

Abbreviations

ASD = Autism Spectrum Disorder

MH = Mental Health

PD = Personality Disorder

ID = Intellectual Disability

TBI = Traumatic Brain Injury

Table 1: Key Characteristics of Included Studies and Headbanging Incident Data

Author, Year, Country, and Title	Study Design	Setting(s)	Participants (n) and diagnoses	Findings/Implications	Physical Health Outcomes (if known)
Zheng et al., 2022, China <i>A retrospective research on non-suicidal self-injurious behaviours among young patients diagnosed with mood disorders</i>	Exploratory study, convenience sample of inpatients admitted from 11 th November 2021 to 31 st January 2022.	Mental health centre.	Total participants n = 349 (aged 14 – 44 years) Adolescents (>18) accounted for 38% of participants. Diagnoses of mood disorders with no significant psychotic symptoms. M = 156 (44.7%) F = 193 (55.3%)	Reported engaging in self-harm within the last month: n = 151 (43%) Within this group headbanging was amongst the most common methods. Reported engaging in self-harm within the last year: n = 128 (37%)	
Kool and Jaspers, 2022, the Netherlands (Conference abstract) <i>Self-harm on a closed psychiatric ward</i>		Closed psychiatric ward.	Total participants n = 27	Total number of participants exhibiting self-harming behaviour n = 20 (74%) Most frequent form of self-harm: Headbanging n = 42% of participants	
Laporte et al., 2021, Sweden <i>Clinical characteristics and self-harm in forensic psychiatric patients</i>	Exploratory cohort study using consecutively recruited participants from November 2016 to November 2020.	A high security forensic psychiatric clinic.	Total participants n = 98 Schizophrenia / other psychotic disorders more prevalent diagnosis (54%), followed by ADHD / ASD (22%) and PD (18%). 62% had a previous diagnosis of substance use or addictive disorders. M = 85 (86.7%) F = 13 (13.3%) Mean age = 34.9 years (19-62, <i>SD</i> = 10.7)	Total participants reported having engaged in self-harm: n = 67 (68.4%) Of those 67, n = 13 female (100% of sub-population) and n = 54 were male (63.5% of sub-population) The most common method of self-harm was headbanging or hitting oneself (n = 31 occasions). Participants admitted these episodes of self-harm occurred during their arrest or early in their admission to a forensic setting.	

Author, Year, Country, and Title	Study Design	Setting(s)	Participants (n)	Findings and Implications	Physical Health Outcomes (if known)
Chester and Alexander, 2018, UK <i>Headbanging as a form of self-harm among inpatients within forensic mental health and intellectual disability services</i>	Service evaluation using routinely collected retrospective incident data over one year, including thematic analysis of incident accounts.	Two inpatient forensic MH services, one ID and one MH / PD. Included low and medium secure, acute, locked, and open rehabilitation wards.	Total patient beds in both services: n = 253 MH/PD = 155 ID = 98 M = 170 F = 74 Mixed = 9 (This relates to one ID service that accepts patients of either gender) Patients accounting for headbanging incidents: n = 43	Total headbanging incidents recorded: n = 229 (<i>once approx. every three days in each service</i>) Frequency of headbanging incidents: M = 81 incidents F = 148 incidents Incidents involving repeated headbanging: n = 213 (93%) Incidents involving a single incidence of headbanging: n = 16 (7%) Five incidents of attempted headbanging were recorded. Individual headbanging rates varied from one incident, to thirty-eight within the year. Females and those in higher levels security were found to be significantly more likely to display headbanging behaviours.	Injuries attributed to headbanging behaviour: n = 49 (21.4%) - Most frequently, injuries to the forehead were reported, and included bruising, swelling, redness, lumps and bumps, grazes and cuts, and bleeding. - Many reports documented the reopening of wounds from previous headbanging incidents. <u>A seizure was documented in one report.</u> <u>Only one incident report detailed that the risk of TBI was considered.</u>
Chester et al., 2018, UK <i>Traumatic brain injury in a forensic intellectual disability population</i>	Service evaluation.	A 95-bed inpatient ID forensic service, with medium secure, low secure, and rehabilitation wards.	Total number of ID pts in service n = 80 M = 46 F = 34	Patients with documented histories involving headbanging incidents: n = 16 (20%)	Several inpatients had severe and prominent facial scarring due to headbanging. Most common treatments post-incident: <u>Visit hospital = 36%</u> <u>Seen by paramedic at the accident scene = 18%</u> <u>Visit GP = 7%</u> Some received medical treatment within their inpatient service and 8% did not know what treatment they received. 27% did not seek any treatment, which is concerning, as the full range of assessments, monitoring and treatments outlined in the NICE

(2014) head injury guideline are not being accessed by inpatients.

Author, Year, Country, and Title	Study Design	Setting(s)	Participants (n)	Findings and Implications	Physical Health Outcomes (if known)
Morales and Guarnero, 2014, USA <i>Non-suicidal self-injury among adult males in a correctional setting</i>	Exploratory study with a small non-randomised convenience sample for quantitative research.	Three correctional facilities/prisons.	Total participants n = 42 (adult males aged 18-55) MH diagnoses not specified. Those with diagnosed or suspected ID excluded.	Headbanging incidents reported in lifetime: n = 33 (78.6%) Headbanging was the second most common type of self-harm in the sample. General understanding around self-harm behaviours is poor, and there are no standards of care or best practice models for delivering MH services for adult males in correctional facilities. Greater insight into motivational factors would support with identifying triggers and risk factors, allowing staff to develop preventative skills.	Hospitalisation required post headbanging in lifetime: n = 14 (33.3%)
James et al., 2012, UK <i>Self harm in adult inpatient psychiatric care: A national study of reports in the UK</i>	Service evaluation using 500 randomly selected incident reports out of 14,271 collected by National Patient Safety Agency (NPSA) between 01/01/09 and 31/12/09.	Adult psychiatric inpatient wards including forensic, rehabilitation, and older adult settings.	Number unknown. Following review of the reports, n = 448 were included. Diagnosis not specified, presumed all MH conditions.	Self-harm episodes were most common in forensic services, perhaps due to environmental restrictions, thus headbanging may be the only form of self-harm available. Outwardly aggressive forms of self-harm (26.4% vs 8.4%, $p < 0.001$) were most common on forensic wards compared with the two other most frequently reported forms of self-harm - by breaking the skin or by restricting breathing. More self-harm was completed by women (n = 292, 65%, compared to n = 106, 24% for men), but a higher proportion of men used outwardly aggressive methods of self-harm (12.6% vs 1.4%, $\chi^2 = 23.11$, n = 392, d.f. = 1, p less than/equal to 0.001). In 11% of reports (n = 50), gender was not specified. Top three types of self-harm: 1. Breaking the skin (n = 174, 38.8%) 2. Restricting breathing (n = 90, 20.1%) 3. Outwardly aggressive methods, such as headbanging (n = 65, 14.5%)	<u>Attendance at the emergency department was an outcome in 8% of all self-harm cases (n = 34).</u>

Author, Year, Country, and Title	Study Design	Setting(s)	Participants (n)	Findings and Implications	Physical Health Outcomes (if known)
Goisman et al., 2007, USA <i>Head Banging on an inpatient psychiatric unit: A vicious circle</i>	Single participant case report.	Inpatient psychiatric unit.	n = 1 (M, 48-year-old migrant, initially informal patient later becoming involuntary patient). Major depression with psychotic features, alcohol dependency, panic and eating disorders)	During admission, increased agitation and headbanging incidents led to four-point restraints and intra-muscular haloperidol being administered. During restraint, the patient repeatedly banged his head on the side of the bed, leading to the need to use a fifth (head) restraint point. The patient declined a head CT, which one consultant felt should not have been honoured: <i>‘If an emergency head CT had been performed earlier by sedating the patient, it would have disclosed the damage that he had done to his frontal lobes—justifying greater efforts to prevent further head banging’ (p75).</i> 1 week post ECT: The repeated incidents of head (and hand) banging on the wall were resumed, requiring seclusion and the use of four or five-point restraints. Eight similar episodes occurred over the following month, commencing with little warning, but seeming to follow frustrations. The patient reported feeling relief when headbanging due to anger, feeling no pain at the time.	CT scan results showed small, bifrontal, chronic subdural haematomas with mass effect on the lateral ventricles. Following a neurosurgical consult, a repeated CT scan gave the impression of chronic subdural haematomas from prior head trauma, suggesting that headbanging incidents had occurred for at least one month prior to admission. Subsequent CT scan results following further headbanging incidents: The bilateral subdural haematomas were seen to increase in size following each episode of headbanging, causing a mild mass effect on the right frontal hemisphere. Mild memory loss was also noted on neurologic assessment. Subdural haematoma drainage was recommended but not deemed an urgent necessity. The patient did not consent to surgery and headbanging behaviours continued. Following neuropsychiatric assessment, no major impairment of frontal lobe-based cognitive functions was noted: <i>‘There were minor indications of frontal lobe dysfunction such as the presence of frontal release signs (p73) [...] Lesions to the orbitofrontal region, particularly if bilateral, have been associated with personality changes, lack of impulse control, and an impairment in estimating the immediate or long-term consequences of the individual’s actions (p75)’.</i> After experiencing headaches, blurred vision and the discovery of dysmetria on exam, the patient consented to the surgery, which was carried out with no complications.

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