



# Knowledge about head injury in police custody staff and implications for training

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## ABSTRACT

Head injury is prevalent in prisoners and is associated with offending behaviour. Awareness and assessment of the occurrence and effects of recent head injury is important and should occur at an early stage in the criminal justice system. This study looks at knowledge about detainees with a recent head injury in police custody and considers the implications for training of custody officers.

Questionnaires about perceived training needs and knowledge about head injury were completed by 67 custody officers in Scotland. All officers reported a need for further training about head injury and the most common areas of need were perceived to be assessment, early management and long term effects. Knowledge and past training seemed to be more focussed on awareness of potentially catastrophic brain injury and a limited understanding of impairment of insight and of emotional and behavioural effects was evident.

There is a need for routine training about recent effects of head injury for custody officers to include the effects on insight, emotional and behavioural effects in detainees in addition to training on catastrophic outcomes which tends to be the main focus of current practice.

## 1. Introduction

Several studies point towards a high prevalence of head injury in prisoners (Farrer and Hedges, 2011; Moynan and McMillan, 2018; Shiroma et al., 2010), and a greater risk of offending behaviour after head injury that includes violent and more serious crime (Williams et al., 2018). It is recommended that there is screening for head injury and triage to appropriate management throughout the criminal justice system and that this should begin in police custody (National Health Service Scotland, 2016). Indeed one preliminary observational study found that around one in eight people detained in police custody reported having had a head injury in the past 48 hours when asked (McMillan et al., 2019). Note that the term ‘head injury’ is used here in relation to self-report and police observation in a custody setting and is distinguished from the term ‘traumatic brain injury’. ‘Head injury’ is a broader term that simply indicates that an injury to the head has occurred. This might be an extracranial injury such as facial laceration, but there could be intracranial injuries such as contusions, haemorrhage or diffuse damage of the brain. The term ‘head injury’ avoids assumptions that can be implicit in the use of the term ‘traumatic brain injury’ and associated with labelling as being ‘brain injured’. Head injury is a more cautious term and is more appropriate in situations such as police

custody, where expert assessment is not carried out.

The effects of traumatic brain injury are often considered to be a ‘hidden disability’ because persisting consequences are often cognitive and emotional rather than physical and as such may not be identified as being linked to a brain injury (McMillan et al., 2021a). These effects include impairments in information processing and executive function-including planning and organisation, and emotional changes associated with impulsivity, irritability and egocentricity. As a consequence, judgement and self-control can be impaired and thereby a greater risk of offending behaviour can result (Williams et al., 2018; Wood and Worthington, 2017).

In Scotland a vulnerability risk assessment (VRA) of health is routinely carried out in police custody. This includes for example, questions about mental health, medication and drug use. It allows custody staff to consider whether the individual needs hospital attention, to be seen by National Health Service forensic nurses or doctors that work in police custody or to be placed in an observation cell. In police custody the focus is on recently acquired brain injury. Our preliminary study in Scotland added a question about head injury to the VRA assessment. It observed that prisoners who reported a recent knock to the head when being processed in custody, most often said that it had occurred on the day of detention as a result of a fall or an assault and that the head injury

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was associated with intoxication. Almost half who reported a head injury were referred to the forensic nurse service associated with the police custody service for advice and a few were placed in an observation cell. Although the head injuries reported were ostensibly mild, if the numbers are representative of those processed through police custody each year, this would scale to 18,000 people with a recent knock to the head (McMillan et al., 2019). Since this study a question on head injury has been introduced into the VRA in police custody in Scotland.

Historically there have been concerns over misperceptions about head injury including by the general public, educators and healthcare professionals (Gouvier et al., 1988; Hooper, 2006; Hux et al., 2006; Linden et al., 2013; McKinlay and Buck, 2019; Springer et al., 1997; Swift and Wilson, 2001). However, very few studies consider knowledge about head injury in professionals working in the criminal justice system and none in police custody. Yuhasz (Yuhasz, 2013) surveyed a range of healthcare professionals in US correctional facilities (n = 155). Two thirds thought that they did not have sufficient training to work with incarcerated individuals with head injury. Half thought the prevalence of head injury in individuals they worked with was less than 10%, whereas it is estimated that a history of head injury is found in around 50% of prisoners (O'Rourke et al., 2018). Misconceptions were particularly common for questions related to unconsciousness, memory and recovery (O'Rourke et al., 2018). O'Rourke et al., surveyed 65 professionals in the probation service in Northern Ireland. Misconceptions were particularly common about self-awareness of effects of head injury in the people they work with and a need for training on head injury was evident.

The present study asked custody staff in Scotland whether they perceive that they had training needs about head injury, and associated with this, surveyed their knowledge about head injury. The aims were to determine knowledge and understanding about head injury in police custody staff, and their perceived training needs in relation to head injury. It is anticipated that the present survey will inform the development of educational resources in future.

## 2. Methods

Police Scotland sent batches of forms to police custody units throughout Scotland. Police sergeants, police constables and police custody and security officers (PCSOs) working in police custody were eligible to take part. A line manager provided participants with an information sheet and paper copies of three forms to complete. Completed forms were returned to a sealed box in their department office. Participation was voluntary and anonymous. Prior to the survey, feedback on draft forms was obtained from the Scottish Police College and from senior staff in police custody.

## 3. Measures

- 1. Demographic/Background, Information and Training Needs:** Basic background information was collected on years in service, job role and frequency of contact with prisoners. Participants were also asked to list any training they had received on assessment or management of detainees with head injury and about their perceived training needs.
- 2. Common Misconceptions about Traumatic Brain Injury Questionnaire (CM-TBI):** The 20-item version of the CM-TBI (Linden et al., 2013) categorises questions into four domains: recovery, sequelae, insight and hidden injury. A modified format that has been used with probation officers was used with questions rated as true or false (O'Rourke et al., 2018); it has good internal consistency (0.84) and test-retest reliability (0.82).
- 3. Knowledge about Head Injury:** A questionnaire designed for the study that assesses knowledge about head injury that is specifically relevant to the criminal justice system and the police custody context (see supplementary).

## 4. Results

**Background and Experience:** Sixty-seven completed forms were returned. Many participants worked in an urban setting (48%; n = 32), a few in a police constable-led service (8%; 4) and a few worked in both urban and rural settings (14%; 9); the response from the remaining 22 (30%) was unclear. Of the respondents, 40% (27) were police sergeants, 51% (34) were PCSOs and 10% (6) were police constables. The average years of experience was 7 (SD 7) with a range of 1–27 years. All but two participants had daily contact with prisoners (97%; 64).

**Training on Head Injury and Perceived Needs:** About a third (37%; 25) indicated that they had no previous training on head injury. Others identified past training as a basic first aid course (52%; 34), a custody welfare course (3%; 2) or via informal contact with forensic NHS staff (3%; 2). Almost all custody staff (94%; 63) perceived a need for further training about head injury. More specific details of perceived training needs are given in Table 1.

More than 70% of staff perceived a need for training on assessment, early management and long term effects of head injury and more than half on causes and management of behaviour. Differences between needs perceived by police sergeants and PCSOs were non-significant for all categories or for any individual category ( $p > 0.05$ ). The sample size of PCs was too small to test, but all reported training needs for assessment, early management and long term effects.

**Knowledge about Head Injury:** Scores on the CM-TBI questionnaire (median 18; IQR 16,19) ranged from 50% to 100% correct with 88% of participants making one or more error (Table 2). The questions can be grouped under the following domains: insight (3 questions), recovery (8), hidden disability (3) and sequelae (6). As there are differences in the number of questions per domain, the total number of errors per question for each domain was calculated, to allow comparison between domains. There were 17.3 errors per question for insight, 9.3 for sequelae, 5.7 for hidden disability and 5.0 for recovery. Hence errors for Insight were most common, and occurred in more than half of participants (52%).

The Knowledge Questionnaire is more specific to police custody than the CM-TBI, and scores here ranged from 50% to 100% correct (median 9; IQR 8,10) with 98% of participants making one or more error (see Table 3).

Differences in scores between Sergeants, Constables and PCSOs were not significant for the CM-TBI, or on the Knowledge Questionnaire ( $p > 0.05$ ). There was no statistically significant association between years of experience and scores on either questionnaire ( $p > 0.05$ ). There was no difference in total scores on either questionnaire between those who reported some training on HI (largely first aid) and those reporting none ( $p > 0.05$ ).

## 5. Discussion

There are three main findings. First, almost all custody officers perceived a need for further training about head injury, irrespective of

**Table 1**  
Perceptions of needs for training about head injury in police custody staff.

Head Injury	All Custody Staff (n = 67)	Sergeants (n = 27)	PCs (n = 6)	PCSOs (n = 34)
Causes	57% (38)	60% (16)	67% (4)	52% (18)
Assessment	78% (52)	74% (20)	100% (6)	76% (26)
Early management	73% (49)	70% (19)	100% (6)	71% (24)
Management of behaviour	51% (34)	48% (13)	83% (5)	50% (17)
Long term effects	79% (53)	74% (20)	100% (6)	79% (27)
All of above	43% (29)	44% (12)	50% (3)	41% (14)
No response	13% (09)	20% (05)	0	12% (04)

**Table 2**

Percentage of participants (n = 67 or \*n = 65) making errors on CM-TBI questions. The domain of question has been added in brackets for information and is not included in the questionnaire.

Question	True or False	% errors
1. A head injury can cause brain damage even if the individual is not knocked unconscious (hidden injury)	T	4
2. Whiplash injuries can cause brain damage even if there is no direct blow to the head (hidden injury)	T	21
3. It is common for people with brain injuries to be easily angered (sequelae)	T	13
4. It is common for personality to change after a brain injury (sequelae)	T	4
5. Problems with speech, coordination, and walking can be caused by brain damage (hidden injury)	T	0
6. Problems with irritability and difficulties controlling anger are common in people who had a brain injury (sequelae)	T	10
7. Most people with brain damage are not fully aware of its effect on their behaviour (sequelae)	T	15
8. People who have survived a brain injury usually show a good understanding of their problems because they experience them every day (insight)	F	40
9. Brain injuries often cause a person to feel depressed, sad, and hopeless (sequelae)	T	33
10. It is common for people to experience changes in behaviour after a brain injury (sequelae)	T	7
11. Sometimes a second blow to the head can help a person remember things that were forgotten (recovery)	F	1
12. Recovery from a brain injury is usually complete in about 5 months (recovery)	F	1
13. Once a person is able to walk again, his/her brain is almost fully recovered (recovery)	F	1
14. Once a person with a brain injury realizes their degree of impairment they will always be aware of this (insight)	F	15
15. A person who has a brain injury will be "just like new" in several months (recovery)	F	0
16. Asking people who were brain injured about their progress is the most accurate, informative way to find out how they have progressed (insight)	F	22
17. It is good advice to remain completely inactive during recovery from a brain injury (recovery)	F	8*
18. Once a person recovering from a brain injury feels "back to normal," the recovery process is complete (recovery)	F	1*
19. How quickly a person recovers depends mainly on how hard they work at recovering (recovery)	F	12*
20. The primary goal of brain injury rehabilitation is to increase physical abilities such as walking (recovery)	F	38*

rank or experience. Second, no officer reported having had specific training about head injury. Third although questionnaire scores might seem high in terms of overall scores (especially given the absence of specific training), the pattern of errors suggests that there are misconceptions about head injury, including in the important areas of insight, emotional effects and behaviour.

More than 40% of custody officers reported a need for further training about head injury in all of the areas listed and more than 70% in areas of assessment, early management and long term effects. Previous training was most often reported as having been part of a first aid course, and more than a third indicated that they had no training. This picture may not be uncommon in workers in the criminal justice system, for example O'Rourke et al. (O'Rourke et al., 2018) found that 93% of probation workers in Northern Ireland reported having had no formal training on head injury. No custody officer specifically cited the custody officer induction course as a source of training which does include information on acute effects of head injury such as drowsiness and change in consciousness, persistent or severe headache, visual disturbance, vomiting, seizures and unusual behaviour. The custody course focusses on the need to be alert to signs of potentially catastrophic brain injury

**Table 3**

Errors on the knowledge questionnaire (n = 66).

Question	% of sample making an error
1 About one in eight prisoners in custody report having had a head injury in the past 48 hours (true)	30
2 If reporting a recent HI the prisoner needs to be taken to A + E (false)	50
3 If conscious after a head injury people can remember what has happened about as well as anyone else (false)	11
4 If talking sensibly and walking, there is not risk of deterioration because of bleeding on the brain (false)	0
5 Prisoners with a recent head injury have a greater risk of fits or seizures (true)	11
6 Prisoners with a recent head injury can almost always be identified by physical injuries to their head (false)	1
7 It is not easy to distinguish between effects of a head injury and alcohol/drug intoxication (true)	9
8 Prisoners do not usually report a recent HI without asking them (true)	26
9 Prisoners with a past history of HI are more likely to be management problems than prisoners without (true)	61
10 If talking sensibly after a HI the prisoner will know where they are and who they are talking to (false)	26
11 Vomiting is not a risk after a recent head injury (false)	1
12 Hallucinations are not common in people with a recent history of HI (true)	80

requiring medical assessment. Indeed error rates were relatively low on several questions relevant to this (eg Knowledge Questionnaire items 5-7,12). There is however, also a need to focus on post traumatic effects of recent head injury that can affect behaviour and reduce the ability to respond to questions reliably (McMillan et al., 2021a).

The CM-TBI questionnaire was not specifically designed for the custody setting, but has the advantage of having been used with other professional groups allowing comparison (O'Rourke et al., 2018). Errors within the domains in the CM-TBI in the present study reveal important misconceptions in custody staff, including in understanding that limited insight can result from head injury and that emotional effects commonly occur (eg questions 8 and 9). Indeed, more than half of the present sample had misconceptions about insight. Impaired insight is associated with reduced self-awareness. The individual lacking insight is often not aware of the acute effects of the head injury. This includes the impact of their behaviour on others and they may not take account of feedback and moderate what they say or do. This can be interpreted by others as being non-compliant, unreasonable, difficult or defiant and the detainee might be reported to the Court in these terms (McMillan et al., 2021a). There are few other studies on staff in the criminal justice system and none on police officers. However, studies on healthcare professionals working in the criminal justice system also note misconceptions about head injury (Yuhasz, 2013) and in probation workers, particularly misconceptions about insight (O'Rourke et al., 2018). In the present study the Knowledge Questionnaire asked about issues that are more specific to a custody setting and more relevant to the occurrence of a recent head injury. Misconceptions found here, again support a need for training and often seemed to be underpinned by a limited understanding of the potential impact of a recent head injury on someone who does not require hospital attention. Post-traumatic amnesia commonly occurs after a concussive head injury, whereupon individuals have difficulty in processing and retaining information, can become confused and irritable and they are often not aware of these effects of the head injury. As they may be able to converse fluently and carry out skilled actions (McMillan et al., 2021a), the occurrence of a head injury and its effects may not be evident to custody officers. There can also be retrograde amnesia and this in combination with unreliable or absent recall for events after the head injury might result in inaccurate or unreliable responses to questioning or seeming non-compliance. On the Knowledge Questionnaire error rates were relatively high for several questions relevant to the presence of post-traumatic amnesia (questions 8-10 and 12). The

implications are that misconceptions may arise, particularly if custody officers believe that detainees are aware of and should be able to report recent events and over-rely on the ability of detainees with a head injury to do so. Studies in prisons suggest that a history of repeated knocks to the head are very common in offenders, that they often do not seek medical attention at the time of injury and often do not ascribe persisting symptoms to the head injury (McMillan et al., 2021b; Schofield et al., 2011) This underpins the need for enquiry about head injury by custody officers at this early stage in the criminal justice process and for them to have training in sequelae of recent head injury that includes those associated with post-traumatic amnesia.

This study is limited by the absence of data to indicate whether the sample is representative of the population of custody officers in Scotland and the design involved paper questionnaire completion without direct supervision from the researcher. The sample size was modest for considering differences in responses within staff groups.

## 6. Clinical implications

The prevalence of head injury in prisoners is high and screening for head injury should take place in police custody. This can take place as part of the vulnerability risk assessment when first taken to the police station and where there is concern should be followed by further assessment by forensic nursing or medical staff. Police custody staff often have misconceptions about the effects of head injury on cognition and behaviour that are relevant for management in the custody setting. There is a need for psychologically informed training about recent head injury for police custody staff that extends beyond whether hospital attendance is required and includes post-traumatic effects of head injury on behaviour and the ability to give testimony.

## 7. Conclusions

Police custody officers perceive a need for training on the effects of recent head injury. Although they performed well in some areas, errors were made on questions pertaining to insight, emotional and behavioural effects of head injury and which were relevant to post traumatic amnesia. On the basis of these findings, it is recommended that training is developed for custody officers that covers these effects of recent head injury. The training should be easy to access and regularly updated.

## Declarations

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.fsml.2022.100105>.

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