**Effects of trauma history among 2014-16 Ebola Virus Disease epidemic survivors living in Victoria-Australia**

**Abstract**

***Background:*** Trauma from previous experiences such as car accidents, robberies, knife attacks, wars, and other types of violence or witnessing the deaths could have exacerbated the experiences of the 2014-16 Ebola Virus Disease (EVD) Epidemic.

***Objective:*** To study past trauma experiences among those West Africans who survived the 2014-16 EVD epidemic and now reside in Victoria - Australia.

***Methods and materials:*** A sequential exploratory mixed methods design utilised an online survey to collect quantitative and qualitative data that were followed by interviews. The quantitative survey adopted the Trauma History Screen tool and descriptive statistics. The qualitative interview followed thematic analysis using the five-phase model.

**Result**: Participants' age ranged between 18-40 years, 52% were females and 29/68 respondents were included in the analysis of traumatic experiences. Further,75% of respondents witnessed the sudden deaths of family and friends. They further, reported psychosocial symptoms including fear, stress, distress, depression, flashbacks, and altered sleep patterns in both infectious outbreaks.

***Conclusion:*** This study provides data on previous experiences of traumatic events among EVD survivors that could have affected how they coped and dealt with the EVD epidemic. The psychosocial sequelae highlight the importance of continuous evaluation of the mental health of people with previous traumatic experiences. Findings from this study are useful in designing intervention programmes to mitigate these sequelae.

***Keywords:*** Past trauma history, post-traumatic stress disorder, physical sequelae, psychosocial outcomes, Ebola Virus Disease, epidemic, online survey data, zoom interview data

**Introduction**

Repetitive exposures to trauma causing events such as car accidents, wars, sexual assaults and knife attacks, before the Ebola Virus Disease (EVD) epidemic in 2014-16 could have caused or exacerbated underlying trauma on the mental health of survivors and especially so for those who live with other compounding conditions (Bovey et al., 2024). Trauma is described as events which emotionally, psychologically and sometimes physically challenge individuals in a way that they find it difficult to cope with the impact (Downey & Crummy, 2022; Muldoon et al., 2019). Before the outbreak of the 2014-16 West African EVD that turned into an epidemic, some people had gone through various forms of life challenging incidents such as car accidents, wars, violent attacks including sexual violence, knife and guns during and after wars (Dwanyen et al., 2024; Rubini et al., 2023), and natural disasters such as mud slides that could have traumatised them (Cui et al., 2019). The outcomes of these challenging events in the short and long terms possibly vary between positive and negative depending on how the survivors were able to handle them.

Handling such events positively for instance, by actively seeking assistance to resolve the problem can promote recovery not only in the short term but, it promotes a better understanding of the outcomes, which could enhance resilience and positive coping in the short and long terms (Bryngeirsdottir & Halldorsdottir, 2022). On the contrary, handling them negatively could undermine the emotions and psychosocial health of the survivors, thereby worsening any underlying trauma. Some of the symptoms of emotional trauma include fear, anxiety, stress, disrupted sleeping patterns and depression (Spadafore et al., 2021). These symptoms can be temporary and therefore resolve quickly, however, the persistence of psychological symptoms could not only traumatise but will negatively affect the functionality of the affected person (Bovey et al., 2024).

For instance, scholars such as Marasini et al. (2022) have associated car accidents with not only physical injury but also with psychological trauma such as Post Traumatic Stress Disorders in survivors. The same can be said about those who survived sexual violence especially in the post-civil war period that they may be at risk of negative psychosocial health problems (Kuupiel et al., 2024). Moreover, more than 40% of women in West Africa have survived sexual violence. This grim statistics is even higher in East Africa where 65% of women have been sexually violated (Ouedraogo et al., 2022). Additionally, researchers Xianguo et al. (2023) reported that globally, out of every thirty-three women, one is a survivor of sexual violence. By the same token, though knife attacks do not seem to be as frequent as sexual violence especially Australia, it cannot only inflict physical harm but also significantly traumatise survivors, their families and witnesses (Gani et al., 2023) as other violent incidents This could be especially true for those who could not access any professional mental health or psychological care in countries where they were rare in practice. Nevertheless, some people might manifest symptoms of emotional trauma, while others do not and therefore, necessitate the need for ongoing assessment of those individuals who experienced them.

**Objective**

To study past trauma history among those West Africans who survived the 2014-16 EVD epidemic and are residing in Victoria-Australia.

**Specific objectives**

* Determine if participants have experienced difficult times in your life.
* Give me examples of difficult times.

**Materials and Method**

***Design:*** This is a sequential exploratory mixed methods study that utilised quantitative and qualitative research methods. The inclusion criteria for participants were, being over 18 years of age and present in West Africa when the epidemic occurred. Those who could not meet this criteria were excluded from the research automatically. The quantitative component which comprised of closed ended questions utilised the Trauma History Screen by Russo et al. (2014) to assess past trauma history among participants. The qualitative component included open ended questions which were included in the survey and semi structured interviews which were conducted after the online survey, respectively. The first part of the qualitative component provided textual data. Participants in the qualitative textual questions were given one number code to maintain confidentiality. This data was analysed through content analysis to identify themes and meanings of words and phrases. The second part was derived from semi structured interviews of nine participants via Zoom to collect more nuanced data. Interview data was initially transcribed electronically verbatim, before it was thematically analysed similar assessment of participants’ perspectives (Aawsaj et al., 2025; Durrani, 2024); and according to five stages of interview data analysis (Bingham, 2023).

Findings from the qualitative data were merged before they were finally presented with the aid of the participants’ statements. The data presented in Table 2 are a summarised version of the Trauma History Screen that was derived from the Survey monkey. Participants in the qualitative interviews were given a three number numerical code to maintain confidentiality.

***Inclusion and exclusion criteria:*** Participants should be 18 or over and was in a 2014-16 Ebola epidemic affected country and at the time for data collection was based in Victoria-Australia.

***Setting:*** This study was conducted in Victoria- Australia and thirty-six individuals, majority (52%) of whom were women participated in an online survey.

***Data collection:*** Data was collected utilising following quantitative and qualitative questions (Table 1).

**Table 1, Research questions addressed in this study**

|  |  |  |  |
| --- | --- | --- | --- |
| **Serial number** | **Design** | **Description** | **Questions** |
| 1 | Quantitative | Survey question (Online Survey Monkey) | Please indicate if something like the following has happened to you |
| 2 | Qualitative | Interview question (on Zoom) | Have you experienced difficult times in your life? |
| **3** | Would you give me examples of difficult times? |

***Statistics:*** A descriptive quantitative data analysis that includes percentages and tables was utilised. Further details are as published in study protocol by Mandoh et al. (2024).

**Results**

Among the 68 participants who initially attempted the survey, 36 qualified and out of this number 29 completed the Trauma History Screen questions in Table 2. Among them, nine volunteered for the semi-structured qualitative interview.

***Quantitative*** ***survey question based on Past Trauma History Screen***

Participants who were impacted by the traumatic events highlighted in Table 2 were low, but some of them stood out. As most of the participants did not experience the events which are highlighted in Table 2, those who had not witnessed the types of accidents in questions 1 and 2 in Table 2 were slightly above three fifths and those who had not experienced natural disasters which include hurricane, floods, tornado, and fire in question 3, represented close to four fifths of the population. More than half of the participants reported that they had hot been hit or kicked hard enough to be injured either as a child or adult. However, half of the population reported that they had been attacked with either a knife, gun, or weapon at varying numbers of times and majority had not been in military service, but witnessed things that made them scared many times. Those who witnessed family, friend or someone die or get badly hurt were approximately three fifths of the population and those who were moved from their homes or lost their homes represented more than half of the population and approximately about two fifths of the respondents were abandoned by their partners.

Table 2: Responses on “…*indicate if something like the following has happened to you*” (N=29)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Serial number** | **Types of trauma** | **No** | **Yes, (once)** | **Yes, (> once)** | **Weighted average** |
| 1 | A really bad car, boat, train or aeroplane accident | 75.86% | 17.24% | 6.90% | 1.31 |
| 2 | A really bad accident at work or home | 75.86% | 17.24% | 6.90% | 1.31 |
| 3 | A hurricane, flood, earthquake, tornado or fire | 86.21% | 13.79% | 0.00% | 1.14 |
| 4 | Hit or kicked hard enough to be injured - as a child | 65.52% | 13.79% | 20.69% | 1.55 |
| 5 | Hit or kicked hard enough to be injured - as an adult | 79.31% | 13.79% | 6.90% | 1.28 |
| 6 | Forced or made to have sexual contact - as a child | 93.10% | 0.00% | 6.90% | 1.14 |
| 7 | Forced or made to have sexual contact - as an adult | 96.55% | 3.45% | 0.00% | 1.03 |
| 8 | Attacked with a gun, knife or weapon | 62.07% | 24.14% | 13.79% | 1.52 |
| 9 | During military service - seeing something horrible or being badly scared | 89.66% | 6.90% | 3.45% | 1.14 |
| 10 | Sudden death of a close family or friend | 25.00% | 21.43% | 53.57% | 2.29 |
| 11 | Seeing someone die suddenly or get badly hurt or killed | 41.38% | 20.69% | 37.93% | 1.97 |
| 12 | A sudden event that made you feel scared, helpless or horrified | 31.03% | 24.14% | 44.83% | 2.14 |
| 13 | A sudden move or loss of home and possessions | 48.28% | 20.69% | 31.03% | 1.83 |
| 14 | Suddenly being abandoned by spouse, partner, parent or family | 58.62% | 37.93% | 3.45% | 1.45 |

**Qualitative data****:** Data presented below were collected through qualitative techniques in the online survey and the semi structured interviews that followed.

**Experiencing difficult times in life**

Qualitative data shows that some of those who survived the EVD epidemic had encountered difficult times before the epidemic. Most of their experiences which were narrated were centered mainly on the period covering the 2014-16 EVD epidemic and to a lesser extent the civil wars that affected Liberia and Sierra Leone mainly. These finding were further evidenced by participants’ the statements such as:

*In my country, the eleven years rebel war we had and …. we had Ebola which killed so many people and … other natural disasters as well. …there is lockdown most times there is no work and there is no support. …especially when it seems like the lockdowns will not end (Participant, 1)*

To assess the exposure to past trauma, participants were asked using the question below, if they would provide evidence of difficult times that traumatised them.

**Participants’ examples of difficult times**

Qualitative results indicated that participants encountered some difficult times. A few dwelled on their experiences during the Liberia and Sierra Leone civil wars, and the majority were on the period during the 2014-16 EVD epidemic. Examples of such difficult times included participants fleeing their homes and living in refugee camps, being unemployed but fending for self and family, they feared EVD infection and avoided people and public places especially when treatment options were limited. Another example of difficult time was when community lockdowns and harassment from security personnel’s were introduced, the period of EVD when communities were devastated accompanied by the high levels of hardship was also mentioned. More findings showed that the extent to which people became ill and dead from the 2014-16 EVD epidemic traumatised them.

**Discussion**

**Quantitative findings as per Table 2**

***Observations:*** Most of the traumatic events assessed in the trauma history scrfeen did not happen to many of the participants in this study but of note, attacks with knives, guns or other weapons were common occurrences to a few of them. Similarly, over half of the respondents to these witnessed events that scared them and significant others including family members, friends were badly hurt in the past. Moreover, about half of the participants reported to be aware of people who abandoned their partners suddenly. Experiencing these life challenging events indicates a significant burden of psychological trauma that could have lingerer on till the EVD epidemic occured.

***Inference on the findings:*** Though trauma exposure does not have the same effects for everyone, but repeated experiences of trauma from disasters or life-threatening events are known to increase the trauma burden of those who survive. However, past events and disasters such as the decade old rebel wars, which mainly affected Liberia and Sierra Leone and mud slides might have traumatised the individuals, and these traumas were not adequately addressed or managed either due to lack or limited availability of mental healthcare professionals in countries most impacted by the 2014-16 EVD epidemic in West Africa or lack of trust in the government run healthcare system. Although the experiences highlighted in Table 2, could have happened a long time ago, the EVD epidemic perhaps awakened strong memory of past traumatic events among this set of people, and also hindered or disrupted their recovery.

***Supporting literature:*** Though some people who experienced these traumatic events may not have haboured the psychosocial impacts for long, some possibly have symptoms of past trauma such as anxiety, stress, fear, avoidance, nightmares and flashbacks. In furtherance to this, Bah et al.(2020) and Jalloh et al. (2018) observed that people in the epicentre of the 2014-16 EVD epidemic had underlying history of trauma from violent attacks. Bah et al.(2020) further observed increased trauma level s among Sierra Leoneans and recommended improved professional care to mitigate further complications.

***Significance of the findings:*** These findings help facilitate the design and making of policies which can be combined with the provision of resources for long-term support for people traumatised by past events. It will further increase awareness on the persistence and scale of trauma among survivors of large-scale disasters such as the decade old rebel wars in Liberia and Sierra Leone and the EVD epidemic.

These findings bring the significance of past trauma history on psychosocial/mental health whilst experienceing other traumatic event. In clinical nursing, the findings on the levels of trauma from past events or disasters provide data applicable to management of similar patient-care situations through protocols that can be developed to support trauma care. Knowledge from this study can be utilised in various ways and other allied fields to foster the awareness about the psychosocial sequelae of chronic trauma that may be worsened by repeated exposures to event such as infectious disease outbreaks. The knowledge of the sequelae of the past trauma experiences guide healthcare workers such as nurses in providing care to those impacted by other past events. Healthcare workers are faced with difficult conditions in line of duty, so knowledge of the extent to which people have been traumatised guide in providing evidence-based care to their clients and other staff members if needed.

***Implications:*** The implications of these findings are that, irrespective that most participants did not suffer from some of these events, some with such experiences carry trauma that need to be identified and managed to maintain mental health. Additionally, the past experiences of the traumatic events and reoccurence of other disasters that reinforces the trauma not only affect the survivors’ psychosocial health but their environmental functionality, which may not only risk being overwhelmed by these experiences but can deteriorate into severe mental health conditions.

**Qualitative findings**

**Experiencing difficult times in life**

***Observations:*** Findings showed that people have indeed encountered multiples of difficult times and that left them with bad feelings. Their experiences of difficult times focused mainly on the difficulties experienced during the EVD epidemic and the wars that affected Liberia and Sierra Loene in the 1990’s. Difficulties include, community lockdowns, the lack of government support and the consequent hardship that followed and the struggles to survive.

***Inference on the finding:*** Exposure to difficulties test the psychosocial and mental resilience and reactions vary, and acquiring basic needs for survival can be socioeconomically and mentally challenging, and this leads to elevated levels of anxiety, stress and depression. Moderate stress can be be considered good for human action and productivity (Lin et al., 2022), however, repeated and elevated anxiety and stress, which emanating from social and economic challenges encountered especially during the EVD epidemic can indicate underlying risk for psychosocial/mental health condition(s).

***Supporting literature:*** Incoherence with the findings in this study, Jalloh et al.(2018) observed elevated levels of anxiety among Sierra Leoneans shortly after the EVD epidemic and proffered that psychosocial/mental health support was required for those at risk of anxiety and stress. Similarly, Secor et al.(2020) observed elevated levels of anxiety and depression among Liberians and Sierra Leoneans in the post EVD period. Additionally, Schindell et al. (2024), highlighted the presence of high level of depression and stress among EVD survivors in Guinea, Liberia and Sierra Leone.

***Significance:*** These findings call for investigation of the long-term implications of trauma from life challenging events such as the rebel wars and EVD epidemic that affected Guinea, Liberia and Sierra Leone and other West African conutries. The significance of current findings is that it brings to the fore the mental health problems among West Africans who have endured e.g., wars and natural disasters. The findings from this study highlights the trauma burden that survivors of trauma carry and the knowledge can be utilised for educational advancements in healthcare. Surviving traumatic events can have negative enduring effects if not identified and managed effectively and knowledge of the effects of past trauma event equips to further probe and effectively intervene to forestall more underlying complictions. It can be used in mentoring and supporting staff who have had traumatic experiences in the past that continues to challenge them psychosocially.

***Implications:*** This study reaffirms the significance of ongoing assessment of West Africans and other cohorts with similar experiences for evidence of underlying trauma which may not be overtly manifested but posing challenges to mental health.

**Participants’ examples of difficult times**

***Observations*:** Examples of difficult times include surviving the events rebel wars and the EVD epidemic and their consequent violence and hardships, which were glaring in their statements.

***Inference on the findings:*** Though giving examples of difficult times might create an impression that survivors of the traumatic events are continually dwelling of their effects on them, recollection of events indicates two things. First, awareness of the scale of the problem has helped them to develop resilience and health promoting behaviors that can help to avert serious complications. Second, the trauma of these event on their mental health may not have been resolved, which can make it difficult to adopt health promoting behaviors that help them avert symptoms such as anxiety, depression and nightmares especially where mental healthcare is suboptimal.

***Supporting literature:*** Jalloh et al.(2018) deliberated on the mental health impacts of large scale disasters such as the examples mentioned by participants in this study, which included the EVD epidemic and the residual effects of the decade old rebel wars. They further outlined symptoms such as anxiety, depression as being prominent indicators of trauma from the difficulties that emerged during the disasters. Bah et al. (2020), similarly emphasised the significance of mental health care for people since the civil wars that affected Liberia and Liberia had negatively impacted the mental health. Maryhuber et al. (2017) observed the loss of properties including homes of EVD survivors and noted that violence was sometimes directed at EVD survivors wich would have exacerbated their traumatic feelings.

***Significance of findings:*** This finding highlights the trauma exposures of survivors of wars and infectious disease such as EVD and promotes understanding of the complex nature of enduring difficult times especially during and after life challenging events such the wars in West Africa and the EVD epidemic. It further presents opportunities to understand how to regain strengths afterlife challenging events. These examples bring to the fore the negative effects of experiencing traumatic events such as those highlighted in this study on the mental health of the survivors. Since the long-term effects of difficulties encountered during the decade old wars that mainly affected Liberia and Sierra Leone on mental health are yet to be fully understood, these findings help in providing an insight into the scale of the problem and guide possible focused investigations.

Knowledge gained from this study can be tailored to suit individual intervention needs and it can be used as a template for studied on trauma history among survivors of life challanging situations.The knowledge of trauma can guide management of patients with underlying traumatic experiences.

***Implication:***EVD survivors of such as wars, car accidents and violent attacks who have not fully recovered from the traumatic experiences risk struggling with activities of daily living and their mental health in general. Hence, the need for continuous mentalhealth evaluation and support for maintainance of a balanced life.

**Limitations:** Though this a mixed methods research that may have neutralised some of the study biases, this study acknowledges that participants were purposively selected which can lead to selection bias. Moreover, as qualitative methods of investigations provide rich data that take into account participants nuanced expressions, interviews are recounted experiences from participants memory which can affect the correctness of the data provided and therefore a recall bias may occur.

**Conclusion**

Unresolved trauma from past experiences such as car accidents, violent attacks and surviving wars could be worsened by exposeres to other large scale events such as the EVD epidemic. The findings in this study show that participants endured an array of life challanging events that traumatised them and continue to live with the impacts on their psychosocial health. Hence, this study highlights the significance of continuous mental health /psychosocial evaluation to forestall unforseable complications. Finally, more research in to past underlying trama can help elucidate the extent of the problem among survivors of events.

**CONSENT**: Consent was given in writing before the study commenced.

**ETHICAL APPROVAL**: Approval given by the Charles Sturt University, New South Wales, Australia (Approval number H20325).

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