A Global Perspective on the Mental Health Response to Terrorism

Michel L.A. DÜCKERS [a,1] Robert J. URSANO [b] Eric VERMETTEN [c]

[a] *Impact, ARQ National Psychotrauma Centre, Diemen, The Netherlands*
Nivel – Netherlands Institute of Health Services Research, Utrecht, The Netherlands

[b] *Center for the Study of Traumatic Stress, Department of Psychiatry*
Uniformed Services University, Bethesda, Maryland, USA

[c] *Leiden University Medical Center, Leiden, The Netherlands*
ARQ National Psychotrauma Centre, Diemen, The Netherlands

Abstract. This chapter explores the association between terrorism, mental health and the capacity to provide evidence-based mass casualty intervention from a global perspective. The main message is there are vast differences in these three areas across countries and that, especially the last of the three, variation in service capacity and supportive conditions, influences the chances of implementing evidence-based guidelines. Consequently, it will be easier to provide evidence-based cost-intensive therapy and treatment to affected populations in less vulnerable countries with well-developed healthcare systems than in resource-poor environments. It is important to better understand alternative interventions and mechanisms and societal options for care delivery in more vulnerable countries, and to develop strategies to utilize them effectively. Systematic enquiries can strengthen the evidence base of guideline implementation across different local contexts of terror-focused aftercare. Importantly, the future development of new lower intensity interventions, guidance and the potential to anticipate vulnerabilities can particularly benefit low resource countries.

Keywords. Terrorism, mental health, cross-cultural, guideline implementation

1. Introduction

Acts of terrorism occur in nearly all countries. The casualties of the attacks are only a means to an end. Terrorism is a strategy used by individuals and groups to change communities, nations, politics or policies. Terrorist attacks expose people to violence, threats and traumatic events. Individuals may be directly or indirectly exposed and become killed or injured, survivors or witnesses. Professionals involved in the response to terrorism or aiding the affected are also directly or indirectly exposed themselves.

The practical lessons and perspectives from a biological, psychological and social perspective described in other chapters of this book provide an indispensable

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[1] Corresponding Author: Michel Dückers, Impact, ARQ National Psychotrauma Centre, Nienoord 5, 1112 XE, Diemen, The Netherlands. m.duckers@impact.arq.org

foundation for addressing the mental health risks and problems of people affected, for the teams and organizations where they work, for their personal social environment comprising family and friends, and for public health policy-makers. The guidance presented later in the book reflects scientific knowledge about psychological approaches, pharmacological interventions, cognitive vaccines and interventions aimed at sleep regulation and deprivation. The role of (social) media and challenges in the implementation of essential principles, and timely detection and monitoring of health complaints, risks and vulnerabilities are highlighted in a terrorism context, whilst considering the relevance of biological neuromarkers and guidance on special populations including refugees and children. The authors have devoted themselves to disentangle the practical implications of the evidence for different time stages, ranging from the short term of hours, days, even weeks and the longer terms covering months up to years. This body of knowledge, in combination with practical and policy lessons from earlier events, forms a logical framework to plan and provide services in the golden hour and afterwards.

The value of this behavioural framework is substantial. However, its actual implementation in an emergency setting will always be a local challenge that requires sufficient capacity and coordinated action by the multiple agencies, professionals and volunteers involved in the intense, chaotic moments of the attack, whether it takes place in the center of city, a shopping mall, a hotel or cinema, an airport or a remote island. In this chapter our objective is to explore the association between terrorism, mental health and the capacity to provide evidence-based mass casualty intervention across the globe. The main message is that none of these three elements is distributed equally across countries. Perhaps most importantly, variation in service capacity and supportive conditions, influences the chances of implementing the evidence-based guidelines as described in this book.

2. Terrorism

Although terrorist attacks can occur everywhere across the world, there are geographical differences and patterns. The Global Terrorism Database is a database of incidents of terrorism from 1970 onward. The data is gathered through open-source contributions that are verified through different media outlets. The database is maintained by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) at the University of Maryland in the United States [1]. For the database, in order to be classified as a terrorist attack, an incident has to meet three criteria. First, the attack must be aimed at attaining political, economic, religious or social goal. Second, There must be evidence of an intention to coerce, intimidate, or convey some other message to a larger audience (or audiences) than the immediate victims. Third, the action must be outside the context of legitimate warfare activities [2].

According to the *Global Terrorism Index 2018*, the total number of deaths from terrorism was 18,814 deaths in 2017. Ten countries accounted for 84% of deaths from terrorism: Afghanistan 25%; Iraq 23%; Nigeria 8%; Somalia 8%; Syria 6%; Pakistan 5%; Egypt 3%; Democratic Republic of Congo 3%; Central African Republic 2%; India 2% [3]. A closer look at the number of terrorist attacks and deaths between 2002 and 2017 per region indicates a substantial increase in the Middle East and North Africa, South Asia and Sub Saharan Africa (Institute for Economics & Peace [3];

Figure 1). The largest number of deaths in this period were recorded in the Middle East and North Africa (MENA) region, with over 90,000 deaths. MENA, South Asia, and Sub-Saharan Africa accounted for the most dead as well as the most lethal terrorist attacks on average (2.75, 1.85 and 4.35 people were killed per attack respectively). Of the other regions, only Russia and Eurasia and Central America and the Caribbean recorded more deaths than attacks. In Asia-Pacific, Europe, South America, and North America, there were more terrorist attacks than total deaths from terrorism between 2002 to 2017 [3].

3. Mental health impact

Terrorist attacks can have widespread mental health effects, spanning to communities geographically distant from the attacks. In the main these effects are short-lived but there is a minority of individuals not directly involved in the incidents who will continue to experience clinical or subclinical levels of symptoms, often accompanied by functional impairment. Based on a literature review Whalley and Brewin estimated that, 30–40% of people directly affected by terrorist action are likely to develop PTSD, and at least 20% may be experiencing symptoms two years later. Less is known about the mental health impact on children, but this too appears to be considerable. Rescue workers and members of the emergency services are also at risk of developing disorder [4, 5,]. Such patterns are described in other works as well for a broader range of disasters and major incidents [6]. The prevalence differs between different vulnerable populations across time, with symptomology showing a variety of trajectories [7, 8]. In their systematic review of 9/11-related PTSD among highly exposed populations Lowell and colleagues analysed available literature over a period of 15 years. Their work reveals a substantial burden of 9/11-related PTSD among those highly exposed to the attack – a burden which is associated with a range of sociodemographic and back-ground factors, and characteristics of peri-event exposure. Furthermore, while most longitudinal studies show declining rates of prevalence of PTSD, some studies of rescue and recovery workers have documented an increase over time [9].

The mental health impact of terrorism is also affected by differences in the national population baseline of mental health. Epidemiological studies have identified variation in the prevalence of common trauma-related mental health disorders like anxiety disorders, mood disorders and substance abuse disorders, and disorders like PTSD and depression in particular [10-14]. Several authors have shown an association between cultural and socioeconomic characteristics, and the prevalence of trauma-related disorders and suicide [15-18]. The socioeconomic association has been confirmed for general anxiety disorder and adult ADHD [19, 20]. Studies like these suggest that the variation is not random but linked to the same factors that influence the provision of professional evidence-based mental healthcare.

4. Service delivery capacity

Communities and countries vary in their capacity to provide needed disaster/terrorism response and high-quality healthcare. Countries that are less vulnerable to lacking service delivery capacity are higher income countries with higher scores on good governance, low corruption, higher levels of private and public health expenditure,

better access to GPs and hospitals. More vulnerable countries are mirror images of less vulnerable countries (country vulnerability scores are updated annually and reported in the freely accessible *World Risk Report* [21]). It is important to take country characteristics like these into account. After all, we know that the psychological and somatic health consequences of mass casualty incidents like terrorist attacks can last for years and require professional health services in line with the guidance presented. One can argue that it will be easier to provide evidence-based cost-intensive therapy and treatment to affected populations with well-developed healthcare systems than in resource-poor environments. This is confirmed by a recent analysis by Evans-Lacko and colleagues, covering 25 countries. Of the cases diagnosed with anxiety, mood and substance abuse disorders, 13.7% in lower-middle-income countries, 22.0% in upper-middle-income countries, and 36.8% in high-income countries received treatment [22]. Another study identified barriers to access to mental health treatment in a sample of 24 countries. The authors underlined the need to address structural factors, especially in low-income countries[23].

A cross-national analysis of European countries found a strong association at the regional level between country vulnerability and the inter-agency capacity to provide coordinated professional psychosocial support in response to disasters and major incidents [24]. The relevance of this inter-agency capacity was studied in the context of 40 mental health and psychosocial support programmes in disaster settings (including terrorism) implemented in different geographical contexts [25]. Firstly, when the inter-agency capacity is more developed (in terms of e.g. coordinated planning, involvement of individuals from local communities, trauma experts, and government representatives, availability of an emergency plan based on evidence-based guidelines and tested through exercise), a larger number of measures and interventions as prescribed in evidence-based guidelines is provided to the affected. Secondly, the coordinators of programs with a developed inter-agency capacity are more positive about the effectiveness, efficiency, need-centeredness, safety, timeliness and equity of the program as well as the perceived relevance and contribution to the essential elements of mass casualty intervention formulated by Hobfoll and colleagues [8]. Finally, the perceptions of coordinators regarding these service aspects are particularly positive in programmes incorporating a stepped care model and appropriate conditions for communal, cultural, spiritual and religious healing practices [25].

Which brings us to one of the principles in the provision of mental health services to people confronted with a terrorist attack [26]: the capacity required – in type and number – to provide services and care differs between the different priorities and needs of affected individuals across time. In Figure 2 this is represented in the shape of a pyramid with a broad base and a narrow apex. In the top of the pyramid we find specialized clinical mental healthcare which is most important for a smaller proportion of the population. Downwards we find other types of services that are increasingly of more general need and can be provided by the communities, families, friends and other social networks people belong to.

In practice, depending on the location of an attack, the optimal response requires a well-organized interdisciplinary effort, covering all layers of the pyramid, with services provided by professionals, trained volunteers and community actors from a variety of organization and institutions. In more vulnerable, ill-resourced societies the capacity to address immediate needs and specialized services upwards in the pyramid is scarce compared to less vulnerable regions. International humanitarian aid programmes, peace keeping missions and NGOs can fulfil a crucial role in deprived regions in

supplementing necessary aid capacity and resources for the provision of recommended services in the golden hour and subsequent time stages.

Recommended interventions and behavioural approaches can only be applied under the condition of sufficient capacity. In areas without naturally available first response and regular professional healthcare systems, international and other external aid organizations including the military can address early needs and problems in line with the guidance, assuming that the populations can be reached in time. Their involvement is, however, destined to be temporary as services are provided under the umbrella of a mission or support programme with a fixed deadline. Consequently, continuation of services to affected people on the longer term can turn out to be difficult. In such countries training local citizens in providing different types of care can extend the resources of care of the community. Provision of complicated and highly specialized care will not be available. The capacity to provide the present evidence-based healthcare and its nature and composition will differ across geographical settings and all the layers of the pyramid (Figure 2).

The challenges noted above apply to service-delivery targeted at the general population and other risk groups. When it comes to first responders, aid workers and uniformed services including the military, the contextual implications will be similar when it comes to the accessibility of services and treatment options in the civil communities where they live. Though, as staff members of professional organizations like the military and international NGOs, they can benefit from internal support and healthcare arrangements in addition to locally available public services as well. Their organizations are challenged to prepare and implement appropriate support structures, wherever the staff are deployed and in that way not become an additional burden to the communities they are to assist. How to maximize and sustain care in resource limited communities is a target for developing innovative care programs including training onsite, telemedicine consultations and leadership support for community leaders.

5. The future: a need to invest in vulnerability reduction

In this chapter we explored the association between terrorism, mental health and the capacity to provide evidence-based mass casualty intervention. We discussed how these three differ between countries and regions. From a global perspective, the association between the three has important implications for research and practice. The risk of a terrorist attack and the number of people killed is the highest in countries and regions that are more vulnerable to a lack of services and service delivery capacity. The places where high-quality mental healthcare and support is needed the most, are less well equipped to professionally address the probable burden of mental illness. In the near future and the longer term it is crucial to keep investing in accessible healthcare capacity across geographies so people and communities confronted with terrorism can benefit from the standards presented in the chapters of this book and other guidelines. It is safe to assume that the effective reception and applicability of any guidance based on research, exchange and careful consideration, will only work if the guidance is adaptable to geographical differences and idiosyncrasies. Also, it will take time before novel, resource-intense treatment models, technologies and tools are tested and can be made available to populations in the West, the Global North or less vulnerable countries. It is hard to say how much longer it will take before they become available to other parts of the world.

Care delivery in vulnerable countries requires alternative interventions and mechanisms and societal options, as well as strategies to utilize them effectively as a satisfactory substitute. It is not unlikely that more collectivistic, vulnerable societies, in general, are better at nurturing social support and in providing protection (or prevention) against the development of mental problems. Families, religious and spiritual organizations can fulfil a natural supportive role here at the base of the pyramid in Figure 2, especially at the level of basic services and security and community and family support.

In the last two decades, important progress has been made as well in understanding focused non-specialized support and specialized clinical mental healthcare in low and middle income countries. Examples include group psychotherapy interventions and individualized interventions led by lay health workers in primary care settings [27-31]. It is a matter of time before other interventions are ready for scale-up, a process that might even be aided by the growing global availability of smartphones and data. All in all, the potential to enhance the timely detection and treatment of mental health problems across the world looks promising, perhaps better than ever. At the same time, there are always obstacles and challenges to address on the path of vulnerability reduction and the implementation of evidence-based medicine. Systematic enquiries of what works and what doesn't in different populations and settings remain invaluable. They can strengthen the evidence base of healthcare optimization in different local contexts of terror-focused aftercare on behalf of tomorrow's affected.
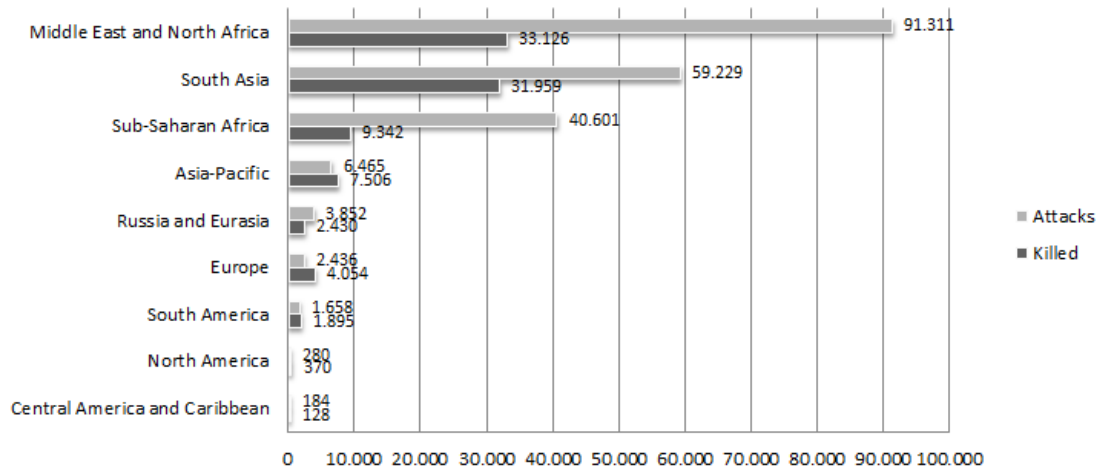
Figure 1. Terrorist attacks and people killed in different regions of the world: 2002-2017 (source: Global Terrorism Database; Institute for Economics & Peace, 2018)
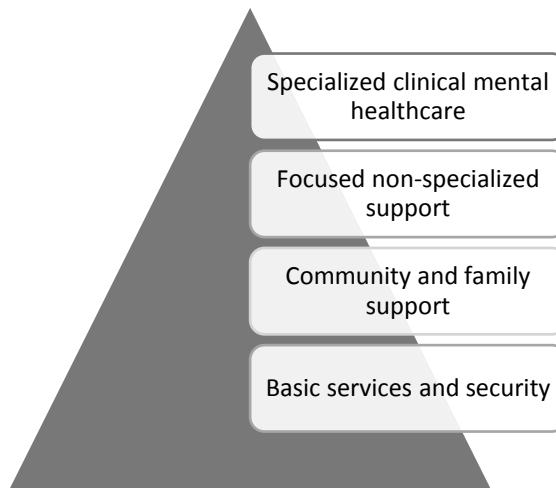
Figure 2. Psychosocial intervention pyramid (source: Inter-Agency Standing Committee, 2006)

References

[1] *The National Consortium for the Study of Terrorism and Responses to Terrorism,* 2018. About START, Retrieved on the 27th of August 2018 from: http://www.start.umd.edu/about/about-start

[2] J.L. Regens, A. Schultheiss, N. Mould, Regional variation in causes of injuries among terrorism victims for mass casualty events, *Frontiers in Public Health* **3** (2015), 198.

[3] Institute for Economics & Peace, *Global Terrorism Index 2018: measuring the impact of terrorism,* Sidney: Institute for Economics & Peace, 2018.

[4] M.G. Whalley, C.R. Brewin, Mental health following terrorist attacks, *British Journal of Psychiatry*, **190(2)** (2007), 94-96.

[5] D.M. Benedek, C.Fullerton, R.J. Ursano, First responders: mental health consequences of natural and human-made disasters for public health and public safety workers, *Annual Review of Public Health* **28** (2007), 55-68.

[6] G.A. Bonanno, C.R. Brewin, K. Kaniasty, A.M.L. Greca, Weighing the costs of disaster: consequences, risks, and resilience in individuals, families, and communities, *Psychological Science in the Public Interest* **11(1)** (2010), 1-49.

[7] G.A. Bonanno, Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *American psychologist* **59(1)** (2004), 20.

[8] S.E. Hobfoll, P.A. Palmieri, R.J. Johnson, D. Canetti-Nisim, B.J. Hall, S. Galea, Trajectories of resilience, resistance, and distress during ongoing terrorism: the case of Jews and Arabs in Israel, *Journal of Consulting and Clinical Psychology* **77(1)** (2009), 138.

[9] A. Lowell, B. Suarez-Jimenez, L. Helpman, X. Zhu, A. Durosky, A. Hilburn, Y. Neria, 9/11-related PTSD among highly exposed populations: a systematic review 15 years after the attack, *Psychological Medicine*, **48(4)** (2018), 537-553.

[10] R.C. Kessler, S. Aguilar-Gaxiola, J. Alonso, S. Chatterji, S. Lee, J. Ormel, P.S. Wang, The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys, *Epidemiology and Psychiatric Sciences* **18(1)** (2009), 23-33.

[11] R.C. Kessler, E.J. Bromet, The epidemiology of depression across cultures, *Annual Review of Public Health*, **34** (2013), 119-138.

[12] R.C. Kessler, S. Aguilar-Gaxiola, J. Alonso, Trauma and PTSD in the WHO World Mental Health Surveys, *Eur J Psychotraumatol*, **8(sup5)** (2017), 1353383.

[13] S. Van de Velde, P. Bracke, K. Levecque, Gender differences in depression in 23 European countries: cross-national variation in the gender gap in depression, *Social Science & Medicine* **71(2)** (2010), 305-313.

[14] World Health Organization, *Preventing suicide: a global imperative.* World Health Organization, Geneva, 2014.

[15] A. Burri, A. Maercker, Differences in prevalence rates of PTSD in various European countries explained by war exposure, other trauma and cultural value orientation, *BMC Research Notes* **7(1)** (2014), 407.

[16] M.L.A. Dückers, E. Alisic, C.R. Brewin, A vulnerability paradox in the cross-national prevalence of post-traumatic stress disorder, *British Journal of Psychiatry* **209** (2016), 300-305.

[17] M.L.A. Dückers, C.R. Brewin, A paradox in individual versus national mental health vulnerability: are higher resource levels associated with higher disorder prevalence? *Journal of Traumatic Stress* **29** (2016), 572-576.

[18] M.L.A. Dückers, L. Reifels, D.P. De Beurs, C.R. Brewin, The vulnerability paradox in global mental health and its applicability to suicide, *British Journal of Psychiatry* (2019), 1-6.

[19] J. Fayyad, N.A. Sampson, I. Hwang, T. Adamowski, S. Aguilar-Gaxiola, A. Al-Hamzawi, et al., The descriptive epidemiology of DSM-IV adult ADHD in the World Health Organization World Mental Health Surveys, *Attention Deficit and Hyperactivity Disorders* **9** (2017), 47-65.

[20] A.M. Ruscio, L.S. Hallion, C.C. Lim, S. Aguilar-Gaxiola, A. Al-Hamzawi, J. Alonso, L.H. Andrade, G. Borges, E.J. Bromet, B. Bunting, J.M.C. De Almeida, Cross-sectional comparison of the epidemiology of DSM-5 generalized anxiety disorder across the globe, *JAMA psychiatry* **74(5)** (2017), 465-475.

[21] T. Welle, J. Birkmann, The world risk index–an approach to assess risk and vulnerability on a global scale, *Journal of Extreme Events* **2** (2015), 1550003.

[22] S. Evans-Lacko, S. Aguilar-Gaxiola, A. Al-Hamzawi, J. Alonso, C. Benjet, R. Bruffaerts, J. M. Haro, Socio-economic variations in the mental health treatment gap for people with anxiety, mood, and substance use disorders: results from the WHO World Mental Health (WMH) surveys, *Psychological Medicine* **48(9)** (2018), 1560-1571.

[23] L.H. Andrade, J. Alonso, Z. Mneimneh, J.E. Wells, A. Al-Hamzawi, G. Borges, S. Florescu, Barriers to mental health treatment: results from the WHO World Mental Health surveys, *Psychological Medicine* **44(6)** (2014), 1303-1317.

[24] M.L. Dückers, A.B. Witteveen, J.I. Bisson, M. Olff, The association between disaster vulnerability and post-disaster psychosocial service delivery across Europe, *Administration and Policy in Mental Health and Mental Health Services Research* **44(4)** (2017), 470-479.

[25] M.L.A. Dückers, S.B. Thormar, B. Juen, D. Ajdukovic, L. Newlove, M. Olff, Measuring and comparing the quality of post-disaster mental health psychosocial support programmes *PLOS ONE* **13(2)** (2018), e0193285.

[26] Inter-Agency Standing Committee, IASC guidelines on mental health and psychosocial support in emergency settings, IASC, Geneva, Switzerland, 2006.

[27] P. Bolton, J. Bass, R. Neugebauer, H. Verdeli, K. F. Clougherty, P. Wickramaratne, M. Weissman, Group interpersonal psychotherapy for depression in rural Uganda: a randomized controlled trial, *Jama*, *289***(23)** (2003), 3117-3124.

[28] V. Patel, H.A. Weiss, N. Chowdhary, S. Naik, S. Pednekar, S. Chatterjee, G. Simon, Effectiveness of an intervention led by lay health counsellors for depressive and anxiety disorders in primary care in Goa, India (MANAS): a cluster randomised controlled trial, *The Lancet*, **376(9758)** (2010), 2086-2095.

[29] V. Patel, H.A. Weiss, N. Chowdhary, S. Naik, S. Pednekar, S. Chatterjee, H. Verdeli, Lay health worker led intervention for depressive and anxiety disorders in India: impact on clinical and disability outcomes over 12 months, *The British Journal of Psychiatry* **199(6)** (2011), 459-466.

[30] A. Rahman, S.U. Hamdani, N.R. Awan, R.A. Bryant, K.S. Dawson, M.F. Khan, M. Sijbrandij, Effect of a multicomponent behavioral intervention in adults impaired by psychological distress in a conflict-affected area of Pakistan: a randomized clinical trial, *Jama* **316(24)** (2016), 2609-2617.

[31] A. Rahman, A. Malik, S. Sikander, C. Roberts, F. Creed, Cognitive behaviour therapy-based intervention by community health workers for mothers with depression and their infants in rural Pakistan: a cluster-randomised controlled trial, *The Lancet* **372(9642)** (2008), 902-909.