you understand the information?	Yes/No
Was it easy to read?	Yes/No
Was the information useful?	Yes/No
Was the information relevant to you?	Yes/No
Did you try the word search?	Yes/No
Did you do anything new after getting the leaflet?	Yes/No
Where is the leaflet now?	In my cell

	I passed it on to someone else I threw it away I used the paper for something else I don't know
Overall, how would you rate the information in the leaflet?	Excellent Very good Average Poor
How would you rate this leaflet compared to other leaflets you have got in prison?	Better Same Worse
If you did not use or look at the leaflet, why not? there was too much writing/I didn't need the information/I didn't like the cover/I didn't want any advice	There was too much writing I didn't need the information I didn't like the cover I didn't want any advice

Sample size

A sample size was not calculated since this was limited to the number of prisoners within each of the eligible wings, which at the time of the research include 316 young men across the six wings.

Randomisation

Prison wings were the unit of randomisation, where we entered the name of each of the eligible wings into an online randomisation allocation program. There was no blinding where the researchers were unblind to study allocation.

Analysis

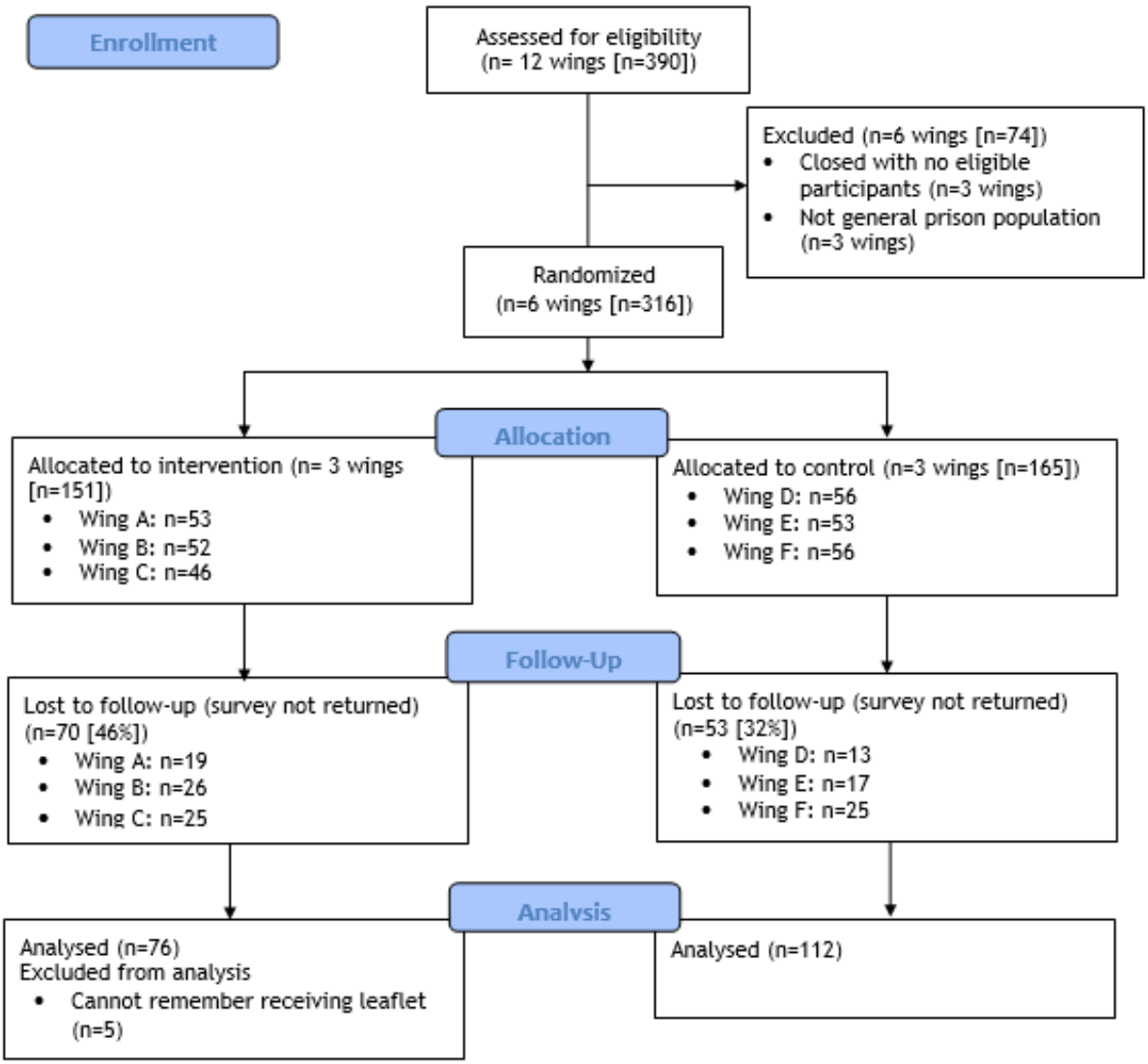
Survey responses were analysed with IBM SPSS version 21. The unit of inference is at the individual level (i.e. examining individual attitudes and practices) therefore analysis is also conducted at the individual level rather than by clusters. X^2 tests and t-tests were used to compare behaviours between the experimental leaflet condition and the control condition. Where frequencies in any cell were four or less (categorical data), Fisher's Exact Probability Test is reported instead of X^2. Multiple

regressions were also performed to examine the overall associations between attitudes with health behaviours in the experimental leaflet and control conditions. Those who reported that they did not recall receiving the leaflet were excluded from comparative analyses due to the high possibility of not receiving the leaflet due to movement within the whole prison estate and within the prison. Descriptive analyses were undertaken to examine the acceptability of the leaflet and content analysis of any free text responses received.

Findings

A total of 316 young adult men across six prison wings were included in the CRCT (see Figure 3). The leaflet was distributed to all the 151 young men in intervention wings. The control wings contained 165 young men. Overall, 193 of the 316 surveys distributed were returned across all six wings in the CRCT (61% response rate). Of the 193 completed surveys, 81 (55%) were completed and returned from the leaflet arm and 112 (67%) from the control arm. Response rates ranged from 46% – 77% across the six units.

Figure 3: CONSORT Diagram



Primary and secondary outcomes relating to behaviours

Differences in behaviours between the experimental and control arm are shown in **Error! Reference source not found.**. There were no significant differences in the uptake of behaviours overall or by category of behaviours between the experimental leaflet and control arms.

Table 2: Health behaviours by cluster arm

	N	Mean	SD	t	df	Sig

Overall number of health behaviours undertaken (out of 24)	Control	110	12.5	5.1	-0.347	184	0.73
	Leaflet	76	12.8	4.6			
Mental health and well-being (out of 12)	Control	110	4.9	2.4	-1.079	184	0.28
	Leaflet	76	5.3	2.2			
Physical health (out of nine)	Control	110	4.0	1.7	-0.552	184	0.58
	Leaflet	76	4.1	1.6			
Healthy dietary choices (out of 11)	Control	110	2.2	1.6	0.033	184	0.97
	Leaflet	76	2.2	1.6			
Maintaining relationships (out of four)	Control	110	1.4	1.0	1.900	181	0.06
	Leaflet	76	1.2	0.8			

Secondary analysis: Attitudes

There was a statistically significant difference in the rating for the importance of health between the leaflet (M=9.5, SD=1.1) and control (M=9.1, SD=1.6) arms (t (182) =-2.2, CI of difference -0.86 - -0.05, p = 0.03) (see Table 3). There were no significant differences in the ratings for other items between the experimental leaflet and control arms. Attitudes did not explain any variances in the number of behaviours undertaken in the whole sample or within each condition (see Table 4).

Table 3: Differences in attitudes between arms

		N	**Mean**	**SD**	**t**	**df**	**Sig**
It is important for me to keep well at [name of prison]	Control	108	9.08	1.6	-2.241	182	0.03*
	Leaflet	76	9.54	1.1			
I feel that I am in control of managing my physical health in [name of prison]	Control	107	7.72	2.4	-0.011	181	0.99
	Leaflet	76	7.72	2.4			
	Control	107	8.07	2.5	1.216	179	0.23

I feel that I am in control of managing my mental health in [name of prison]	Leaflet	74	7.58	2.8			
I am confident that I can keep myself well in [name of prison]	Control	108	7.92	2.5	-0.398	182	0.69
	Leaflet	76	8.07	2.5			
I have made plans of how I can manage my physical health in [name of prison]	Control	108	7.44	2.7	-0.414	182	0.68
	Leaflet	76	7.61	2.8			
I have made plans of how I can manage my mental health in [name of prison]	Control	108	6.94	3.2	-0.623	182	0.53
	Leaflet	76	7.22	3.0			

Table 4: Differences in behaviour categories between arms

		N	**Mean**	**SD**	**t**	**df**	**Sig**
Overall number of health behaviours undertaken (out of 24)	Control	110	12.5	5.1	-0.347	184	0.73
	Leaflet	76	12.8	4.6			
Mental health and well-being (out of 12)	Control	110	4.9	2.4	-1.079	184	0.28
	Leaflet	76	5.3	2.2			
Physical health (out of nine)	Control	110	4.0	1.7	-0.552	184	0.58
	Leaflet	76	4.1	1.6			
Healthy dietary choices (out of 11)	Control	110	2.2	1.6	0.033	184	0.97
	Leaflet	76	2.2	1.6			
Maintaining relationships (out of four)	Control	110	1.4	1.0	1.900	181	0.06
	Leaflet	76	1.2	0.8			

Secondary analysis: use and acceptability

Most young men who remember receiving the leaflet (n=76), reported that they read the leaflet with 76% (n=53) of them reading all of the information. The vast majority (n=69, 99%) of survey respondents stated that the leaflet was easy to read

with all respondents (70, 100%) reporting that the information on the leaflet was understandable. The majority of respondents reported that the information in the leaflet was both relevant (71%) and useful (77%). Overall, most respondents (38, 55%) rated the leaflet as either ‘excellent’ or ‘very good’ with half (35, 50%) reporting that the leaflet was better than other leaflets received in prison. Half of respondents (38, 50%) stated that they either still currently had the leaflet or had passed it on to another person. 20 (27%) of the respondents self-reported that they had undertaken a new health behaviour featured in the leaflet with 50 (68%) reporting they did not.

Of the young men who received the leaflet and responded to the follow-up survey, 20 (29%) of young adult men self-reported that they undertook a new behaviour in response to receiving the leaflet (see Table 5). These 20 young men reported significantly fewer number of health behaviours overall (10.8 compared with 14; t (68) = 2.70 [CI of difference 0.83 – 5.5] p = 0.01), and specifically those relating to mental health and well-being (4.5 compared with 5.8; t (68) = 2.445 [CI of difference 0.25 – 2.43], p = 0.02), and physical health (3.5 compared with 4.4; t (68) = 2.111 [CI of difference 0.05 – 1.71] p = 0.04).

Table 5: Differences in uptake of behaviours

	Did you do anything new?	**N**	**Mean**	**SD**	**t**	**df**	**Sig**
Overall number of health behaviours undertaken (out of 24)	No	50	14.0	4.5	2.702	68	0.01**
	Yes	20	10.8	5.3			
Mental health and well-being (out of 12)	No	50	5.8	2.2	2.445	68	0.02*
	Yes	20	4.5	1.8			
Physical health (out of nine)	No	50	4.4	1.6	2.111	68	0.04*
	Yes	20	3.5	1.4			
Healthy dietary choices (out of 11)	No	50	2.4	1.6	1.424	68	0.16
	Yes	20	1.9	1.5			
Maintaining relationships (out of four)	No	50	1.3	0.7	1.737	68	0.09
	Yes	20	1.0	0.8			

* Statistically significant at $p < 0.05$

** Statistically significant at $p < 0.01$

Secondary analysis: free-text responses

132 (70%) of the sample provided additional information in the free-text comment. Most of the comments (92%) related to frustrations in managing their health at the YOI. The remaining 8% of comments confirmed specific behaviours from the leaflet or survey which respondents undertook and found useful for them (e.g. doing cell work outs, reading, and goal setting). However, other comments related three other themes: 1) the frustrations of the long-periods of being locked up in their cell which both adversely affected their mental and physical health whilst reducing their ability to take part in activities which would be beneficial to their health, 2) limited opportunities within the prison regime (i.e. attending gym sessions, personal hygiene and food choices), and 3) limited personal resources (i.e. money and support outside prison).

Discussion

This study aimed to describe the approach to developing a health promotion leaflet to support behaviours within the real material and social context of prison, for young adult men. The study further aimed to evaluate the short-term effect of the leaflet on behaviours in the wider prison population and further examine the role of attitudes and the overall acceptability and use of the leaflet in explaining the uptake of behaviours. A leaflet was successfully co-designed with a group of young men in the prison. The leaflet was evaluated through a cluster randomised controlled trial within the wider prison population but there were no significant differences in the type or number of behaviours adopted between the leaflet and control group. Young men in the experimental leaflet group rated the importance of health as higher than those in the control condition, but behaviours were not explained by health attitudes overall.

Despite the lack of effect on behaviours, the findings demonstrate that young men engaged with the leaflet appropriately and that it was well-received, where most read the leaflet, and found it easy to read, and relevant and useful. This suggests that the co-design approach was beneficial and achieved this aim of developing authentic, personalised and relevant messaging. Secondary analysis suggest there

might be a greater effect of the leaflet for young men who report fewer behaviours overall. This suggests that the leaflet may have been most beneficial to those with the most need rather than the general prison population who are already undertaking many of the health behaviours promoted. Free-text responses supported much of the findings from previous research, which highlight the structural and social barriers to undertaking the health behaviours where extended periods locked-up and the limited access to physical activity and healthy foods were difficult to overcome. Despite the aim to develop a leaflet which acknowledged the material and social contexts of prisoner lives, motivations, and needs, these structural barriers still present very real challenges for health promotion efforts and are difficult to overcome. The findings therefore confirm that prisons are largely unhealthy places which present with many challenges in promoting healthy behaviours within these spaces. In this sense, the pains of imprisonment cannot be underestimated and prisoners often go through considerable despair to adjust and adapt to the environment, which severely impede health promotions efforts (Crewe et al., 2020). Overall, the findings indicate that there are some benefits in co-designing a leaflet and supporting some healthy attitudes and behaviours but this is limited within the current material and social contexts of imprisonment.

There are some strengths and limitations of the study which must be considered within these findings. Despite the wide use of leaflets within prison contexts, there are surprisingly few evaluations using robust designs. This study is one of the few which has described a theory-driven approach to developing a health leaflet with a robust CRCT design. However, the lack of findings may be a result of the limitations in CRCT design and delivery. Notably, the sample size was restricted to number of prisoners within the eligible wings and it is likely that the CRCT was only powered to detect medium to large effects, which can be difficult to achieve within such short-term evaluations. The lack of a baseline level of behaviours and the short follow-up limits the extent to which behaviour change can be fully examined within the limited sample size available. Furthermore, the CRCT randomised prison wings, but it was not possible to fully explore how comparable these wings were and it is possible that differences within each wing may also have confounded any effects. For example, some wings are subject to greater restrictions if being placed on lock-down due to incidents. The researcher did attempt to monitor these potential confounders where staff on each wing were asked whether there were any particular

occurrences on the wing which may have affected the usual regime the young men were subjected to. However, there may have been some variations between the wings. Further research may wish to more fully examine any intra-cluster variations through self-report and routine prison data (i.e. number of incidents on each wing). The CRCT also relied on short, self-report items to measure behaviours but the specificity and sensitivity of these items were not established and it is possible that the items were too broad to capture any effects where they exist. Future research may prefer to utilise more standardised measures with careful consideration of the increased literacy and time demands this places on participants. Another limitation includes the relatively large proportion of missing follow-up data in both leaflet and control condition. Indeed, there are few trials conducted within prison settings and there are significant challenges associated with engaging prisoners in research, structural barriers to collecting data, and accounting for relatively high levels of movement and churn in and around the prison estate. Future trials should seek to explore effective approaches to collecting complete follow-up data. Overall, the limitations in aspects of the trial design raises some uncertainty over the lack of findings and whether these may be due to underpowered or incomplete data or whether the leaflet not being sufficient to promote health in such a constrained prison setting.

Despite these limitations, the findings hold significant implications for practice and policy. Prisons are heralded as an important public health strategy with the potential to address larger health disparities by returning prisoners back to their communities with better health than when they entered (O'Moore & Sturup-Toft, 2019). Leaflets are a very cost-effective method for health promotion and co-developing these with young adults holds even more potential to generate acceptable, relevant and useable interventions. Notably, young adult men were able to consider their holistic health needs within prison which may not ordinarily be obvious to practitioners nor directly translate to key policy targets. The study demonstrated a simple approach which can be extended to include greater involvement of young men in the co-design of other health promotion materials and services. For example, the use of peer health mentors to both advise and deliver supportive health-related duties. This would signal a shift towards collaboration in promoting health and creating more positive prison environments where prisoners engage in more meaningful and civic activities. These approaches have

subsequently been explored and advocated within the prison (Mehay & Meek, 2016). The process of co-design highlights the importance of understanding the interaction between individuals and their context when considering health promotion. Health Psychologists are uniquely placed to inform these developments and apply theory-driven approaches to work with some of our most disadvantaged individuals held within some of the most complex environments. The article outlines what could be achieved and the role of Health Psychologists in these complex spaces. However, this clearly requires wider structural and policy support to support more health promoting environments for young men to take control of their health and use their time in ways to support health and health promotion. This is a space which can fully utilise the research, practitioner and *advocacy* skills of Health Psychologists. Despite the challenges, the opportunities to address the health needs of a marginalised and vulnerable young adult population is immense and requiring greater commitment at a practice and policy level.

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