S Afr Gen Pract. 2023;4(4):158-162
https://doi.org/10.36303/SAGP.0075

S Afr Gen Pract
ISSN 2706-9613 EISSN 2706-9621

REVIEW

Less-than-lethal weapons and the general practitioner

R Blumenthal

Department of Forensic Medicine, University of Pretoria, South Africa
Corresponding author, email: *ryan.blumenthal@up.ac.za*

When general practitioners are faced with claims of less-than-lethal weapon injuries, or when such injuries are suspected based on limited evidence or information, they are obliged to investigate and manage the process. This paper will consider an approach to such a situation. It will briefly introduce some underlying basic theory behind these weapons and the potential effects, as well as some illustrations of how to document and manage such cases.

Keywords: less-than-lethal weapons, crowd control, rubber bullets, tear gas, pepper spray, pepper balls, conducted electrical weapons, TASER, water cannons, sound injury

Background

On 16 August 2012, thirty-four miners, who were apparently protesting employment and salary-related matters at the Lonmin platinum mine between Rustenburg and Brits in the North West Province of South Africa, were reportedly shot dead by police during a confrontation. Several other people sustained gunshot injuries. This incident became known as the Marikana Mining Massacre.

In July 2021, violent unrest, anarchy and looting erupted in KwaZulu-Natal and Gauteng, which decimated businesses, hospitals and health services; it also brought COVID-19 vaccination to a halt. Lives were endangered by violence as well as by lack of access to treatment, medicine, oxygen, food and essential supplies. Pharmacies were lost to looting. Ambulances were attacked. Services were suspended. There was large scale destruction and damage to properties and both the public and the private sector were hard-hit. There were also many protest-related injuries and deaths. By late Wednesday, 14 July 2021, the high levels of unrest had begun to subside, after the South African National Defence Force (SANDF) fanned out across KZN and parts of Gauteng, and as law-abiding citizens worked with public and private security forces to guard vulnerable areas.

Looking at the international literature, there were also injuries reported during the George Floyd protests in Minneapolis in the United States of America. The role of less-than-lethal weapons in human rights abuse is recognised in the literature.[1-4]

Crowd-control agents may have health impacts. For example, there could be immediate and long-term health effects following exposure to chemical warfare agents[5]. Considering the potential for violent anarchy, hostile crowds and hordes of people, certain questions have repeatedly come to mind when dealing with mass disasters and tragedies: How to responsibly quell a swathe of angry humans? What options exist for maintaining crowd control and preventing further violence? The concept of less-than-lethal weaponry keeps coming to the fore. What are the perspectives when considering such measures? And what should the general practioner (GP) know about the documentation and management of less-than-lethal weapon injuries?

Less-than-lethal weapons

Firstly, what is a less-than-lethal weapon?

As an academic forensic pathologist, I had difficulty searching the literature on this topic. There are many different keywords for this topic: "less-lethal weapons"; "non-lethal weapons"; "sub-lethal weapons"; "less-than-lethal weapons". How would decision makers (military and police) make informed decisions on this topic, when I, as an academic researcher, had so much difficulty on this topic? Existing less-than-lethal weapons include a wide range of weapons based on delivery of kinetic energy, incapacitating chemicals, biological agents, or electromagnetic energy. These weapons are potentially capable of causing serious injury or even death.

The best definition of a less-than-lethal weapon would probably be *"a discriminate weapon that is explicitly designed and used so as to incapacitate personnel or material while minimising fatalities and undesired damage to property and environment"*.[6]

This paper will consider an approach to such a situation. It will introduce some underlying basic theory behind these weapons and their potential effects, as well as some illustrations of how to correctly document and manage such cases.

Crowd control

Practical psychology; dogs and horses; rubber bullets; tear gas; sound and noise techniques; stun grenades; water cannons; mechanical methods; tasers and conducted electrical weapons (CEW)s; malodorants and miscellaneous techniques have all been used in the past. There are many pros and cons to the different methods used.

Sir Sydney Smith in his book "Mostly Murder", described the situation at Abdin Palace in Egypt in the early part of 1900s when he ran into a mob and thought the situation was critical:[7] *"Two mounted troopers of the Australian force came into the square: their*

rifles remained in their holsters, and they were armed apparently with nothing but long canes and their distinctive slouch hats. As they approached in a nonchalant way, skillfully using their canes with encouraging cries such as "Imshi!" the raging crowd of thousands wilted away like snow in sunshine." According to Sir Sydney Smith, it was a marvellous example of practical psychology.

Rubber bullets

The first rubber bullets were introduced by British forces in Northern Ireland in 1970. Rubber bullets are impact munitions made of rubber or other elastic materials. Rubber bullets are of the oldest less-than-lethal weapon technologies using kinetic energy. The shape and material of the bullets have been continuously modified since their first use in 1970. They cause pain and incapacitate the target. Typically, they resemble a baton (15 cm in length, weight 140 g) and are highly unstable. Approximately 55 000 were fired between 1970 and 1975, with a death rate of one in 16 000 rounds. The literature reports serious injury in one in 800–1 900 rounds. The newer rubber bullets typically measure 40 mm in diameter and weigh 30 grams. The velocity upon impact from 8 metres is approximately 95 mps and the kinetic energy is approximately 135 J.

The majority of injuries are non-penetrating; however severe and fatal cases due to penetrating injuries or internal organ injuries have been reported. When a less-than-lethal weapon causes major injuries or death, the user and the manufacturer of the weapon can be criticised. Examination and interpretation of the rubber bullets and the injuries they cause are an essential part of the analysis. Few GPs are familiar with injuries caused by rubber bullets because of the rarity of such incidents.

The typical injuries caused by rubber bullets are blunt force trauma injuries. The 40 mm rubber bullet has been known to cause pulmonary contusion; contusions of the heart; contusions of the liver; contusions of the spleen; chest impact may cause commotio cordis; the eye has been ruptured; and stomach with contents ruptured. This bullet causes lacerations and contusions. The slight rough surface of the sponge foam can cause strong skin traction, resulting in lacerations, if it strikes the skin at an acute angle.

Deaths from rubber bullets reported in the literature include a fatality at California State Prison. An inmate was shot from 16 metres, causing a 5 cm laceration on the head. The inmate died 47 days later due to intracranial trauma. The officer reported having wanted to fire at lower extremities; however, the rubber bullet struck the forehead.

Israeli defence forces used rubber bullets during 'Intifada' (uprising) between 1987 and 1993, which resulted in 20 deaths. Since then, Israeli defence forces have regulated minimum firing distance, not firing at children and only firing at the legs. Since then, there has also been worldwide distribution of the weapon.

Suicide by rubber bullet has been reported in the literature.[8]

There is a relationship between the feature of injury and the type of bullet. Large heavy bullets cause multiple casualties. Shotgun ammunition-like small rubber pellets in a shell cause many penetrating injuries and ocular injuries. Large, but comparatively light rubber bullets may cause non-penetrating contusions, occasional lacerations, and rare internal organ injuries. Risk factors have been suggested: short range; young age; point of impact; bullet size, shape, mass, velocity on impact; target factors: thickness of chest/abdomen wall, elasticity rib cage, clothing.[9–11]

Rubber bullets will be continued to be used by law enforcement agencies. The interpretation of rubber bullet injuries by GP's may be difficult. For example, differentiating rubber bullet injury versus a stone thrown, or a C-size or D-size battery or other solid object may be difficult.

Tasers and conducted electrical weapons

Tasers were invented by Jack Cover in 1974. A taser is a handheld conducted electrical weapon, powered by two 3 V batteries, that induce neuromuscular incapacitation and pain by the application of a small electrical current. The word taser is a homage to Thomas A. Swift's Electric Rifle.[12]

The taser fires two small dart-like electrodes, which stay connected to the main unit by conductive wire as they are propelled by small, compressed nitrogen charges. The physiological effects of CEWs are dependent on the distance between the two darts and their location on the body, in other words, a function of their 'spread'. It is therefore critical for the GP to measure the distance between the two dart locations on the body.[13]

Tasers interrupt the ability of the brain to control the muscles in the body. They stimulate both afferent sensory neurons causing pain, and efferent motor neurons causing involuntary skeletal muscle contraction. The objective is to temporarily disable the target person. These less-than-lethal weapons are used to obtain physical and psychological control of violently resistive subjects.

There has been controversy in the lay press about the use of these weapons. Claims have been made that these weapons have been responsible for over 300 deaths.[14-19] Amnesty International believes that there is therefore a need for strict limits on the use of such weapons.

There is 'no conclusive medical evidence' to indicate high risk of serious injury or death from the direct or indirect effects of CEW exposure in healthy normal non-stressed adults. Small children, people with diseased hearts, the elderly, the pregnant and other such vulnerable groups are potentially at higher risk. When such less-lethal weaponry causes major injuries or death, the user and the manufacturer of the weapon may be criticised, and legal action may be brought against them.[13] Taser International has defended the safety of its stun guns by spending millions on studies and forging close ties with police, medical examiners and consultants. When someone dies after an altercation involving

Footnote: (Imshi - /ˈɪmʃi/ - Exclamation - MILITARY SLANG•AUSTRALIAN - go away; be off).

one of these weapons, the manufacturer is quick to offer guidance to investigators.

Regarding exposures to CEWs (including taser devices), the questions typically arise as to how many, and for how long are acceptable?[20] The forensic analysis of taser-related or CEW-related deaths may be complex. Good reviews have been written on this topic and there is also an extensive review on the use of taser in the human rights literature.[21-24] In addition, electrified shields have been used to great effect in the past, although there is limited literature on this topic.

Electronic control devices such as Taser M- and X-series; the emergency department implications and management of taser injuries and the long-term sequelae of electrical injury is a super-specialty, and as such, the GP would be advised to consult other experts.[23-25]

Tear gas

Tear gas is a slang term for pepper spray. Pepper spray was originally used for defence against bears, mountain lions, wolves and other dangerous predators, and is often referred to colloquially as bear spray.[26] Oleoresin Capsaicin (OC) is an oily extract from hot pepper plants. OC extract is mostly composed of capsaicin – the same compound that gives spicy food its hotness. OC is the substance most likely to be found nowadays in tear gas and pepper sprays.

Its inflammatory effects cause the eyes to close, temporarily taking away vision. This temporary blindness allows officers to more easily restrain subjects and permits people in danger to use pepper spray in self-defence for an opportunity to escape. It also causes temporary discomfort and burning of the lungs which causes shortness of breath. Capsaicin produces intense pain, particularly in the conjunctivae and mucous membranes, and generates extreme discomfort. Exposure to OC "is basically as if your head is on fire, and you inhaled a hive of angry wasps". This was the description of someone who was sprayed in the face with pepper spray.[26]

The prototypical tear gasses were o-chlorobenzylidenemalononitrile (CS), chloroacetophenone (CN), and dibenzoxazepine (CR). The noxious irritant (capsaicin) has been known to cause or contribute to unexpected deaths. Two cases of death have been described in the literature in relation to the use of OC spray.[27]

Pepper balls

These are like paint balls, except that instead of paint, they contain fine-powdered OC, or other chemical irritants. Upon impact, pepper balls burst and release their contents in a large dust cloud.

In summary, tear gas is a lachrymatory agent used in policing, riot control, crowd control, chemical crowd control agents, and self-defence.[28-34]

Injuries and deaths have been reported by tear gas and pepper spray.[35]

So, what should the GP do if the patient has been exposed to tear gas or pepper spray? Decontaminate. Wash with copious amounts of soap and water – especially hands and face. Regarding occupational health and safety, the GP must also guard against coming into contact with the OC. Hazardous materials management principles should apply, because it is likely that healthcare workers could be exposed to riot control agents and become symptomatic.

Malodorants

Recently, the Israeli Defence Force came up with Skunk: a malodorant, non-lethal weapon used for crowd control. It has been marketed to militaries and law enforcement agencies around the world. The liquid's strong odour has been advertised as an improvement over other crowd control weapons such as rubber bullets and tear gas. Skunk is typically used when demonstrators become violent or engage in vandalism. It has specific rules of engagement for its use. It is said to contain an organic and non-toxic blend of baking powder, yeast, and other ingredients.[36]

A BBC reporter described its effects as follows: *"Imagine the worst, most foul thing you have ever smelled. An overpowering mix of rotting meat, old socks that haven't been washed for weeks – topped off with the pungent waft of an open sewer. . .Imagine being covered in the stuff as it is liberally sprayed from a water cannon. Then imagine not being able to get rid of the stench for at least three days, no matter how often you try to scrub yourself clean."*[36]

It is reported that the smell is so potent it can linger on your clothes for months, if not years. The company that produces Skunk also sells a special soap, available to authorities but not the general public, that neutralises the smell of skunk water if officers are accidentally sprayed.[37]

Skunk was criticised in a joint 2016 Physicians for Human Rights (PHR) and International Network of Civil Liberties Organizations (INCLO) report on crowd control weapons published by the American Civil Liberties Union (ACLU).[38] Skunk is considered a new tool in the use of less-than-lethal weapons.[39-42]

Water cannons and sound

Water canons and sound have been used to great effect in the past. Water cannons may cause a variety of injuries, chiefly due to blunt force trauma.

In sound injuries, the GP should examine the hearing of the victim, check for ruptured tympanic membranes. Approximately 29 psi is the minimum threshold required to produce minor eardrum ruptures. 40 to 50 psi is considered necessary to rupture the normal eardrum.[43]

Interpretation of scars and marks

GPs may be asked to assess individuals claiming human rights abuse. Such assessments can be complex and it may be necessary to assess and interpret physical findings for which there may be a number of explanations. The doctor's role is to assess these findings impartially. In order to make an assessment for physical

evidence, a structured examination must take place, which involves the history, the medical history and then the physical examination. The physical examination must involve a thorough systemic examination. The history-taking should include direct quotes from the victim, establishment of a chronology, where possible backing it up, for example with old medical records and photos. Good photographs must be taken, perpendicularly, with a ruler next to the ('cleaned') wound. Attention should also be paid, and may require specialist assessment of the psychological status of the victim. It is important to recognise that there may be no physical evidence of injury at all. Where scars or marks are present it is important for the credibility of the examination to distinguish between less-than-lethal weapon scars and injuries and non-less-than-lethal-weapon scars and injuries.[44-45]

Regarding the interpretation of less-than-lethal-weapon injuries, GPs should perhaps limit themselves to five responses:

1. *Not consistent:* Could not have been caused by the trauma described.
2. *Consistent with:* The lesion could have been caused by the trauma described, but it is non-specific and there are many other possible causes.
3. *Highly consistent:* The lesion could have been caused by the trauma described, and there are few other possible causes.
4. *Typical of:* This is an appearance that is usually found with this type of trauma.
5. *Diagnostic of:* This appearance could not have been caused in any way other than that described.

Legislation

South African General Practioners should be guided by the following international provisions:[46-48]

Article 3 of The European Convention on Human Rights: No-one shall be subjected to torture or to inhuman or degrading treatment or punishment.

The Istanbul Protocol: Provides for a set of guidelines for the assessment of persons who allege torture and ill-treatment, for investigating cases of alleged torture, and for reporting such findings to the judiciary and any other investigative body.

The Minnesota Protocol: Updated version of the United Nations (UN) Minnesota Manual on the Effective Prevention of Extra-legal, Arbitrary and Summary Executions.

And of course, the *Bill of Rights contained in Chapter 2 of our Constitution*, which outlines the different groups of human rights. The basic human rights include the rights to equality, dignity and life.[49]

Conclusion

There is a paradox in the concept of 'less-than-lethal' weaponry, as there exists a fine line between incapacitating and killing. It is likely that South African General Practitioners will begin to see an increase in the use of less-than-lethal weapons for crowd control. GPs will therefore have to upskill themselves in the documentation and management of such injuries.

ORCID

R Blumenthal https://orcid.org/0000-0002-5023-6084

References

1. Kaske EA, Cramer SW, Pena Pino I, et al. Injuries from less-lethal weapons during the George Floyd protests in Minneapolis. N Engl J Med. 2021;384(8):774-775. https://doi.org/10.1056/NEJMc2032052.
2. Gaffney AW, McCormick D, Woolhandler S, Himmelstein DU. US law enforcement crowd control tactics at anti-racism protests: a public health threat. Lancet. 2020;396(10243):21. https://doi.org/10.1016/S0140-6736(20)31421-5.
3. Wright S. The role of sub-lethal weapons in human rights abuse. Medicine, Conflict and Survival. 2001;17(3):221-33. https://doi.org/10.1080/13623690108409581
4. Weir E. The health impact of crowd-control agents. CMAJ. 2001;164(13):1889-90.
5. Karalliedde L, Wheeler H, Maclehose R, Murray V. Possible immediate and long-term health effects following exposure to chemical warfare agents. Public Health. 2000;114(4):238-48. https://doi.org/10.1038/sj.ph.1900659.
6. Lewer N. Non-lethal weapons: operational and policy developments. Lancet. 2003;362:s20-1. https://doi.org/10.1016/S0140-6736(03)15061-1.
7. Smith S. Mostly murder. Made and printed in Great Britain for the Companion Book Club (Odham's Press Ltd.) by Odhams (Watford) Limited. Watford, Herts. S.161,X.P. Page 90.
8. Voiglio EJ, Fanton L, Caillot JL, Neidhardt JPH, Malicier D. Suicide with "non-lethal" firearm. Lancet. 1998;352:882. https://doi.org/10.1016/S0140-6736(05)60010-4.
9. Koayashi M, Mellen PF. Rubber bullet injury. Case report with autopsy observation and literature review. American Journal of Forensic Medicine and Pathology. 2009;30(3). https://doi.org/10.1097/PAF.0b013e318187dfa8.
10. Soulat G, Puymirat E, Mousseaux E. Blunt cardiac injuries due to rubber bullets. Circulation: Cardiovascular Imaging. 2020;13(10):e010485. https://doi.org/10.1161/CIRCIMAGING.120.010485.
11. Lartizien R, Schouman T, Raux M, et al. Yellow vests protests: facial injuries from rubber bullets. Lancet. 2019;394(10197):469-70. https://doi.org/10.1016/S0140-6736(19)31764-7.
12. Appleton V. Tom Swift and his electric rifle. 2016.
13. Dawes DM. The physiologic effects of conducted electrical weapon as a function of spread. Proceedings at the National Association of Medical Examiners (NAME) 2016 meeting, held in Minneapolis, Minnesota, on the Monday the 12th September 2016, at the Hyatt Regency.
14. Amnesty International (2004). USA: Excessive and lethal force? Amnesty International's concerns about deaths and ill-treatment involving police use of tasers.
15. Amnesty International, 30 November 2004, Index number: AMR 51/139/2004. Amnesty International (2007). CANADA: Inappropriate and excessive use of Tasers. Amnesty International, 23 May 2007, Index number: AMR 20/002/2007.
16. Amnesty International (2011). Tasers - Potentially lethal and easy to abuse. http://amnesty.org/en/news-and-updates/report/tasers-potentiallylethal-and-easy-abuse-20081216 (Accessed 26 April 2013).
17. Amnesty International (2004). USA: Excessive and lethal force? Amnesty International's concerns about deaths and ill-treatment involving police use of tasers. Amnesty International, 30 November 2004, Index number: AMR 51/139/2004. https://doi.org/10.3917/come.051.0045.
18. Amnesty International (2007). CANADA: Inappropriate and excessive use of Tasers. Amnesty International, 23 May 2007, Index number: AMR 20/002/2007.
19. Amnesty International (2011) Tasers - potentially lethal and easy to abuse. http://amnesty.org/en/news-and-updates/report/tasers-potentially-lethal-and-easy-abuse-20081216 (Accessed 26 April 2013).
20. Jauchem JR. Exposures to conducted electrical weapons (including taser devices): How many and for how long are acceptable. J Forensic Sci. 2015;60(S1). https://doi.org/10.1111/1556-4029.12672.
21. Kroll MW, Panescu D. Physics of electrical injury. In: Ho JD, Dawes DM, Kroll MW, eds. Atlas of Conducted Electrical Weapon Wounds and Forensic Analysis. New York, NY: Springer Science and Business Media; 2012:25-45. https://doi.org/10.1007/978-1-4614-3543-3_2.
22. Becour B. Conducted electrical weapons or stun guns. American Journal of Forensic Medicine and Pathology. 2013;34(2):142-146. https://doi.org/10.1097/PAF.0b013e31828873d6.

23. Robb M, Close B, Furyk J, Aitken P. Emergency department implications of the TASER. Emerg Med Austral. 2009;21:250-258. https://doi.org/10.1111/j.1742-6723.2009.01194.x.
24. Kunz SN, Zinka BZ, Fieseler S, et al. Functioning and effectiveness of electronic control devices such as TASER M- and X-series: A review of the current literature. Journal of Forensic Science. 2012;57(6). https://doi.org/10.1111/j.1556-4029.2012.02227.x.
25. Wesner ML, Hickie J. Long-term sequelae of electrical injury. Can Fam Physician. 2013;59:935-9.
26. Bettenhausen C. Tear gas and pepper spray: What protesters need to know. C&EN. 2020;98(26):14-16. https://doi.org/10.1021/cen-09826-feature1.
27. Steffee CH, Lantz PE, Flannagan LM, Thompson RL, Jason DR. Oleoresin Capsicum (Pepper) Spray and "In-Custody Deaths." The American Journal of Forensic Medicine and Pathology. 1995;16(3):185-92. https://doi.org/10.1097/00000433-199509000-00001.
28. Hoz SS, Aljuboori ZS, Dolachee AA, et al. Fatal penetrating head injuries caused by projectile tear gas canisters. World Neurosurgery. 2020;138:e119-23. https://doi.org/10.1016/j.wneu.2020.02.050.
29. Chan EYY, Hung KKC, Hung HHY, Graham CA. Use of tear gas for crowd control in Hong Kong. Lancet. 2019;394(10208):1517-8. https://doi.org/10.1016/S0140-6736(19)32326-8.
30. Carron PN, Yersin B. Management of the effects of exposure to tear gas. BMJ. 2009;338:b2283-3. https://doi.org/10.1136/bmj.b2283.
31. Torgrimson-Ojerio BN, Mularski KS, Peyton MR, et al. Health issues and healthcare utilization among adults who reported exposure to tear gas during 2020 Portland (OR) protests: a cross-sectional survey. BMC Public Health. 2021;21(1). https://doi.org/10.1186/s12889-021-10859-w.
32. Kaszeta D. Restrict use of riot-control chemicals. Nature. 2019;573(7772):27-9. https://doi.org/10.1038/d41586-019-02594-5.
33. Unuvar U, Yilmaz D, Ozyildirim I, et al. Usage of riot control agents and other methods resulting in physical and psychological injuries sustained during civil unrest in Turkey in 2013. Journal of Forensic and Legal Medicine. 2017;45:47-52. https://doi.org/10.1016/j.jflm.2016.11.007.
34. Menezes RG, Hussain SA, Rameez MAM, et al. Chemical crowd control agents. Medico-Legal Journal. 2015;84(1):22-5. https://doi.org/10.1177/0025817215622314.
35. Haar RJ, Iacopino V, Ranadive N, Weiser SD, Dandu M. Health impacts of chemical irritants used for crowd control: a systematic review of the injuries and deaths caused by tear gas and pepper spray. BMC Public Health. 2017;17(1). https://doi.org/10.1186/s12889-017-4814-6.
36. Browning N, Israeli "skunk" fouls West Bank protests, Reuters 3 September 2012.
37. "Who, What, Why: What is skunk water?" September 11, 2015 - via www.bbc.co.uk.
38. "Lethal in Disguise: The Health Consequences of Crowd-Control Weapons". American Civil Liberties Union.
39. Skunk(weapon). Available from: https://en.wikipedia.org/wiki/Skunk_(weapon).
40. Hambling D. US military malodorant missiles kick up a stink. Available from: https://www.newscientist.com/article/mg21428676-800-us-military-malodorant-missiles-kick-up-a-stink/.
41. Blaze Defense Systems. Available from: https://shop.blazedefensesystems.com/shop/ols/products/skunk-malodorant-aerosol.
42. Malodorant compositions, related non-lethal weapon systems, and methods of their use. Available from: https://patents.google.com/patent/US6352032B1/en (Malodorant compositions, related non-lethal weapon systems, and methods of their use).
43. Blumenthal, R. Lightning and the forensic pathologist. Academic Forensic Pathology Journal. 2018 8(1): 98-111. https://doi.org/10.23907/2018.007.
44. Payne-James J, Jones R, Karch SB, Manlove J. Simpson's forensic medicine. 13th Edition. Hodder and Stoughton Ltd. London. 2011. Pages: 93-94. https://doi.org/10.1201/b13324.
45. Payne-James J, Bussutil A, Smock W. Forensic Medicine. Clinical and Pathological Aspects. 2003. Greenwich Medical Media Ltd. Page 61.
46. Manual on the effective investigation and documentation of torture and other cruel, inhuman or degrading treatment or punishment. Istanbul Protocol. Available from: http://www.ohchr.org/Documents/Publications/training8Rev1en.pdf.
47. Peel M. History of torture. In: Jason PJ (ed). Encyclopedia of Forensic and Legal Medicine, Oxford: Elsevier, 2005, pp.520-524. https://doi.org/10.1016/B0-12-369399-3/00192-0.
48. Revision of the UN Manual on the Effective Prevention and Investigation of Extra-Legal, Arbitrary and Summary Executions (the Minnesota Protocol). Available from: http://www.ohchr.org/EN/Issues/Executions/Pages/RevisionoftheUNManualPreventionExtraLegalArbitrary.aspx.
49. Constitution of the Republic of South Africa, 1996 - Chapter 2.