

Post-Traumatic Stress Disorder in Road Traffic Accident Survivors – Can We Do More?

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Medicine and technology are closely intertwined. Technology has opened a plethora of possibilities to medical treatments with better imaging and diagnostic devices, novel intervention techniques and countless medication choices. It has also enhanced the standard of living and created ease and accessibility in modern-day commute. Traditional means of transportation such as cars and motorcycles have been equipped with more powerful engines that are able to accelerate faster and attain higher speeds in a shorter time. Personal mobility devices (PMDs) such as electronic scooters, motorised wheelchairs and power-assisted bicycles are now commonly used and can reach cruising speeds of up to 50 km/h. While technology has no doubt improved the quality of life, it has proven to be a double-edged sword and created a new set of problems. The number of more severe road traffic accidents (RTAs) have spiked and survivors often present with long-term psychiatric disabilities and impaired health-related quality of life.¹

Unfortunately, it is difficult to prevent RTAs. In a highly congested city-state such as Singapore with its dense population and heavy vehicular traffic, it only takes a momentary lapse in judgement by a driver or pedestrian before a RTA occurs. When it happens, victims are promptly evacuated from the accident scene and rushed to the nearest hospital where they undergo medical interventions and are stabilised. Upon discharge, they are usually given a follow-up consultation with a physician.

Up to 13% of RTA survivors¹ present with symptoms of acute stress disorder (ASD) within the first month of RTA and up to 21% have subclinical presentations of ASD. ASD can present intrusion symptoms such as recurrent, involuntary and intrusive distressing memories of the traumatic event, recurrent distressing dreams, dissociative reactions, persistent inability to experience positive emotions and intense or prolonged psychological distress or marked psychological reactions in response to internal or external cues that symbolise or resemble an aspect

of the traumatic event. Survivors may also experience dissociative symptoms such as altered sense of reality of one's surroundings or of oneself, inability to remember an important aspect of the traumatic event and avoidance symptoms including avoiding distressing memories, thoughts or feelings about or closely associated with the traumatic event or external reminders that may arouse them. Lastly, they may have arousal symptoms and may experience sleep disturbances, irritability, hypervigilance, poor concentration and exaggerated startle response. Without intervention, 78% of ASD and 60% of subclinical ASD¹ patients develop post-traumatic stress disorder (PTSD) 1 month after a RTA.

A meta-analysis of 15 studies that included 6804 RTA survivors has found a pooled PTSD prevalence of 22.25% (95% confidence interval, 16.71-28.33).² Eventually, 10% of survivors developed chronic depressive or anxiety disorders.³ Trauma severity, perceived threat, dissociation during the accident, female gender, prior emotional problems and litigation subsequent to an RTA were identified as predictors of PTSD.^{4,5}

A retrospective review of 1038 RTA fatalities in Singapore from 2000 to 2004 showed that the mean age of victims was 36 years old, 78% of whom were from the economically productive age group of 15 to 65 years old.⁶ RTA survivors often share the same demographics and PTSD threatens to pose a long-term financial, health and social burden on them.^{7,8}

Various legislations and measures have been implemented by the authorities to reduce RTA. They include lowering the cruising speed of motor vehicles, erecting traffic signals that demarcate vehicular and pedestrian traffic, handing out harsher fines and issuing public sanctions to deter reckless behaviour. After several accidents that involved PMDs, the Active Mobility Act was legislated in 2017 to arrest the spike in the number of reported incidents. PMDs of all types are now restricted to a standard size and capped at a maximum speed of

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25 km/h to reduce the severity of injuries sustained in an accident. Owners of PMDs are mandated to register their devices with the authorities. Guidelines on the usage of PMDs on the roads are also disseminated to the public. These measures may help to ameliorate trauma severity, perceived threat and dissociation by reducing RTA rate. They can also reduce the force of impact in an accident and lower the danger such mobility devices pose to the public when they are used in areas other than those designated for their use. They may also lead to lighter sentences for PMD users who are convicted for violating the legislations.

A change in the modus operandi of managing RTA survivors in the hospital emergency setting can lead to early identification and treatment of PTSD and prevent long-term debilitation in patients. Medical resuscitation and stabilisation remained the primary focus in RTA victims in Accident and Emergency services. Since victims may still be in a state of shock and distress, any psychological interventions provided at this point have been shown to be ineffective as they may not respond to them.⁹ Early interventions may also disrupt the human body's innate psychological defence against fear and distress. Information and advice on ASD and PTSD may, however, be provided to them to increase their awareness of both conditions.⁵

Screening services can be established in hospitals to review RTA survivors 2 weeks after the incident. Nurses can screen them with a questionnaire such as the Impact of Event Scale-Revised (IES-R).¹⁰ It is easy to administer and provides a structured way for patients to communicate distress when they find it difficult to express themselves. The IES-R comprises 22 questions that address intrusion, avoidance and hyperarousal symptoms. Patients can indicate their response to each question on a scale of 0 to 4. A summary score >24 will benefit from referral to psychiatric services.

After patients are identified in early screening, psychiatrists can institute medical treatments and psychological interventions. ASD progression to full-blown PTSD and, subsequently, chronic PTSD can be halted. Psychiatric comorbidities such as anxiety and depression^{3,5}—which often manifest in chronic PTSD—will also be addressed after screening services. The management algorithm for cases that are identified early will become easier and fewer drugs and psychotherapy sessions are also needed. The long-term financial, medical and social effects on

patients are reduced and they also enjoy a better quality of life with an earlier return to full functional status. There is also less wastage of resources in hospitals.

Most RTA survivors with chronic PTSD were able-bodied individuals. They were treated by medical services and discharged early since they appeared well during treatment. They could ambulate and talk in a relevant but superficial manner as long as the topic of trauma was not discussed. Their avoidant behaviours are often interpreted and accepted as “normal” since they had experienced a traumatic episode. This acceptance often resulted in aggravation and progression of PTSD symptoms and would eventually incapacitate them, leading to a late referral to psychiatric services. While screening services for asthma, diabetes and hypertension by nursing staff are common in hospitals, it is perhaps time for hospital stakeholders to consider a similar service for RTA survivors to change their clinical trajectory towards a more optimistic outcome.

REFERENCES

1. Harvey AG, Bryant RA. The relationship between acute stress disorder and posttraumatic stress disorder: a prospective evaluation of motor vehicle accident survivors. *J Consult Clin Psychol* 1998;66:507-12.
2. Lin W, Gong L, Xia M, Dai W. Prevalence of posttraumatic stress disorder among road traffic accident survivors: a PRISMA-compliant meta-analysis. *Medicine (Baltimore)* 2018;97:e9693.
3. Mayou R, Bryant B, Duthie R. Psychiatric consequences of road traffic accidents. *BMJ* 1993;307:647-51.
4. Mayou RA, Ehlers A, Bryant B. Posttraumatic stress disorder after motor vehicle accidents: 3-year follow-up of a prospective longitudinal study. *Behav Res Ther* 2002;40:665-75.
5. Ehlers A, Mayou RA, Bryant B. Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *J Abnorm Psychol* 1998;107:508-19.
6. Wong ZH, Chong CK, Tai BC, Lau G. A review of fatal road traffic accidents in Singapore from 2000 to 2004. *Ann Acad Med Singapore* 2009;38:594-6.
7. Undavalli C, Das P, Dutt T, Bhoi S, Kashyap R. PTSD in post-road traffic accident patients requiring hospitalization in Indian subcontinent: a review on magnitude of the problem and management guidelines. *J Emerg Trauma Shock* 2014;7:327-31.
8. Ng V, Norwood A. Psychological trauma, physical health and somatisation. *Ann Acad Med Singapore* 2000;29:658-64.
9. Hobbs M, Mayou R, Harrison B, Worlock P. A randomised controlled trial of psychological debriefing for victims of road traffic accidents. *BMJ* 1996;313:1438-9.
10. Beck JG, Grant DM, Read JP, Clapp JD, Coffey SF, Miller LM, et al. The impact of event scale-revised: psychometric properties in a sample of motor vehicle accident survivors. *J Anxiety Disord* 2008;22:187-98.