Re-Examining the Dual Harm Profile: An Assessment using US Prison Population-Level Data

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Data is available from authors subject to third party restrictions

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Abstract

Dual harm behaviour has recently gained scholarly attention. Dual harm centres on a subset of people who display violent and self-harming behaviour. This study re-examines the differential profile characteristics identified in Europe for those who dual harm, using international data featuring a population study of a state prison system in the south-eastern United States. Three years of data produced 43,489 institutional events, from a custodial population of 22,918. Logistic regression analysis indicates that those who dual harm in custody had an overall rate of infraction 40-70% higher than those who engage solely in violence or self-harm, and five times higher than those without physical harm infractions. Dual harm was associated with higher rates of non-harm incidents (e.g., property damage and disorder), younger age, lower educational achievements on admission and less educational development during imprisonment, greater self-reported mental health need although not substance abuse, and fewer intimate relationships. Dual harm was related to more lethal acts of self-harm such as ligature or ingestion. This is the first study that applies the dual harm profile to prison data within the US. This study supports dual harm as a highly relevant construct within international custodial settings and offers policy implications for this population.

Keywords: *Dual harm; violence; self-harm: non-suicidal self-injury; suicide; prison*

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INTRODUCTION

Violence, suicidal behaviours, and non-suicidal self-injury (NSSI) represent major health concerns within institutionalized settings, as they dictate administrative decisions, staffing levels and budgets, and risk management approaches. The need to better understand and prevent these behaviours is underscored by their prevalence and severity. Suicide and homicide remain leading causes of premature death at the international level (Hawton & van Heeringen, 2009; Knox, Conwell, & Caine, 2004; WHO, 2021), with suicide being one of the most common causes of death in custody worldwide (Marzano *et al.*, 2016). Rates of self-harm continue to rise in many countries with lifetime rates of 6% within community populations (McManus *et al.,* 2019). Self-harm disproportionately impacts incarcerated people as documented through a range of methodological approaches applied in diverse international settings (Favril, Yu, Hawton, & Fazel, 2020; *Redacted* & Kaminski, 2010, 2011; *Redacted et al.*, 2019; *Redacted*, Edelmann, Worrall & Bray, 2014) for example, during 2021 prisons across England and Wales reported 767 self-harm events and 266 assaults per 1000 population (Ministry of Justice, 2022)

To date, criminological research has largely explored these behaviours in isolation, that is, violence examined as an externalized expression of the criminogenic individual, and suicidal behaviours and NSSI viewed as internalised expressions that are reflective of the high prevalence of mental health issues within incarcerated populations. This lack of research is surprising as these behaviours have similar risk profiles and are both a manifestation of aggression and violence (though they are managed and expressed differently). In general, our

understanding of self-harm behaviour is drawn from its categorisation into a homogenous group, reflective of the presence or absence of the behaviour. Although categorisation issues and complexity are acknowledged, these largely focus on whether the behaviour involves suicidality (Favril & O'Connor, 2021; *Redacted, et al.,* 2019) rather than its relationship to violence.

More research is needed to examine the duality of these behaviours, though examples of empirical studies that have occurred in the criminal justice system have highlighted its relevance to practice. For example, studies indicate that up to 16% of residents housed in psychiatric inpatient or custodial settings have demonstrated both violence and self-harm (Kottler, *et al.,* 2018; Nijman & Campo, 2002; Plutchik, van Praag & Conte, 1989; *Redacted,* 2018). There is also evidence that over 6% of suicides in the community have received a violent conviction (Webb *et al.,* 2017) whereby violent conviction rates stand around 3.9% (Falk, *et al.* 2014) with between a third and a half of those who self-harm engaging in aggression or violence in their lifetime (O'Donnell & Waterman, 2015). In accordance with this approach, *Redacted* (2018) examined the co-existence of a history of violence and self-harming behaviour in corrections (defined as harm to the self, irrespective of intent) within the same individual and developed the termed "dual harm".

Incarcerated People and Dual Harm

In recent years, the importance of the relationship between harm to self and harm to others has received increasing attention within correctional settings in the UK (*Redacted,* Kaminski, Power & *Redacted,* 2019). These studies provided evidence that people in prison

who dual harm are more than the sum of their parts, demonstrating a qualitatively different set of characteristics which cannot be explained by cumulative risk factors. Studies in the UK prison system (*Redacted*, 2018; *Redacted*, Forrester & *Redacted*, 2020; Kottler, Smith & Bartlett, 2018), demonstrated the significant influence of this dual harm group on widespread institutional instability and at greater risk of lethal self-harm, emphasising the need to address this duality when attempting to increase overall safety in prison. Those in prison who dual harm have been shown to have distinctive patterns of characteristics and behaviours compared with those who solely self-harm or are violent, as they display very high levels of maladaptive and damaging behaviour including fire-setting, institutional disorder and property damage when compared with all other prison groups (*Redacted*, 2018; *Redacted, et al.,* 2020; Kottler *et al.,* 2018). This remained even when accounting for risk factors such as time in prison (on average, those who dual harm experience twice as long in prison) and age at first incident (those who dual harm were on, average three years younger at their first self-harm or violent act in prison) (*Redacted et al*, 2020).

The high level of co-occurrence of harmful behaviour along with the complexity of those who dual harm, indicates that jails and prisons are likely to benefit from a clearer understanding of the characteristics, risks and needs of this population. This understanding can help to focus limited resources on effective prevention and management of physically harmful behaviours and improve prison stability. Moreover, with a lack of theoretical approaches used to explain and predict self-harm occurring in prison and jail, the notion of dual harm represents an advancement that requires further investigation. This is particularly salient in the United States criminal justice system that is unique in its capacity for mass incarceration, and where jails and prisons operate as a default mental health system for a substantial portion of society.

Community studies, mainly in adolescent populations, have recently begun to identify additional factors which aid our understanding of the development of dual harm behaviours. Studies have identified greater rates of mental health issues for those who dual harm including higher rates of anxiety/depressive symptoms, early substance dependence or psychosis (pre-age18), compared with those who self-harm without violent offending, but with similar rates of engagement with mental health services, suggestive of an under-representation in their accessing of services (Harford & Freeman, 2012; Richmond-Rakerd *et al.,* 2019; Steinhoff, et al., 2022). Furthermore, those who dual harm, compared with those who sole harm, report greater experience of childhood violence and harsh parenting, less bonding with school (although studies report similar IQ levels), have lower levels of self-control and greater emotional and interpersonal lability (Richmond-Rakerd *et al.,* 2019; Steinhoff, et al., 2022). *Redacted* and colleagues (2020) proposed a theoretical framework for dual harm that links these dysfunctional early life experiences and family problems to the utilization of emotional and behavioural regulation (Richmond-Rakerd *et al.,* 2019; Sahlin *et al.,* 2017). This body of work suggests that both self-harm and violence (and other damaging behaviours) emerge during dysfunctional childhood environments that facilitate the management of emotional and trauma-based distress. Importantly, the framework suggests that the relationship between the behaviours is not coincidental, with those who dual harm exhibiting distinctive patterns of characteristics from those who harm either themselves or others. Although the risk of dual harm may develop in tandem, the enactment of either self-harm or violence is influenced by a combination the function of each behaviour (e.g., men who dual harm report they could inflict pain to either themselves or others as a method of relieving distress; Pickering, Blagden & *Redacted*, 2022) but also circumstance (e.g., the availability of others) and taking account of consequence. For instance, men report they would self-harm due to wishing to avoid violence (Power, *Redacted* & Beaudette, 2016). This framework is based on the few studies that have

directly examined dual-harming populations, currently limited to sub-groups of clinical or custodial samples, largely in Europe (e.g., alcohol dependence, psychiatric inpatient or single prisons) or adolescents and young adults (under age 21) (Harford, Chen, Kerridge and Grant, 2018; Richmond-Rakerd *et al.*, 2019; Harford and Freeman, 2012; Hemming et al., 2021; Steinhoff et al., 2022) while using differing operational definitions for self-harm and violence (Shafti, *et al.*, 2021; *Redacted*, 2018; *Redacted et al.*, 2020; Kottler *et al.*, 2018). Furthermore, the presence of contrasting findings, such as substance dependence being prominent in adolescent populations, but not within prison populations, emphasises the need to replicate the patterns of characteristics across populations and jurisdictions.

This study will test profile characteristics identified within UK prisons and community studies within an entire United States prison population for one state (including both males and females) covering an extended time-period to provide more robust testing of the distinctiveness of the dual harm profile within a previously unexplored international setting. Specifically, in keeping with *Redacted et al.,* (2020), we examined, in detail, the types of institutional behaviours exhibited by dual harm compared with all other groups; considering whether the same reactive behaviour patterns were present. In addition, this study explores for the first time whether the demographic profile of those who dual harm in prison is reflective of indicators from adolescent community studies in relation to poorer educational achievement, mental health, substance use and relationship status. To our knowledge, this is the first population-level study to examine the comparative differences between those who engaged in dual harm, self-harm, violence, or no harmful behaviours whilst in custody. This provides important information regarding population-level associations between behaviours and the association of dual harm with criminogenic, health and developmental factors. The current study investigates whether those in prison who dual harm should be considered as having a distinctive pattern of

characteristics. Furthermore, it provides an important test of whether the patterns previously observed for dual harm in a UK context also hold across different custodial contexts (including in some cases very different ways of recording prison incidents and behaviour).

This study therefore aims to confirm a pattern of characteristics of people who display a history of dual harm within a complete state prison sample. Based on the UK prison research, we hypothesise there will be a strong relationship between violent and self-harm behaviour in prison. Furthermore, based on factors identified in prison and community research, that those who have a history of dual harm in prison will, in comparison to other groups:

1. Have a higher overall rate of prison disciplinary incidents;
2. Have a higher rate of non-harm incidents within prison (particularly in relation to property damage and disorder);
3. Use a greater number of lethal self-harm methods than prisoners who solely self-harm;
4. Be younger in age on admission to prison and less likely to be married;
5. Have poorer educational achievements on admission to prison and less educational development during imprisonment;
6. Have greater mental health history and, in keeping with prison research, less history of substance use.

METHOD

The current research was reviewed and approved by (*two university names redacted for manuscript review*) IRB research ethics committees.

Data used in this study were collected from the Management Information Notes Systems (MINS) used by a state prison system located in the south-eastern United States. This

electronic system is used by correctional staff to record demographic and offending data and all incidents requiring an institutional response and includes 56 different disciplinary offences, which were placed into 19 categories.

Participants

Data were retrieved from all 28 prison institutions for the period 31/12/2004 to 31/12/2007 giving a total sample of 22,918 (93.2% male; M_{age} = 34.3 years (SD = 10.7); 33.4% classified as White ethnic group, 65% Black, 1.1% Hispanic, 0.3% Asian or Indian and 1.2 % Other) and 43,489 incidents events recorded. While the researchers recognize that these data are dated, this study represents an international collaboration on self-harm and violence occurring in prison and this remains one of the largest datasets on the behaviour in any United States correctional context.

Measures

Dependent Variables

The definitions for incident categories initially reflected the categorisations as reported in previous dual harm research in the prison context (*Redacted et al.,* 2020) which are based on the official recording of an event where physical harm (through contact) to a person occurred.

Self-harm event: Events reported in MINS and *Self-Injurious Behaviour* reports were used to provide the number of self-harm (irrespective of intent) events and classify self-harm method: hanging, cutting, inserting, opening, ingesting and other. A superordinate ***Lethal self-harm*** category was defined as a history of either hanging or ingesting.

Violence event: A violence event included assault and battery of an employee, fighting with or without a weapon, homicide, robbery with force, striking an employee, and throwing a substance or object on an employee.

The sample was classified into four exclusive groups based on presence of one or more relevant event based on the presence or absence of physical harm to a person:

Self-harm (SH): Those with self-harm but not violence;

Other-Harm (OH): Those with violence but not self-harm;

Dual Harm: Those with both violence and self-harm.

No Harm: Those with no recorded violence or self-harm events;

The group frequency and key demographics by group is outlined in Table 1

Table 1 about here

Independent Variables

Demographics, health, and education (self-reported and unverified): Demographic information collected included prisoner age at admittance, sex, ethnicity, and marital status. Health information included the self-reported presence of a mental health issue or drug dependence and a recorded IQ of less than 70 (based on unverified assessment). Information was collected on prisoners' educational status and ability including whether they had completed High School, educational level in years, results of the Wide Range Achievement Test (WRAT) at admission (giving a score corresponding to school grade level)

Time in prison: Prisoners' total years spent in prison was calculated by taking the difference between their current age and age at admittance.

Disciplinary infraction:

Thematic categorisations were developed, where possible in line with those outlined in *Redacted et al*. (2020).

Damage: any damage made to property and possessions; ***Disorder***: inciting or creating a disturbance, riot, or mutiny, or, creating unnecessary noise), ***Substance use***: possession and use of alcohol or any other drug; ***Unauthorised possession***: possession of contraband, forgery, unauthorised services and trading, phone possession.

Threats of Violence: threats towards both prisoners and employees, as well as possession of a weapon and hostage taking; ***Sexual Violence:*** being physical sexual assault; ***Sexual Misconduct***: the offensive use of sexual language or gestures, and all other sexual misconduct not constituting a physical assault; ***Interference*:** incidents of preventing the duties of any person; ***Refusal or Failure***: failing to complete a variety of orders or tasks; ***In Place Without Permission:*** being out of place or without permission; ***Interpersonal Misconduc****t*: disrespect, exerting authority over another inmate, making false statements intended to harm, and soliciting others to violate the rules

Data Analysis

The prevalence of the four groups was calculated and differences between the groups explored. The risk of violence towards others given self-harm status and vice-versa was estimated, with differences in the self-harm, incident and demographic data investigated. All statistical analyses were conducted in R version 4.03 (R Core Team, 2020). The data were used to establish the overall prevalence for self-harm and violence within the sample. Those who exhibited both behaviours (i.e., dual harm) and either self-harm or violence, were compared

with those who exhibited neither behaviour while they were in prison. This study identifies the distinct characteristics of the prison population with a history of dual harm and therefore predominately uses logistic regression and generalized linear models and related models for count data.

RESULTS

Relationship between Self-Harm and Violence

Self-harm status (i.e., whether had self-harmed in prison) was significantly associated with violence. The simple correlation between self-harm and violence was $r(22{,}916) = .146$, 95% CI [.133, .159]. Binomial logistic regression calculated the change in odds of violent behaviour when self-harm was present. Those who self-harm were six times more likely to be violent, and vice versa $OR = 6.20$, 95% CI [5.16, 7.44], $p < .001$. *OR* provides an appropriate measure of association because it accounts for the differing behaviour base rates.

Event Rate

The event rate included all recorded events (disciplinary events and self-harm events). The full sample had a recorded history of 43,489 events including 3,127 violence and 400 self-harm events recorded. Dual Harm have a markedly higher overall rate of events than all other groups. The mean annual rate for all events (including violence and self-harm) for Dual Harm is 2.32, 95% CI [2.04, 2.63], compared with 1.29, 95% CI [1.22, 1.36] for Other-harm, 1.42, 95% CI [1.22, 1.63] for Self-harm and 0.31, 95% CI [0.29, 0.32] for No Harm.

As the groups have, by definition, differing rates of self-harm and violence events, these event types were excluded from the following analysis to compare the groups on their rates of non-harm disciplinary events with 39,962 events then analysed. Dual Harm persisted with a

significantly higher annual event rate than all the other groups at 1.74, 95% CI [1.50, 2.01], per year. Next was SH at 1.22, 95% CI [1.04, 1.42], OH at 1.01, 95% CI [0.94, 1.07], with No Harm at 0.31, 95% CI [0.29, 0.32]. Incident rate group differences were explored using a Poisson model. A dispersion parameter was included to adjust the standard error for the overdispersion of the count data. Total years in prison was included as an offset to control for the effect of time available for events to occur, which means the model compares groups on the number of events per year (i.e., the rate rather than count). Due to some having under a year in prison, 0.5 (the estimated time in prison for incomplete years) was added to the full sample to remove zeros, allowing for log transformation. The resulting model compares the event rate per year between the No Harm, OH, SH and Dual Harm groups. Figure 1 shows the mean non-harm disciplinary event rate for each group.

The emmeans package in R (Lenth, 2018) was used to conduct pairwise comparisons, using the Hochberg correction (Hochberg, 1988) for multiple testing. This showed that all the groups differed significantly from one another (Table 2) with Dual Harm having rates 40-70% higher than OH and SH and over five times higher than No Harm.

Figure 1 about here

Table 2 about here

Disciplinary Categories

To ensure comparisons, logistic regression compared all groups on 11 disciplinary categories with at least 10 events in each group. Time spent in prison was a covariate to control for differential opportunity, with Hochberg correction used. Overall, those with one or both harm behaviours exhibit a significantly higher rate across all categories, compared with No Harm. The only significant difference between the OH and SH groups was lower unauthorised possession rate in OH. Dual Harm have a significantly higher rate, than all other groups, of all violence-related events including property damage, refusal, disorder, interpersonal misconduct threats of violence, sexual violence, and sexual misconduct, but not substance use or non-violent disciplinary events. Comparisons of all groups with ratios and 95% confidence intervals are presented in Table 3.

Table 3 about here

Self-Harm Method

Logistic regression was used to test whether Dual Harm were more likely to ever use lethal self-harm than SH group, with years in prison as covariate. Self-harm method was available for 152 (46.8%) of SH and 141 (71.9%) of Dual Harm persons. Dual Harm were more likely to ever use a lethal Self-harm method than the SH, $OR = 1.59$, 95% CI [1.00, 2.55], $p = .0497$.

Demographic, Education and, Health History

Table 4 about here

The analysis examined group differences on demographic, previous and recent educational status, and health factors (Table 4). Categorical variables were analysed using the Egon-Pearson corrected Chi-square test, and continuous variables using one-way ANOVA, with Hochberg correction. The differences between groups for the continuous variables are summarized in Table 5. Table 6 shows the departures from the expected frequency for each group in the form of the adjusted standardized residuals (ASRs). Positive ASRs indicate higher frequencies than expected if the categorical variables are independent of group, while negative ASRs indicate lower than expected frequencies.

Dual Harm are significantly more likely to have an identified mental health issue and be younger at admission to prison than all other groups. Dual Harm and OH are significantly less likely to be married than other groups. No differences were identified between OH and SH. There were no significant differences between any groups on previous drug dependence. Those with a history of violence in prison, either OH or Dual Harm, have a lower reading score on admission and less likely to have completed high school.

Table 5 about here

Educational development in prison

To consider improvements in education during incarceration, the differences in change in reading score between admittance and the most recent (current) assessment were tested using ANCOVA. Current Reading score was regressed onto group membership, with standardised reading score at admittance, education level, presence of an IQ less than 70, time spent in prison and sex included as covariates. Group significantly predicted current reading scores, $F(3,$

22446) = 58.79, *MSE* = 6.77, $p < 0.001$. Pairwise comparisons with the Hochberg adjustment showed that the Dual Harm group reading scores were significantly lower than OH (b = -0.59, 95% CI = [-0.97, -0.20], $p < .01$), SH (estimate = -0.90, 95% CI = [-1.37, -0.43], $p < .001$), and No Harm (b = -0.92, 95% CI = [-1.29, -0.55], $p < .0001$). Those in Dual Harm had the least improvement in reading scores during their imprisonment.

Table 6 about here

DISCUSSION & CONCLUSION

The current study provides several key insights into the manifestation of dual harm behaviours occurring in corrections and reinforces that a dual harm profile can be differentiated from those who solely self-harm or are violent and those who do not cause physical harm in prison. These insights begin with an observation that most people incarcerated in this state prison system did not demonstrate violent and/or self-harming behaviours, as approximately 89% had no documented acts that warranted an institutional report by staff. This stands in contrast to views often held by the public and as portrayed by media representations (Surette, 2014). Of the remaining 11%, there was evidence of the existence of three groups: an other-harm (solely violence) group (8.6%), a solely self-harm group (1.4%), and a dual harm group (0.9%). This indicates that most people in prison who engaged in physically harmful behaviours did so via externalisation in the form of violence directed towards others, with a minority of people reportedly engaged in acts of self-harm. Moreover, 33% of those who engaged in self-harm in prison were also violent whilst incarcerated and this high rate of

overlap is in keeping with both UK prison studies (*Redacted et al.,* 2020; *Redacted*, 2018, community and hospital populations (O'Donnell *et al.,* 2015).

A test of the hypotheses indicates that those engaging in dual harm in prison present with a differentiated profile when compared to others who did not engage in dual harm. Those who dual harmed had proportionally far more institutional infractions at statistically significant levels. Less than 1% of the prison population had reported acts of both violence and self-harm of sufficient severity to warrant an institutional response, although those who dual harm demonstrated an overall rate of infraction that was 40-70% higher than those who engage in other-harm or self-harm, and over five times higher than those who do not have any physical harm infractions. These finding echoes *Redacted* and colleagues (2020) who reported that the dual harm population (11% of the prison population) accounted for over 50% of all misconduct incidents. Moreover, these incidents while incarcerated were expressed in variety of ways, with those who dual harm engaged in significantly higher rates of aggressive incidents like property damage, disorder, refusal, and threats of violence, than all other groups. Those who dual harm also demonstrated significantly higher rates of sexual violence and sexual misconduct, than other groups, whilst in prison although, consistent with previous prison studies, did not display disproportionate involvement in substance use or having unauthorised items in their possession. The manifestation of self-harm behaviour in this sample was also relevant to risk management, with those who dual harm engaging in more lethal methods such as ligature or ingestion when compared to the self-harm group. While confirming the hypothesis of increased infractions by those who dual harm in prison, these results suggest, in keeping with UK prison studies (Kottler *et al.,* 2018; *Redacted et al.,* 2020; *Redacted*, 2018), that the dual harm population is more identifiable by their aggressive forms of institutional deviance rather than engagement in substance abuse, more organized or premeditated

infractions, or other types of rule-breaking and are at greater risk of fatal outcomes from their self-harm behaviour.

This study also documents that those who dual harm in prison differs from those who are solely violent or self-harm and the broader prison population (i.e., no harmful behaviour) in factors that are related to both pre- and during incarceration. On arrival into the prison system, those who go on to be violent or dual harm whilst incarcerated had lower reading scores and were least likely to have a high school diploma/GED, than other groups. Additional research is needed to better understand the processes that influence this stalling of educational status prior to incarceration in these groups. These is evidence of low school bonding in adolescents who dual harm (Steinhoff et al., 2022), and evidence that the emergence of symptoms of mental health issues during elementary school and adolescence can be linked to school problems such as truancy, self-harm, and aggressiveness (Keenan *et al.,* 2011; *Redacted* & Power, 2015) Unfortunately, this deficit continued, with dual harming individuals having the least levels of educational development during incarceration and may indicate a beneficial area for a review by correctional services regarding whether there may be disproportionate restriction of access to suitable services or the presence of additional educational needs..

The potential relevance of mental health was identified with those who dual harm self-reporting a greater need for mental health care compared to other groups, though not for drug dependence, a finding reinforced with no increase in infractions for drug use in prison for this group. Furthermore, the dual harm population was younger when admitted to prison and less likely to be married, when compared to other groups, which suggests less access to positive social support or connections. The lack of verified data restricts the conclusions regarding the relationship between dual harm and mental health with further research require which uses more robust methods of assessment.

This full US state population study confirms findings from earlier UK studies and strengthens the argument for a dual harm profile which can distinguish those who dual harm from those who harm in a single manner, and which has relevance to all custodial environments. Internationally, the custodial dual harm population has been shown to maintain a disproportionate level of engagement in institutional misconduct concentrated on reactive or aggressive behaviours. Furthermore, this study validates consistent findings that both male and female populations who dual harm are at greater risk of premature death due to lethal methods of self-harm and that substance misuse is not a discriminatory factor either on admission or during incarceration for custodial dual harm (Kottler *et al.*, 2018; *Redacted et al.*, 2020; *Redacted*, 2018). This contrasts with community studies (Harford, *et al.*, 2018; Harford and Freeman, 2012; Richmond-Rakerd *et al.*, 2019; Steinhoff, et al., 2022) which indicated a relationship between early substance use and harmful behaviours. This study further extends the current understanding on custodial dual harm although with some jurisdiction differences with dual harm in US also exhibiting disproportionate rates of sexual violence and misconduct, in contrast the UK studies. These differences suggest that the differing definitions of dual harm (e.g., the inclusion of aggression without physical harm or sexual violence, using self-reported or recorded events or over differing timelines) may impact the profile. As evidence grows, there are calls for reflection on the definition of dual harm (Shafti *et al.*, 2021; Pickering *et al.*, in press) and improved consistency in reporting, which may support the resolution of these discrepancies. In this study, those who engaged in any harmful behaviour (dual, other or self-harm) had significantly higher rates of aggressive behaviour, including verbal threats and sexual misconduct than those who did not engage in physical harm behaviours, with the highest levels reported within the dual harm population. This indicates that a broader definition of violence which incorporates aggression would not sufficiently distinguish these groups.

Therefore, this study supports the position that dual harm is most meaningfully defined, for research and clinical practice, where physical harm is caused both to self and others as distinct from other forms of violent behaviour e.g., aggression or threats of harm.

This study confirmed the differentiated nature of dual harm within an international and large-scale population. These findings emphasise that within both academic and clinical contexts, there is a need to review the current distinctive assessment and intervention pathways for violence and self-harm behaviour to ensure greater awareness of the overlap in harmful behaviour and address the specific needs of this group. The growing evidence indicates that risk management, and assessment tools, for both self-harm and violence, would benefit from consideration of the patterns associated with dual harm to potentially improve their relevance and effectiveness. Furthermore, developing greater integration between clinical and criminal justice pathways, with collaborative and single case management approaches, may also significantly improve harm prevention outcomes across justice and health.

While this study strengthens current knowledge and provides several promising insights into dual harm behaviour, it is not without limitations. These data are based on an institutional reporting system, this process is initiated by the responding correctional officer, with a report forwarded and reviewed by supervisors, and then maintained by a central research office in the prison system headquarters. These steps do allow for error, with data collection neither developed nor monitored by researchers. It is also likely those who engage in violence, disruption or self-harm in prison will attract additional staff monitoring and this may result in a higher likelihood of an event being identified and recorded. The effect of this monitoring is not known, although it is assumed to consistently affect the recording of all events and therefore, does not affect the patterns of higher rates in specific incident types. Furthermore,

the labels and definitions used for events differ between jurisdictions and they have been aligned, as best as possible, for the purpose of this study to allow for confident comparisons to be made. The quality of some of the data on aspects such as mental health and IQ is based on correctional services were not collected or confirmed by health services. Therefore, although this study provides some early indications that mental health or learning needs may have relevance, further study is required.

These limitations may explain why the overall reporting of self-harm within this sample is a significant under-representation when compared to studies that use other methodological approaches. The current study produced a rate of less than 1% reported within institutional records in this study, whereby US research has suggested estimates of between 15-24% of individuals engaging in non-suicidal self-injury (NSSI) while incarcerated (Dixon-Gordon, Harrison, & Roesch, 2012). There are therefore likely to be many who dual harm within sole-harm groups in this sample and the proportion of dual harm in the population also a significant under-representation. The use of institutional reports does not negate the findings, but rather it is expected that more serious acts of self-harm and violence are documented with less serious acts not recorded. This makes this dataset appropriate for this dual harming population. Although females are included, their proportion is less than 7% of the overall sample and more detailed analysis was not possible due to the small dual harm sample. Further testing for female populations is required before some of these findings can be confidently applied in practice with females.

This is the first study to the authors knowledge that tests the differential dual harm profile identified in UK prisons within population-level international data, in the USA. The current study finds support for the notion that dual harming behaviour is a highly relevant construct within international custodial settings, with the profile confirmed and expanded across jurisdictions which demonstrates the impact but also the early and ongoing educational,

health and social needs of this population. The utilisation of this knowledge can support correctional and health services in identifying those at-risk and, critically, to prioritise interventions for this group at all stages of life and for when in contact with the criminal justice system.

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Figure 1: Annual incident disciplinary events rate (excluding violence and self-harm) by group

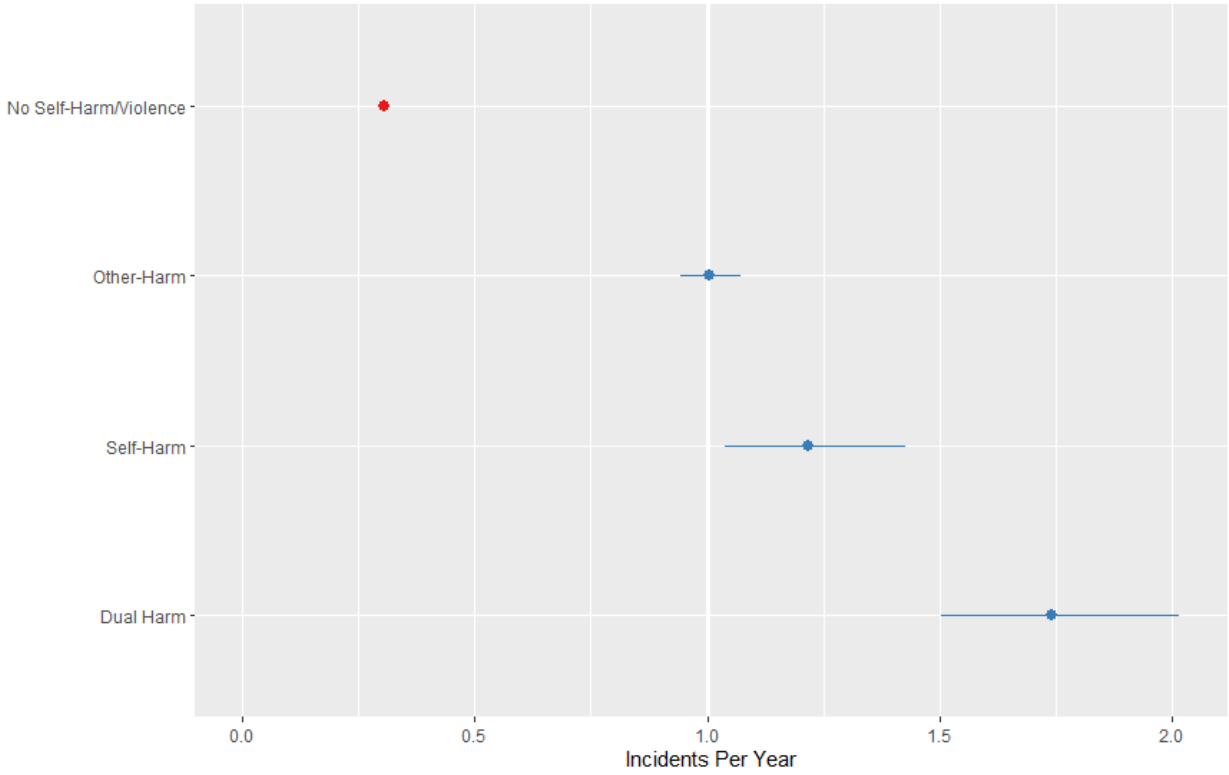

Table 1: Prevalence rates and group characteristics.

Group	*n*	Prevalence (%)	Female (%)	Age at admittance M (SD)	Ethnicity (Ethic minority %)	Married (incl. common law) (%)	Sentence length (Years, (SD)
No Harm	20,413	89.1	7.0	31.2 (10.0)	66.1	27.3	100.1 (280.5)
Other-harm	1,984	8.7	4.8	25.9 (8.3)	83.1	17.3	82.8 (251.6)
Self-harm	325	1.4	7.4	25.8 (7.4)	52.6	23.1	66.6 (226.7)
Dual Harm	196	0.9	7.7	23.7 (7.2)	71.4	14.8	72.2 (229.7)
Full sample	22,918	100.0	6.8	30.6 (10.0)	67.6	26.2	97.9 (277.1)

Table 2: Rate ratios for pairwise comparisons in annual incident rate between groups (with p adjusted for multiple comparisons)

Contrast	**Rate ratio**	**95% CI**	**Adjusted *p***
Dual Harm - No Harm	5.70	4.90, 6.63	< .0001
Dual Harm - OH	1.73	1.48, 2.03	< .0001
Dual Harm – SH	1.43	1.15, 1.77	< .01
OH - No Harm	3.29	3.06, 3.55	< .0001
SH - No Harm	3.99	3.39, 4.69	< .0001
OH - SH	0.83	0.70, 0.98	< .05

Table 3: Odds ratios and 95% CIs for the differences for each of the 11 disciplinary categories

Category	Dual Harm – Other-harm	Dual Harm – Self-harm	Dual Harm- No Harm	Other-harm – Self-harm	Other-harm- No Harm	Self-harm- No Harm
Violence-related						
Damage	3.90 [2.83, 5.37]***	3.16 [2.07, 4.82]***	20.23 [14.93, 27.40]***	0.81 [0.58, 1.13]	5.18 [4.43, 6.07]***	6.40 [4.67, 8.78]***
Disorder	2.10 [1.45, 3.05]***	2.64 [1.58, 4.42]***	10.69 [7.49, 15.27]***	1.26 [0.84, 1.89]	5.09 [4.31, 6.01]***	4.05 [2.73, 5.99]***
Refusal or Failure	1.55 [1.15, 2.07]*	1.52 [1.06, 2.17]*	6.52 [4.91, 8.65]***	0.98 [0.77, 1.25]	4.22 [3.82, 4.65]***	4.30 [3.43, 5.37]***
Interpersonal Misconduct	1.88 [1.35, 2.63]***	1.69 [1.11, 2.57]*	6.36 [4.62, 8.76]***	0.90 [0.66, 1.22]	3.38 [2.96, 3.86]***	3.77 [2.82, 5.03]***
Sexual Misconduct	2.22 [1.65, 2.99]***	2.68 [1.86, 3.88]***	12.63 [9.49, 16.82]***	1.21 [0.94, 1.56]	5.68 [5.12, 6.31]***	4.71 [3.70, 5.99]***
Sexual Violence	2.78 [1.71, 4.51]***	2.91 [1.46, 5.80]**	17.08 [10.75, 27.14]***	1.05 [0.59, 1.86]	6.14 [4.72, 8.00]***	5.87 [3.36, 10.27]***
Threats of Violence	3.88 [2.85, 5.30]***	4.06 [2.78, 5.92]***	25.92 [19.18, 35.03]***	1.04 [0.81, 1.35]	6.68 [5.99, 7.44]***	6.39 [5.02, 8.14]***
Substance-related						
Substance Use	0.67 [0.46, 0.98]	0.71 [0.45, 1.11]	1.40 [0.97, 2.02]	1.06 [0.80, 1.41]	2.09 [1.87, 2.33]***	1.97 [1.51, 2.56]***
Other non-violent						
Unauthorised Possession	1.41 [1.03, 1.93]	1.03 [0.71, 1.51]	3.04 [2.25, 4.10]***	0.73 [0.57, 0.94]*	2.16 [1.93, 2.40]***	2.95 [2.32, 3.74]***
Interference	1.09 [0.69, 1.70]	1.09 [0.63, 1.87]	2.69 [1.75, 4.15]***	1.00 [0.69, 1.44]	2.48 [2.13, 2.88]***	2.48 [1.76, 3.50]***
In place without permission	0.86 [0.59, 1.26]	1.04 [0.66, 1.65]	2.59 [1.80, 3.73]***	1.20 [0.89, 1.63]	2.99 [2.66, 3.38]***	2.49 [1.87, 3.33]***

*p <.05 ** p<.01; *** p <.001

Table 4: Education and health history

	Variable	No Harm	Self-harm	Other-harm	Dual Harm	Total
Educational	Reading Score (Admission), M (SD)***	8.25 (3.94)	8.00 (3.93)	7.76 (3.78)	7.10 (3.86)	8.20(3.93)
	Current Education Level, M (SD)***	10.49 (2.03)	10.07(1.80)	10.19 (1.83)	9.79 (1.99)	10.5(2.02)
	High School Diploma/GED (%)***	41.8	30.15	29.99	22.96	40.45
Health	Drug Dependent (%)	42.04	43.69	39.52	41.33	41.84
	Mental Health (%)***	9.48	39.38	14.82	57.14	10.78

*p <.05 ** p<.01; *** p <.001

Table 5: Post-hoc contrasts and Hochberg adjusted significance levels (continuous variables

Variable	**No Harm**	**Self-harm**	**Other-harm**	**Dual Harm**
High School Diploma/GED	11.88***	-3.81***	-9.94***	-5.01***
Married (incl. Common Law)	10.16***	-1.30	-9.53***	-3.65***
Mental Health	-18.02***	16.75***	6.07***	21.02***

*p <.05 ** p<.01; *** p <.001

Table 6: Adjusted Standardised Residuals and Hochberg adjusted significance level (categorical variables)

Contrast	Age at Admittance	Current Education Level	Reading Score (Admission)
Dual Harm - OH	-2.14 [-3.58, -0.70]*	-0.40 [-0.70, -0.10]*	-0.65 [-1.23, -0.08]
Dual Harm - SH	-2.09 [-3.83, -0.35]*	-0.28 [-0.64, 0.08]	-0.90 [-1.60, -0.20]*
Dual Harm - No Harm	-7.43 [-8.81, -6.05]***	-0.70 [-0.98, -0.42]***	-1.15 [-1.70, -0.60]***
OH - SH	0.06 [-1.09, 1.21]	0.12 [-0.12, 0.36]	-0.25 [-0.71, 0.22]
OH - No Harm	-5.29 [-5.74, -4.84]***	-0.30 [-0.39, -0.21]***	-0.50 [-0.68, -0.31]***
SH - No Harm	-5.34 [-6.42, -4.27]***	-0.42 [-0.64, -0.20]***	-0.25 [-0.68, 0.18]

*p <.05 ** p<.01; *** p <.001