

Research Brief

Drivers of program participation in NSW correctional centres: A trend analysis of digital tablets and Five Minute Interventions (FMI)

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AIM To examine whether implementation of digital tablets and FMI training had an impact on inmates' participation in behaviour change programs within correctional centres.

FINDINGS AND CONCLUSIONS

We used a quasi-experimental controlled interrupted time series design to compare trends in program dosage hours delivered in correctional centres where these initiatives were implemented, against comparison centres where these initiatives had not been introduced.

Results indicated a significant impact of digital tablets. We found a trend towards increased participation in behaviour change programs, expressed by higher proportions of expected dosage delivered at centres after the introduction of digital tablets. We did not observe any association between the implementation of FMI training and program participation.

We concluded that the flow-on effects of the introduction of digital tablets could help promote conditions that are conducive to rehabilitative prison environments, as expressed through increased participation in behaviour change programs. Practical and administrative barriers to program delivery might have restricted the impact of FMI and additional lead-on time may be required before the benefits of FMI training may be realised. Subsequent evaluations on the longer-term impact of digital tablets and FMI would be beneficial to further explore how these initiatives contribute to the rehabilitative potential of prison environments.

INTRODUCTION

A critical factor in efforts to reduce reoffending among people in custody is to promote conditions that contribute to a rehabilitative prison environment. Features of the prison climate and living environment have been identified as instrumental to inmates' motivation for change and engagement in therapeutic and other processes of change (Day et al., 2011; Galouzis et al., 2023; Mann & Howard, 2018). There is also increasing recognition for the potential of custodial staff interactions with inmates and their adoption of roles as agents of change for rehabilitative outcomes (e.g. Barkworth et al., 2021; 2022). It is consistent with these assertions that variation in prison conditions has been linked with observable differences in how inmates engage with behaviour change programs, treatment outcomes, and reoffending (e.g. Auty & Liebling, 2020; Day et al., 2011). In recognition of the rehabilitative potential of prison environments, Corrective Services NSW implemented a number of transformative initiatives under the Premier's Priority to reduce reoffending. Central among these were the introduction of digital tablets in correctional centres and training of custodial staff in Five Minute Interventions (FMI).

Digital tablets were introduced in correctional centres across NSW in October 2020 (see Thaler et al., 2022, for details on implementation). These internet-enabled digital tablets provide regulated access to free and paid services, such as educational and entertainment resources, pre-approved websites, voice calls to approved numbers, health and welfare services, games, and information about centre administration. Evaluations have indicated that digital tablets enhanced inmates' overall prison experience by improving connectivity with their loved ones, greater independence, lessening boredom and idleness, reducing friction and aggression in shared places, and improving interactions with staff and other inmates (Barkworth et al., 2022; Thaler et al., 2022). A controlled interrupted time series (CITS) study found that the introduction of digital tablets was associated with a reduction in the incidence of violence and assaults in correctional centres (Mahajan et al., 2023).

In early 2020, Corrective Services NSW commenced training custodial staff on the FMI initiative (for more details on implementation, see Barkworth et al., 2021, 2023). The training enables custodial staff to use everyday interactions with inmates to target impulsivity, inspire hope and motivate behaviour change with a set of skills including Socratic questioning, active listening, and positive reinforcement (Kenny & Webster, 2015; Tate et al., 2017; Vickers-Pinchbeck, 2019). Evaluation studies indicated associations between FMI training and improved staff attitudes towards inmates, increased understanding of their interactions with inmates, and enhancements in their perceived ability to support inmates' rehabilitation (Barkworth et al., 2021, 2023; Howard et al., 2021; Lobo et al., 2022). From inmates' perspectives, studies have reported inmates experiencing improvements in their interactions with FMI-trained staff. Such interactions helped enhance their thinking skills, perceptions of self-efficacy, and perceived trained staff as non-judgmental and trustworthy (Tate et al., 2017). An interrupted time series evaluation recently revealed that the rollout of FMI training was linked to reduced violent and other offences in custody across NSW correctional centres (Chong et al., 2023).

AIMS

Early evaluation studies on the impact of digital tablets and FMI training suggest that these initiatives show positive indications of fostering conditions that may be associated with a safer and more rehabilitative prison environment. This study aims to extend upon these findings by examining whether these initiatives are also associated with measurable flow-on effects linked to increased participation in behaviour change programs.

The introduction of digital tablets is expected to positively impact program participation by enhancing inmates' motivation to change and by helping them use their time effectively. For example, the key objectives of digital tablets are to increase inmates' sense of autonomy and independence through access to in-cell telephony services and self-addressing administrative needs (Lindstrom & Puolakka, 2020; Palmer et al., 2020). As a result, digital tablets allow better time management for inmates and staff, allowing for greater opportunities to schedule and participate in meaningful structured activities such as therapeutic programs (Barkworth et al., 2022; McDougall et al., 2017; Thaler et al., 2022).

The perceived benefits of FMI training, including improved staff-inmate interactions, enhanced staff capabilities in supporting rehabilitation, inspiring change towards prosocial thinking and hope for change, may be anticipated to increase inmates' motivation and readiness to participate in behaviour change programs (Barkworth et al., 2021, 2023; Bosma et al., 2017; Day et al., 2011; McMurrin & Ward, 2010; Vickers-Pinchbeck, 2019).

To address the aims of the current study, we adopted a time-series research design to compare program participation rates between correctional centres that implemented these initiatives and those that had not yet implemented them.

METHODS

The data used in this study were extracted from the Corrective Services NSW Offender Integrated Management System (OIMS), the central operation database maintained to manage people under supervision in custody and the community. The variables extracted from OIMS were administrative information related to inmate participation in various behaviour change programs across correctional centres, including the number of scheduled participants in a program session, number of sessions, number of participants absent in a session and reasons for absence, type of program delivered, and total dosage hours expected and delivered per session. Dosage comprised of criminogenic and non-criminogenic program hours. Criminogenic programs included programs such as the EQUIPS, VOTP, SOP, HIPU, SSIP, IDATP, YAOP, and the MIP, while non-criminogenic programs included emotional regulation programs, wellbeing and parenting programs, and programs related to traffic offences (see Department of Communities and Justice, 2021, for details).

The outcome indicator in the current study was the rate of participation in programs, expressed as the proportion of expected or scheduled program dosage delivered weekly in a correctional centre. Expected dosage was defined as the total number of hours estimated to be delivered in a given week and was derived from the total number of participants enrolled and the number of program hours scheduled per session. The proportion of expected dosage delivered was the percentage of scheduled dosage that was actually delivered per week. This definition of the outcome indicator is intended to reflect trends in program participation such that disparities between expected and actual dosage delivered indicate disrupted participation, which may be attributed to individual motivational factors or administrative reasons.

We used the CITS approach to analyse trends in the weekly proportion of expected dosage delivered before and after the implementation of the two focus initiatives, digital tablets, and FMI training, separately. A CITS approach compares the trends of an intervention time series against a comparison time series where the intervention was not implemented (Lopez Bernal et al., 2018). The CITS approach allows one to determine the impact of an intervention while controlling for other co-occurring latent variables. Both FMI training and digital tablets were implemented concurrent with the COVID-19 pandemic, and disruptions to various correctional centre operations, such as lockdowns and social distancing, might have

affected program session delivery, impacting overall intervention dosage. As both the intervention and comparison groups were exposed to these disruptions, any differences in observed trends may be attributed to the implementation of the FMI training or digital tablets.

The impact of the digital tablets was studied across 20 correctional centres, of which nine centres were selected to be part of the 'intervention group'. These intervention centres were selected because digital tablets were implemented at their respective centres in close time proximity, within three weeks of one another. The comparison group comprised 11 correctional centres where digital tablets were not implemented within the current observation period between 9 September 2019 and 13 June 2022. As digital tablets were implemented across most of the intervention group sites within three weeks, the implementation time (T0 – 13 September 2021) was considered the earliest date when digital tablets were introduced to the intervention sites. For both comparison and intervention groups, the observation period spanned a total of 142 weeks, which included 100 weeks of time points before the introduction of digital tablet (T0) and 41 weeks after its implementation.

For FMI training, the 'intervention group' consisted of seven correctional centres and the 'comparison group' comprised six correctional centres. The comparison group sites were selected on the criteria that FMI training was not rolled out at these sites within the study observation period between 18 June 2018 and 24 May 2021. This observation period included approximately two years' worth of time series data before and one year after the implementation of FMI training. The earliest date of FMI training rollout across the intervention sites was 25 May 2020, considered T0. For comparison and intervention groups, 100 weeks of time points before and 55 weeks after implementation for FMI training were examined. We note that the observation periods for digital tablets and FMI training varied due to their implementation at separate times.

The intervention and comparison group time series were derived for the proportion of expected delivered dosage across both digital tablets and FMI training initiatives. The comparison time series was then subtracted from the intervention time series to produce a 'differenced' time series used for modelling purposes. We used ARIMA (autoregressive integrated moving average) modelling procedures to estimate trends in the data. An ARIMA model was first fitted to the differenced time series' pre-intervention data to identify the pre-intervention trend. Once the best-fitting model was determined, the estimated parameters of the final model were then fitted to the entire time series to estimate the intervention's effects. To quantify the impact of digital tablets and the impact of FMI training, we examined if there were any step or ramp changes after the point of implementation (T0). A significant step change indicates an immediate change in trends post-intervention implementation. In contrast, a significant ramp change indicates either an increasing or decreasing change in trends after implementation.

FINDINGS

Consistency of data across intervention and comparison groups

Table 1 below represents the average program dosage delivered across pre- and post-implementation periods of intervention and comparison group sites for the two initiatives. It also presents the number of programs that were delivered at these sites. The COVID-19 pandemic impacted program delivery across our sample of correctional centres. Irrespective of the initiative (digital tablets and FMI) or the group (intervention vs. comparison), the average number of dosage hours delivered declined post-intervention. For the digital tablets sample, pre-implementation hours averaged 12.27 and post-implementation hours

averaged 10.11 hours. For the FMI sample, the average hours before implementation were 15.33 and 12.33 hours after implementation of the initiative.

The number of programs were also similar between the groups in the pre-implementation period of both initiatives. However, some centres changed their delivery schedule over time, and there were instances where the number of programs decreased or increased over the observation period. This variation in programs delivered should have a minimal impact on analyses as our research design aggregated dosage delivery across programs. Moreover, dosage delivery and participation or non-participation trends within centres are subject to the same local factors and should therefore show similar patterns in dosage across programs delivered within the same centres.

Table 1. Program and program participation-related indices across two initiatives

	Digital Tablets				FMI training			
	Intervention		Comparison		Intervention		Comparison	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
Average dosage (hours)	12.07	8.53	12.46	11.69	14.36	13.49	16.31	11.16
Number of programs	8	7	6	4	7	7	6	5
Criminogenic programs	2	3	2	2	2	2	1	2
Non-criminogenic programs	6	6	5	3	6	6	5	4

Impact of digital tablets

Figure 1 shows the weekly proportion of expected dosage delivered before and after digital tablets were introduced across the intervention and comparison groups. The dotted line shows trends in dosage delivery for the comparison group while the solid line shows the intervention group's delivery trends. Prior to the introduction of digital tablets, sites in the comparison group delivered a consistently higher proportion of expected dosage than sites in the intervention group. After the introduction of digital tablets, the difference between groups diminished towards the end of the observation period, as indicated by a decline in dosage delivery in the comparison group and an increase in the intervention group.

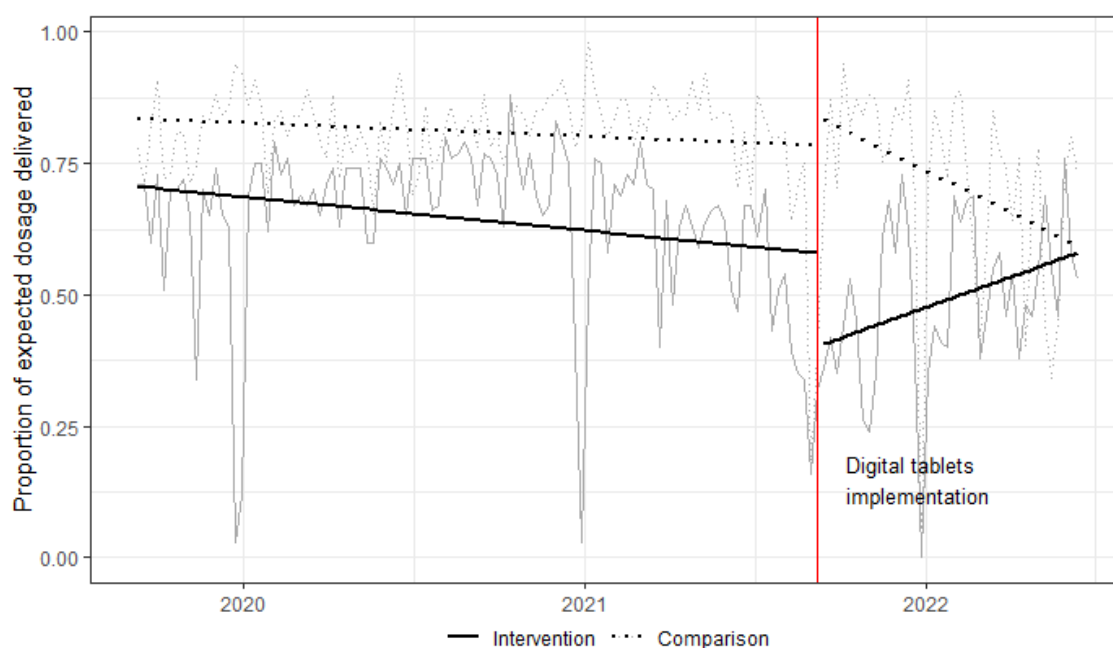


Figure 1. Proportion of expected dosage delivered for intervention and comparison groups for digital tablets

Figure 2 shows the differenced time series derived from subtracting the intervention group trend line from the comparison group trend line shown in Figure 1. An ARIMA (0,0,2) model was the best fit for the differenced trend line. The Ljung–Box statistic was not significant ($Q(12) = 9.32, p = .68$), indicating that the model was a good fit. The ARIMA model demonstrated a significant change to the proportion of expected dosage following the implementation of digital tablets, step ($b = -0.26, 95\% \text{ CI } [-.40, -.12], p < .001$), ramp ($b = 0.01, 95\% \text{ CI } [.004, .01], p = .001$). These results indicate a significant impact of digital tablets on the proportion of dosage delivered across intervention sites relative to comparison sites.

Figure 2 shows that the differenced time series indicated a decreasing trend from the start of the observation period until the implementation of digital tablets. This decreasing trend suggests that prior to the introduction of digital tablets, the comparison sites delivered increasingly larger proportions of expected dosage compared to the intervention sites. This trend changed after the introduction of digital tablets when a significant step and ramp change was observed. The significant step change suggests an immediate increase in the difference in the proportion of expected dosage delivered between groups, driven by a sudden decline in expected dosage delivered in the intervention sites compared to the comparison sites (see Figure 1). Following this step change, a significant positive ramp change was observed, which suggests that the difference in expected dosage delivered rapidly diminished following the introduction of digital tablets, with both groups reaching comparable levels of dosage delivery by the censoring date (June 2022). This change was driven by an increase in the proportion of dosage delivered at intervention sites and a decline at comparison sites (Figure 1).

At the time of the digital tablet introduction (September 2021), the proportion of expected dosage delivered at comparison sites was 84% compared to 60% at the end of the observation period, depicting a decrease of 24%. At intervention sites, however, the proportion of expected dosage delivered at the time of implementation was 40% compared to 58% at the end of the observation period, demonstrating an increase of 18%.

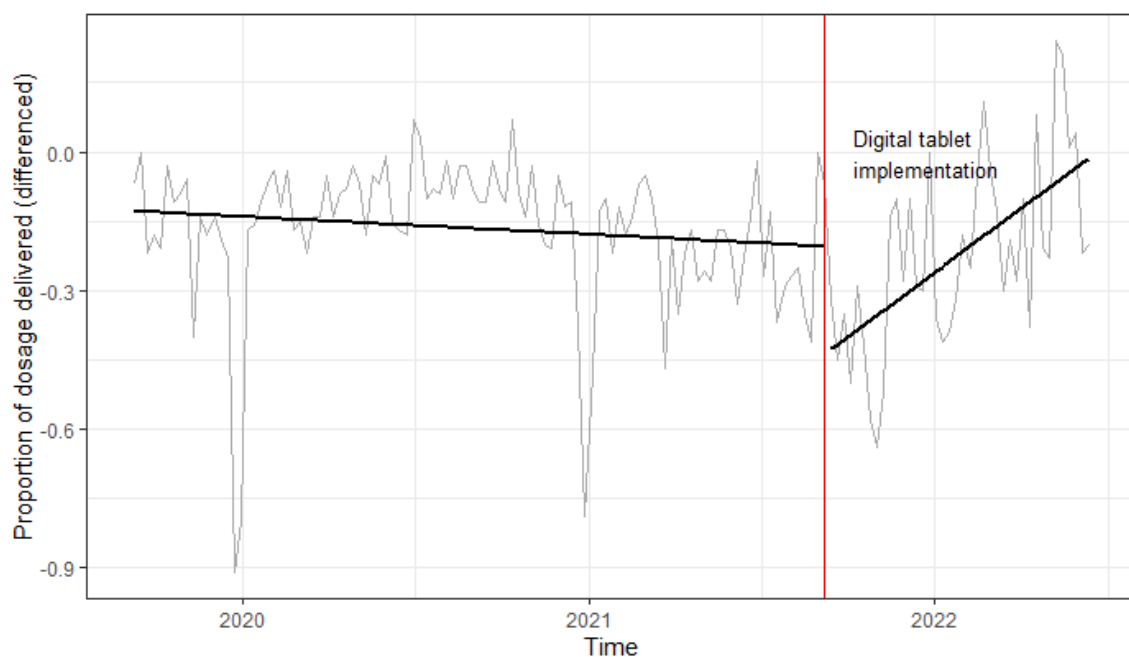


Figure 2. Weekly difference in the proportion of expected dosage delivered for digital tablets derived from subtracting dosage delivered to the intervention group from the comparison group

Impact of FMI training

Figure 3 shows the weekly proportion of expected dosage delivered at intervention and comparison correctional centres before and after FMI training was implemented. A greater proportion of expected program dosage was delivered at comparison group sites than at the intervention group sites. Across the observation window, the trajectories in dosage delivery trends differed between groups; an increasing trend was observed for the comparison group, while a decreasing one was characteristic of the intervention group both before and after the implementation of FMI training.

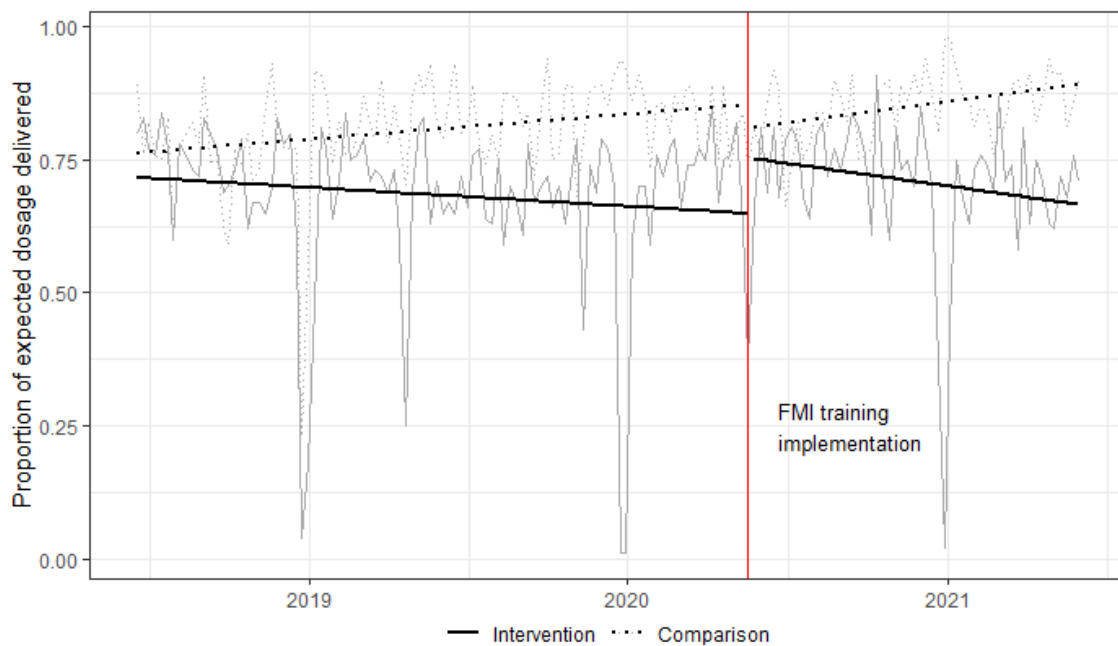


Figure 3. Proportion of expected dosage delivered for intervention and comparison groups for FMI training

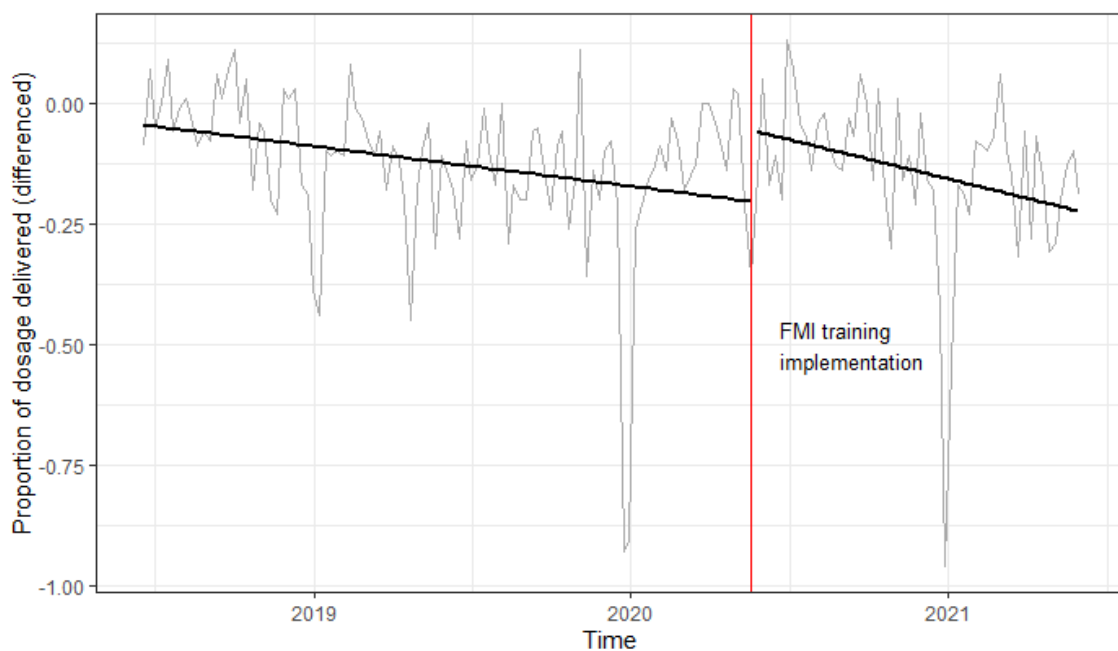


Figure 4. Weekly difference in the proportion of expected dosage delivered for FMI training derived from subtracting dosage delivered to the intervention group from the comparison group

Figure 4 shows the differenced time series derived from subtracting the intervention from the comparison trend lines. The differenced trend line shows a general decreasing trend across the entire observation period which suggesting that comparison group sites delivered an increasingly higher proportion of expected dosage than the intervention group sites.

To determine whether this decreasing trend was significant, an ARIMA (1,0,0) model was fitted to the differenced time series. The Ljung–Box statistic was not significant ($Q(12) = 7.06, p = .85$), indicating that the model was a good fit. The model found no significant changes in the proportion of expected dosage delivered following the implementation of FMI training, step ($b = 0.08, 95\% \text{ CI } [-.05, .22], p = .24$), ramp ($b = -0.003, 95\% \text{ CI } [-.008, .001], p = .11$). The results indicate no significant impact of the implementation of FMI training on the proportion of expected program dosage delivered across intervention sites, relative to comparison sites. At the time of FMI training implementation (May 2020), the proportion of expected dosage delivered at comparison sites was 81% compared to 89% at the end of the observation period, representing an increase of 8%. At intervention sites, the proportion of expected dosage delivery was 76% at the time of FMI implementation and 66% at the end of the observation period, indicating a decrease of 10%.

CONCLUSIONS

There are indications that both digital tablets and FMI training have the potential to contribute to conditions that foster a rehabilitative environment. For example, implementation of these initiatives has been linked to improved staff–inmate and inmate–inmate interactions, and trends towards reduced assaults, violent offences, and order–related offences in custody (Barkworth et al., 2021, 2022; Chong et al., 2023; Lobo et al., 2021; Mahajan et al., 2023; Thaler et al., 2022). The current study aimed to expand on these results by examining whether the introduction of digital tablets and the implementation of FMI training were associated with changes in participation in behaviour change programs, using a robust quasi–experimental time–series design.

We found a significant impact of the introduction of digital tablets on the proportion of expected dosage delivered. Program dosage delivery steadily increased at intervention sites compared to the comparison sites during the post–implementation period. This may indicate that dosage delivery underwent incremental improvements at intervention sites after the implementation of digital tablets and may reflect increased participation in behaviour change programs. As tablet functionalities stabilised and initial rollout issues were addressed, the impact of digital tablets on participation rates may have increased due to the increasing effectiveness of tablets in enhancing inmates' ability to manage their own time and administrative needs. Other benefits associated with digital tablets including increased safety, reduced anxiety, better mood, an improved sense of agency, and overall wellbeing (Barkworth et al., 2022; Mahajan et al., 2023; Palmer et al., 2020; Thaler et al., 2022) may also have had positive flow–on effects on motivation for goal–directed behaviour towards behavioural change, leading to greater program participation.

We also found a sudden decrease in the proportion of dosage delivered immediately after tablets were implemented at intervention sites. It is possible that the introduction of digital tablets may have initially distracted users from their intended activities, including participating in programs, leading to a sudden and immediate decrease in dosage delivery. Another potential explanation is that the introduction of digital tablets had broader, short–term disruptions to routines for both inmates and staff within a correctional centre, disrupting administrative processes associated with program delivery. It is noted,

however, that this sudden drop in dosage delivery was moderated by gradual increases in dosage delivered over time after the introduction of tablets.

We did not find any significant associations between the implementation of FMI training and the proportion of dosage delivered. This result suggests that FMI training may have minimal or no impact on program participation rates. We acknowledge that there could be several reasons for this finding. It is possible that while FMI has the potential to impact motivational factors among inmates, participation in programs can be affected by other practical and administrative barriers, including the availability of programs, participant capacity in a session, time remaining in custody, or security issues such as lockdowns. Consistent with this, many programs operated at limited capacity during the current study period, which coincided with the pandemic. In addition, it has been suggested that it takes time to fully realise the benefits of FMI training for improving outcomes related to correctional centre climate and other behavioural indicators (Barkworth et al., 2021; Chong et al., 2023). For example, impacts of FMI training on safety in correctional centres were observable approximately one year after its implementation (Chong et al., 2023). It is possible that the intended effects of FMI in increasing staff attitudes and skills as rehabilitative agents of change may require longer periods to be systematically or effectively implemented to the extent that they have detectable effects on gross program participation trends.

A related limitation of this study is that while a greater series of post-implementation data points would have been optimal, the number of usable data points were constrained by the research design and staggered rollout of FMI across correctional centres. In order to use the CITS research design, it was necessary only to include limited data points from a small number of sites that were early adopters of FMI in the intervention group. However, given the significant impact of the pandemic, the restricted observation window was deemed an acceptable trade-off, allowing us to use a robust quasi-experimental design to account for the unintended consequences of the pandemic.

To conclude, this study indicated that the implementation of digital tablets was associated with increased participation in behaviour change programs across correctional centres. This finding adds to other evidence of the positive impact of digital tablets on inmate behaviour in correctional centres and fostering favourable conditions of rehabilitative correctional environment (Barkworth et al., 2022; Mahajan et al., 2023; Thaler et al., 2022). Future studies may extend these findings by investigating the impact of FMI training and digital tablets over an extended period on other indicators of program participation, such as program attrition and program completion rates.

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