



Systematic Review of the Literature on the Psychosocial Impacts of Ebola Virus Disease on West Africans Who Survived the Epidemic

Sulaiman L Mandoh ^{a*}, Phillip T Bwititi ^b
and Ezekiel U Nwose ^c

^a School of Nursing, Paramedicine & Healthcare Sciences, Charles Sturt University, Wagga Wagga, Australia.

^b School of Dentistry & Biomedical Sciences, Charles Sturt University, Wagga Wagga, Australia.

^c School of Health & Medical Sciences, University of Southern Queensland, Toowoomba, Australia.

Authors' contributions

This work was carried out in collaboration among all authors. Author SLM did the data collection including literature search and initial drafting of the manuscript. Author EUN guided the statistical analysis. Author PTB reviewed the results. Authors EUN and PTB reviewed and developed the initial draft done by Author SLM for intellectual content, and all authors approved the final manuscript.

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ABSTRACT

This scoping review examines the psychosocial impacts of the 2014-16 Ebola Virus Disease (EVD) epidemic on West African populations, focusing on trauma, social support, and coping mechanisms. Using systematic database searches across multiple databases and appraisals with the McMaster

*Corresponding author: E-mail: smandoh02@csu.edu, mandohs@gmail.com;

tool. 24 studies were included. The findings indicate that EVD survivors experienced significant psychosocial distress with limited access to government support and mixed coping strategies. This review highlights critical gaps in mental health resources for epidemic survivors and calls for further research to inform support strategies in future health crises. West Africans psychosocially impacted from the EVD trauma lacked government support. Coping strategies appear to be mixed but the paucity of literature that addressed this phenomenon of interest raises concern and calls for further studies.

Keywords: Psychosocial Impact; ebola virus; epidemic; West Africa.

1. INTRODUCTION

1.1 Background

Ebola virus causes haemorrhage (Jalloh et al., 2018; Hasan et al., 2019; Van Bortel et al., 2016) and West Africa experienced Ebola virus disease (EVD) epidemic in 2014-16, but there have been outbreaks of EVD in North America, Europe, and Asia (Barry et al., 2014; Van Bortel et al., 2016). Although there have been EVD outbreaks in Africa after 1976 when it was reported in DR Congo, little was reported before 2014–16 epidemic (Barry et al., 2014). This epidemic resulted in many deaths, and it negatively affected the psychosocial and physical health of survivors (Chan, 2014; Mohammed et al., 2015). These psychosocial impacts are projected to last for short or long periods of time (Van Bortel et al., 2016). Feelings of shame, stigmatisation or the course of the disease caused trauma for EVD survivors which lead to the manifestation of psychosocial symptoms such as fear of infection, anxiety, depression all emanating from loss of loved ones or trauma that accompanied the disease. This EVD outbreak resulted to many deaths (Van Bortel et al., 2016) in the epicentre of the epidemic which was caused by a combination of factors that are outlined in the following paragraphs.

Despite previous outbreaks being confined to the African Great Lakes region, that is, Burundi, Rwanda, Democratic Republic of Congo, Tanzania, Uganda, and Kenya a major outbreak occurred in West Africa in 2014–16, which began in Guinea (Barry et al., 2014; Hasan et al., 2019) and quickly spread to Liberia, Sierra Leone and, to a lesser extent, Nigeria and Mali (Chan, 2014; Mohammed et al., 2015). This epidemic resulted in many infections and deaths in Liberia, Guinea, and Sierra Leone (Secor et al., 2020; Yerger et al., 2020).

The overall research objective is to review published studies that focus on the psychosocial

impact of EVD on survivors from West Africa who survived the epidemic. This broad objective statement revolves around seven specific objectives. Therefore, the next subsection (Hasan et al., 2019; Van Bortel et al., 2016) provides further introduction to the seven phenomena of interests leading the list of specific objectives on subsection 1.3.

1.2 Factors which Impacted the EVD Epidemic Response

According to the Centers for Disease Control and Prevention. (2019), the EVD epidemic affected Guinea, Liberia and Sierra Leone more than other countries because of social political and cultural reasons which includes: First, Liberia, Sierra Leone and partly Guinea, were recovering from a decade of rebel wars (Buseh et al., 2015; Chan, 2014), which destroyed their healthcare infrastructure and capacity to cope with an infectious disease such as the 2014–16 EVD epidemic (Park 2020; Shoman et al., 2017). Second, these countries lacked the preparedness to respond to a disease outbreak on the scale of the EVD epidemic (Delamou et al., 2017). Third, healthcare systems were overwhelmed by the lack of financial, and technical resources and even the World Health Organization could not intervene early enough to quell the spread of the outbreak (Shoman et al., 2017). Fourth, the high level of human traffic across political and national borders including human interactions in crowded cities and communities contributed to the initial unfettered spread of the disease. Finally, the decade-old wars in Liberia and Sierra Leone, which destroyed healthcare infrastructure had resulted to many healthcare professionals to flee to other countries.

Other factors that contributed to the outbreak becoming an epidemic are the traditional cultural burial practices, distrust in primary public healthcare systems, and corruption in healthcare delivery system (Shoman et al., 2017). Such

factors undermined the ability of these countries to prepare and manage the disease outbreak and the consequent mental health impacts that followed. Oleribe et al. (2024), reported that healthcare systems are underfunded in most African countries, and this could have contributed to the governments' incapability to respond adequately to the outbreaks. Similarly, Brolin-Ribacke et al. (2016) and Shoman et al. (2017) noted that the EVD epidemic occurred when the healthcare delivery systems and infrastructures of the worst affected West African countries were weak and therefore, unprepared for such a disease outbreak.

1.2.1 Experiences of trauma

As the EVD outbreak took hold, there was widespread sickness and deaths in communities, isolation from family for fear of spread of the disease, loss of jobs due to health reasons and hardship from the inability to work and closure of some businesses. Prior to the EVD epidemic, countries in the epicentre had experienced frequent outbreaks of infectious diseases such as cholera, measles, yellow fever, and other haemorrhagic fevers (Jalloh et al., 2018; Mayrhuber et al., 2017). The experiences during the EVD epidemic and from other previous disasters such as the rebel wars in Liberia and Sierra Leone, perhaps negatively impacted on survivors leaving them traumatised. Thus, the psychosocial impact on the people who survived this epidemic is expected to be felt for a long time (Esterwood & Saeed, 2020; Mboussou et al., 2019; Subissi et al., 2018) considering the scale of trauma (Jalloh et al., 2018). It is possible that previous disasters such as the decade civil conflicts in Liberia and Sierra Leone, and the morbidity and mortality that accompanied the EVD epidemic could have had an add-on effect on the trauma (Jalloh et al., 2018). Van Bortel et al (2016) noted that the course and severity of the disease, negatively impacted people psychologically. This assertion could have been as a result of individual and collective experiences of witnessing the deaths from EVD, which Rabelo et al. (2016) noted that exposure to the same events/infection may potentially had negatively impacted on EVD survivors.

Further, the trauma could also be associated with rigid infection prevention and control measures, resulting in family separation and isolation [28,29]. Such experiences potentially exacerbate underlying mental health and trauma burden that call for more support. The epidemic resulted in

many orphans in Guinea, Liberia and Sierra Leone who required support such as surrogate parenting and accommodation, emotional support, educational, healthcare, and nutritional supports. There were reports of closures of schools, and increased school dropout rates as well as child pregnancies during the EVD epidemic (Secor et al., 2020; Smith et al., 2016). These evidence-based issues added to the mental health burden mentioned thus, possibly the psychosocial impacts on West African EVD Survivors.

1.2.2 Social Support

Government support was inadequate during the EVD epidemic, and support was mainly from families, friends, communities, and non-government organisations. Such support aided recovery and community integration, but it was not available to all people. Studies have highlighted the unwillingness of some families and communities to support EVD survivors (James et al., 2019). Long after the epidemic, EVD survivors continue to experience stigmatisation in communities (Schindell et al., 2024), indicative of social rejection and discrimination.

Murray et al. (2021) noted that due to the inability of government to provide support, which included psychological and mental health services, the mental health of EVD survivors in Sierra Leone would have been negatively impacted. Van-Bortel et al. (2016) also reported that despite the mental health problems in Liberia, there was sub-optimal contextualised mental health support due to scarcity of mental healthcare resources.

Mayrhuber et al. (2017) proffered on the long-term physical sequelae of the 2014–16 EVD, and Secor et al. (2020) and Cenat et al. (2020) predicted long-term persistence of mental health complications in survivors of EVD epidemic. The mental health challenges require continuous monitoring and interventions. Social support is vital for post disaster survival and coping, which aid remediation of psychosocial impact of a disaster. Poor health during the post-infection recovery, derails the ability of survivors to engage in income-generating activities such as farming and mining. Mitigation of the impact of the socioeconomic instability that occurred because of the EVD epidemic, government financial and social supports were required to mitigate the negative psychosocial impacts.

1.2.3 Memory of events from surviving EVD epidemic

The highlighted memory of EVD events included restrictions of inter and intra community movements, emotional pain, widespread death, avoidance of government healthcare facilities, lack of resources and absence of appropriate treatment, financial hardship, inability to help the sick, and failure to culturally reverence the dead (Delamou et al., 2017).

Buseh et al. [14] reported that the lack of appropriate treatment and vaccines contributed to fear and panic and Delamou et al. (2017) noted how the limitation of movements affected business and the consequent hardships, and that deaths from diseases like HIV, tuberculosis and malaria increased due to failure to utilise healthcare services during the epidemic. Brolin-Ribacke et al. (2016) reported on how healthcare utility among women dropped out of fear of EVD infection. McMahan et al. (2016), similarly noted that healthcare workers were isolated from communities because of fear of infection and deaths. Other reasons for widespread deaths during the epidemic were delayed interventions and lack of treatments and vaccines, which according to Delamou et al. [36] resulted to EVD devastation of communities. On another point, Kamorudeen et al. (2020) observed that the epidemic severely impacted due among others, to lack of emergency preparedness and health literacy. Fear of EVD infection at health care facilities could have prevented people seeking help. This situation could have been exacerbated by inconsistent messages from government communication networks and/or mistrust in government management strategies. These limitations affected socioeconomic activities, hence the hardship that followed. As control of the Ebola epidemic required rigid alterations to activities supporting life in affected communities, it disrupted the cultures of the affected communities. Though these interventions curbed the spread of the virus, they caused disruptions which undermined coping, hence, the difficulty in contending with the impacts of the EVD (McMahan et al., 2016).

1.2.4 Influence of surviving the EVD event

Surviving the EVD epidemic was associated with lots of physical and psychological sequelae, which if not mitigated could lead to more serious mental complications. Physical impacts include falling sick with the virus, residual physical

complications, which some have described as Post Ebola Syndrome (PES). There have been several studies including James et al. (2019) who deliberated on the residual physical and psychological impacts of surviving the EVD on the lives of survivors, and Nyanfor Jr & Xiao (2020) on post trauma stress disorders among EVD survivors in Liberia. Jalloh et al. (2018) drew attention to residual psychological impacts of surviving EVD, and Overholt et al. (2018) deliberated on the psychosocial impacts of stigma on those who survived the EVD. Mohammed et al. (2015) associated distress to relationship in EVD, and Qureshi et al. [43] described how the EVD infection complications impacted the physical functionality of survivors.

All psychosocial health problems in these reports could exacerbate existing mental health problems if they are not addressed. Therefore, an accessible and culture specific intervention coupled with robust and well-planned governments intervention strategy are important to alleviate the impact of surviving EVD and to enhance coping strategies.

1.2.5 Coping strategies

Coping strategies are complex internal and emotional mechanisms adopted in response to events that cause stress, thus, individuals adopt a variety of coping approaches (Bianca et al., 2022). Some approaches can be positive or negative. Positive coping strategies included seeking help and support and examples include accessing information and compliance with prevention of infection and control regulations. For those with underlying mental health problems, accessing information about where and how to seek assistance to bolster resilience and coping thus, can be described as positive coping.

Alternatively, negative coping strategies included delay to address the stressor and avoiding utilisation of social and professional interventions that help coping. Other negative forms of coping were alcohol and drug use during the epidemic. Despite the enormity of the negative EVD impact on survivors, the selection of coping strategy could be described as deliberate and conscious or situational. Whereas a conscious and deliberate adoption of coping strategy may mean selection of a well-suited positive coping strategy a situational reaction on the other hand depicted a maladaptive reactional attitude, which leaves the problem solution to chance. Therefore, a

deliberate selection of positive coping strategy gave indication of the individual's adaptive belief in the effectiveness of utilising such services which will either enhance coping or resolve the problem. Studies show that when health issues occur and actions are proffered for their resolution, people would act according to belief that their actions will work [45]. Nonetheless, a situational selection of avoidance coping depicted either a denial of the existence of the problem or leaving the problem to resolve itself by chance. These actions would predispose the affected individuals to more emotional and mental health complications later (Korem et al., 2023; Patierno et al., 2023).

1.2.6 Current levels of psychological distress

Traumatic and major life events such as infectious disease outbreaks have proven to be sources of stress and health issues from disease outbreaks leave a trail of negative impacts that eventually undermine the wellbeing of survivors. Secor et al. (2020) observed manifestation of symptoms of psychological distress, which includes anxiety and depression among respondents in their study and highlighted that depression and anxiety scores were highest among Sierra Leoneans compared to Liberians and Guineans. These symptoms of psychological distress could either be a precursor for PTSD or mental health problems for those actively involved in the treatment and other healthcare service to the EVD patients as well as the patients.

To mitigate psychological distress symptoms, EVD survivors should be assisted with specific psychological and mental health interventions and Secor et al. (2020) who proffered that mental health services should prioritise mental health staff training and design training, which considers addressing stigmatisation of EVD survivors. Bah et al. (2020) and Jalloh et al. (2018) noted that EVD survivors displayed similar symptoms depicting psychological distress and PTSD and Schindell et al. (2024) [reported that little research has been done about the psychological distress in the post EVD epidemic period among EVD survivors.

1.2.7 Life satisfaction

Though the reviewed articles did not focus on life satisfaction specifically, nuanced understanding of the literature shows that quality of life would have been negatively impacted taking

cognisance of the levels of psychosocial impacts reported in the studies. This would have been so, especially when there was widespread illness, death, militarised isolation, and lockdowns superimposed on inadequate support from government. This would have culminated into the hardship that physically and psychologically impacted peoples' levels of functioning. According to the World Health Organisation "health is a state of physical, social and mental wellbeing and not merely the absence of diseases or infirmity". Thus, according to Kubzansky et al. (2023) interventions must focus on reinforcing strategies that focus on improving the health of populations, which will positively impact the wellbeing and life satisfaction of EVD survivors.

1.3 Objective of the Systematic Review

The objective of this review is to evaluate the extent the following seven research points are addressed in the literature. This is with a view to advance evidence-base knowledge that can be adopted in COVID-19 and other future infectious disease outbreaks management. The seven research items/questions regarding EVD survivors, which are outlined in the main study protocol (Mandoh et al., 2024), include:

1. Previous trauma experiences
2. Strongest memory of events during the EVD
3. Social support available during the EVD
4. The influence of EVD on survivors
5. Coping strategies were used during the EVD epidemic.
6. The current level of psychological distress
7. The current level of life satisfaction among EVD survivors

The corresponding research questions for the respective specific objectives are

1. What are the previous trauma experiences of EVD survivors?
2. What social support were available during the EVD?
3. What is the strongest memory of events during the EVD?
4. What is the influence of surviving EVD on survivors?
5. What coping strategies were used during the EVD epidemic?
6. What is the current level of psychological distress among EVD survivors?

7. What is the current level of life satisfaction among EVD survivors?

2. MATERIALS AND METHODS

2.1 Study Design

Study was designed to follow the PRISMA-ScR approach, as published in protocol [52].

2.2 Data Collection

Multiple search platforms were used starting with CINAHL and Cochrane. Other databases included African Journals Online (AJOL), MEDLINE, PsycINFO, and Scopus. The order of the search process was as indicated in the literature review protocol (Mandoh et al., 2024).

Further, this literature review on EVD, specifically focused on the 2014–16 West African epidemic and it is a prelude to studying the psychosocial impacts of COVID-19 on EVD survivors from West Africa who are residing in Victoria, Australia. To achieve this, the qualitative research SPICE framework was utilised to inform the development of the search strategy for this literature review (Table 1). Further, the search strategies including data sources, design and process were as published in the protocol (Mandoh et al., 2024).

Table 1. SPICE Framework for EVD

S	Setting	West Africa
P	Perspective	West Africans who survived the EVD
I	Phenomenon of Interest	Psychosocial impacts
C	Comparison	None
E	Evaluation	Impact

Source: [53]

2.3 Data Analysis

The data analysis adopted the JBI critical appraisal principles (Joanna Briggs Institute, 2017). The analysis for characteristics and quality of articles utilized the McMaster tool (2019), as indicated in published protocol (Mandoh et al., 2024). Further analysis to evaluate 'how many of the seven research questions may have been addressed by each study' was a self-developed 7-item scale that followed the McMaster critical appraisal scoring principle.

3. RESULTS

3.1 Summary Characteristics of the Literatures

The outcome of the literature search is presented in the PRISMA flow chart (Fig. 1). Summary of the characteristics of the literatures shows that 13/24 (54%) are mainly empirical i.e., quantitative studies, while 46% comprise a mix of different study methods (Table 2). Table 3 shows the results of the quality appraisal based on the McMaster criteria. While the phenomenon of interest i.e., research objective, as well as the research design and sampling appear complete in all studies, only 2/24 (~8%) of the articles have comprehensive information. On average, 83% of the necessary information is available.

3.2 Critical Review for Specific Objectives

Table 4 presents the critical evaluation of the literature in terms of the seven research points addressed by each study and critical evaluation shows that on average, only 2.08/7 (30%) are addressed. Descriptive quantitative statistics that utilised percentages, mean, tables, figures and frequency for analysis and presentation of studies. Over two thirds of the studies focused on psychosocial distress, about one third of the articles covered social support and a quarter of the studies reported about coping strategies. In another perspective, evaluation shows that the fifth research question i.e., coping strategies is least (8%) addressed, whereas the sixth question i.e., psychosocial distress is addressed by most (63%) of the studies.

4. DUSCUSSION

This section on discussion or the results in presented in two main subsections. The first espouses the characteristics and qualities of the literatures reviewed. The second subsection dwells on the research questions and accordingly structured in the sequential order of the specific objectives.

4.1 Characteristics and Quality of Literatures

4.1.1 The PRISMA

Findings as per result section: It identified 24,193 studies and most were not related to the 2014-16 West African Ebola epidemic. Further screening to determine eligibility significantly reduced articles to 24, which were included for review (Fig. 1). Many identified studies were not based on West Africa, and some did not match the topic under investigation.

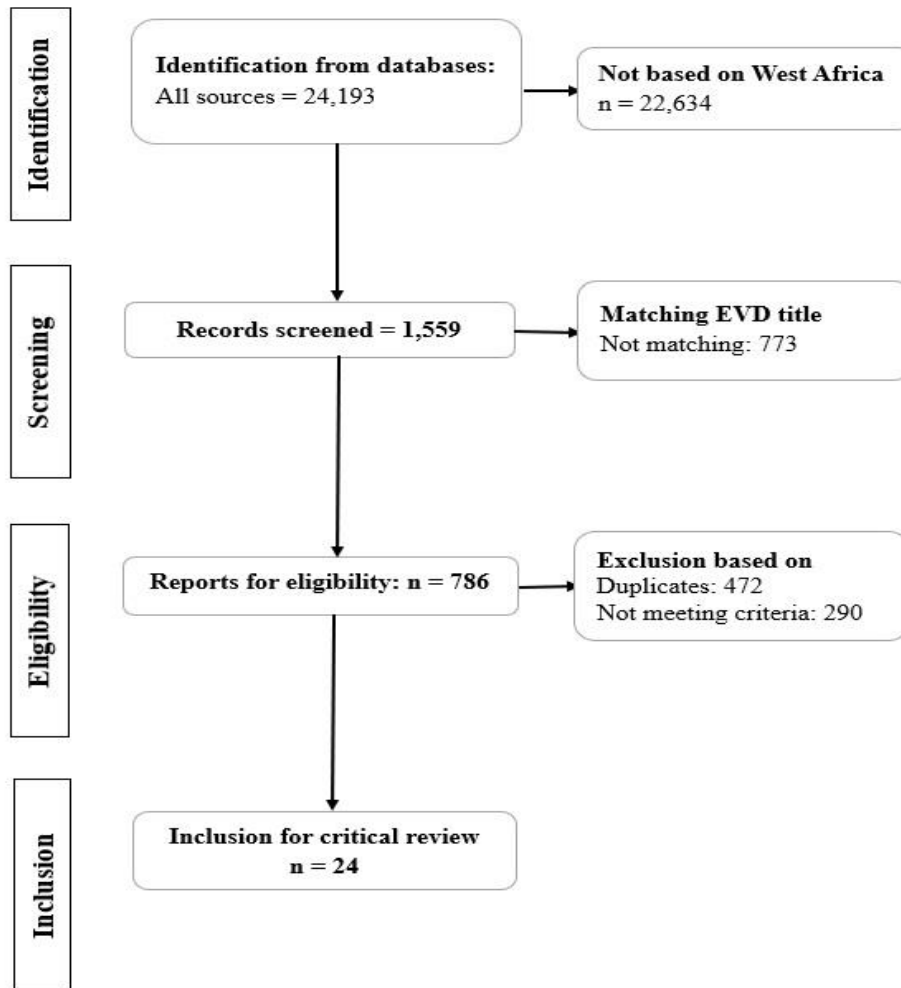


Fig. 1. PRISMA flow chart results of search strategy for the literature on the EVD epidemic

Table 2. Summary Characteristic of Studies in this Review

Serial Number	References	Phenomenon of interest
Quantitative studies		
1	Bah et al. (2020)	Prevalence of anxiety, depression, and PTSD among Ebola survivors in northern Sierra Leone.
2	Brolin-Ribacke et al. (2016)	The impact of the West Africa Ebola outbreak on obstetric in Sierra healthcare Leone.
3	Gamma et al. (2017)	Contextual and psychosocial factors predicting Ebola prevention behaviours using the risks, attitudes, norms, abilities, and self-regulation approach to behaviour change in Guinea-Bissau.
4	Jalloh et al. (2018)	Impact of Ebola experiences and risk perceptions on mental health in Sierra Leone, July 2015.
5	Ji et al. (2017)	Prevalence of psychological symptoms among Ebola survivors and healthcare workers during the 2014–15 Ebola outbreak in Sierra Leone.
6	Keita et al. (2017)	Depressive symptoms among survivors of EVD in Conakry.
7	Mohammed et al.	An evaluation of psychological distress and social

Serial Number	References	Phenomenon of interest
	(2015)	support of survivors and contacts of EVD infection and their relatives in Lagos, Nigeria.
8	Nyanfor Jr & Xiao (2020)	The psychological impact of the Ebola epidemic among survivors in Liberia.
9	Overholt et al. (2018)	Stigma and Ebola survivorship in Liberia.
10	Qureshi et al. (2015)	Study of EVD Survivors from Donka National Hospital in Guinea.
11	Schindell et al. (2024)	Stigmatisation of EVD survivors in 2022: A cross-sectional study of survivors in Sierra Leone.
12	Secor et al. (2020)	Mental health among Ebola survivors in Liberia, Sierra Leone, and Guinea.
13	Wilson et al. (2018)	Post-Ebola syndrome among EVD survivors in Montserrado county, Liberia 2016.
Other studies		
14	Carter et al. (2017)	Treatment-seeking behaviours and Ebola Community Care Centres in Sierra Leone.
15	Crea et al. (2022)	Social distancing, community stigma, and implications for psychological distress in the aftermath of EVD.
16	Gershon et al. (2016)	Experiences and psychosocial impact of West Africa Ebola Deployment on US Health Care Volunteers.
17	Howlett et al. (2017)	Neurological and psychiatric manifestations of post-Ebola Syndrome in Sierra Leone.
18	McMahon et al. (2016)	Healthcare providers on the frontlines.
19	Murray et al. (2021)	A community's experience during and after the Ebola epidemic of 2014–16 in Sierra Leone.
20	Rabelo et al. (2016)	Psychological Distress among Ebola survivors discharged from an Ebola treatment unit in Monrovia, Liberia.
21	Mayrhuber et al. (2017)	We are survivors and not a virus:' Content analysis of media reporting on Ebola survivors in Liberia.
22	Cénat et al. (2020)	Prevalence of mental health problems and associated factors among EVD survivors
23	James et al. (2019)	Post-Ebola psychosocial experiences and coping mechanisms among Ebola survivors.
24	Lötsch et al. (2017)	Neuropsychological long-term sequelae of EVD survivors.

Table 3. Critical appraisal for quality of the Literatures based on McMaster tool

Serial Number	Study author(s)	RO	LR	RD	SS	OM	R/S	DE	CI	CO	Lt	/10
1	Bah et al. (2020)	x	x	x	x	x	x	-	x	x	x	9
2	Brolin Ribacke (2016)	x	-	x	x	-	x	x	-	-	x	6
3	Gamma et al. (2017)	x	x	x	x	-	x	-	x	x	x	8
4	Jalloh et al. (2018)	x	x	x	x	x	x	-	x	x	x	9
5	Ji et al. (2017)	-	-	x	x	x	x	-	x	x	x	7
6	Keita et al. (2017)	x	x	x	x	x	x	-	x	x	x	9
7	Mohammed et al. (2015)	x	x	x	x	x	x	-	x	x	x	9
8	Nyanfor Jr & Xiao (2020)	x	x	x	x	x	x	-	x	x	x	9
9	Overholt et al. (2018)	x	x	x	x	x	x	-	x	x	x	9
10	Qureshi et al. (2015)	x	x	x	x	x	x	-	x	x	x	9
11	Schindell et al. (2024)	x	x	x	x	x	x	-	x	x	x	9
12	Secor et al. (2020)	x	x	x	x	x	x	-	-	x	x	8
13	Wilson et al. (2018)	x	x	x	x	-	x	-	x	x	x	8

Serial Number	Study author(s)	RO	LR	RD	SS	OM	R/S	DE	CI	CO	Lt	/10
14	Carter et al. -2017	X	-	X	X	-	X	-	X	X	X	7
15	Crea et al. (2022).	X	X	X	X	X	X	-	X	X	X	9
16	Gershon et al., (2016).	X	X	X	X	X	X	-	X	X	X	9
17	Howlett et al. (2017)	X	-	X	X	-	X	X	X	X	-	7
18	McMahon et al. (2016)	X	X	X	X	X	X	-	X	X	X	9
19	Murray et al. (2021)	X	-	X	X	-	-	-	X	-	X	5
20	Rabelo et al. (2016)	X	-	X	X	-	X	-	X	X	X	7
21	Mayrhuber et al. (2017)	X	X	X	X	X	X	-	X	X	X	9
22	Cénat et al. (2020)	X	X	X	X	X	X	X	X	X	X	10
23	James et al. (2019)	X	X	X	X	X	X	X	X	X	X	10
24	Lötsch et al. (2017)	X	X	X	X	X	X	-	X	X	X	9

Keys: RO – research objective, LR – literature review, RD – research design, SS – sample size, OM – outcome measures and data analysis, R/S – results of statistics, DE – dropouts or exclusion, CI – clinical importance, CO – conclusion, Lt – limitations, /10 – score out of the ten appraisal criteria.

Table 4. Outline of Research Questions touched by the Literatures

Serial Number	Reference	RQ1	RQ2	RQ3	RQ4	RQ5	RQ6	RQ7	X /7
1	Bah et al. (2020)	X							1
2	Brolin-Ribacke et al. (2016)						X		1
3	Gamma et al. (2017)		X						1
4	Jalloh et al. (2018)	X		X			X		3
5	Ji et al. (2017)		X						1
6	Keita et al. (2017)	X							1
7	Mohammed et al. (2015)		X				X		2
8	Nyanfor Jr & Xiao (2020)	X			X		X		3
9	Overholt et al. (2018)	X							1
10	Qureshi et al. (2015)			X					1
11	Schindell et al. (2024)	X					X		1
12	Secor et al. (2020)							X	1
13	Wilson et al. (2018)			X					1
14	Carter et al. (2017)				X				1
15	Crea et al. (2022)		X		X		X		3
16	Gershon et al. (2016)		X	X			X		3
17	Howlett et al. (2017)		X				X		2
18	McMahon et al. (2016)		X	X			X	X	4
19	Murray et al. (2021)			X			X	X	3
20	Rabelo et al. (2016)		X			X	X	X	4
21	Mayrhuber et al. (2017)						X	X	2
22	Cénat et al. (2020)				X		X	X	3
23	James et al. (2019)			X		X	X	X	4
24	Lötsch et al. (2017)	X	X				X		3

Key: RQ – research questions 1 to 7 list

1. What are the previous trauma experiences of EVD survivors?
2. What social support were available during the EVD?
3. What is the strongest memory of events during the EVD?
4. What is the influence of surviving EVD on survivors?
5. What coping strategies were used during the EVD epidemic?
6. What is the current level of psychological distress among EVD survivors?
7. What is the current level of life satisfaction among EVD survivors?

Inference of the findings being reported: This finding indicates that majority of the initial studies did not consider the psychosocial impact of the disease on the survivors. This could be attributed to the delayed interventions in managing the

outbreak, which could have hindered research in that direction. Moreover, there was scarcity of professionals to help with interventions and research on the mental health complications of the epidemic.

Support on inference: In consonance with the inference posited, James et al. (2019) observed that management of the epidemic was delayed. Schindell et al. (2024) observed the scarcity of mental health care professionals, and the absence could have impacted, which also supports the inference of this study.

Significance of findings: As the psychosocial sequelae of the EVD remain, more attention in research needs to be paid to investigating the psychosocial impacts on the EVD, which will provide knowledge about these impacts and coping strategies, as the observations can aid planning and interventions.

4.1.2 Summary of Characteristics

Findings as per result section: More than half (54%) of the reviewed studies are quantitative (Table 2). 83% of the entire number of studies focused on mental health and psychosocial health problems.

Inference of the findings being reported: This quantity and phenomenon of research interests reflects the initial focus on resolving the epidemic. The healthcare systems' unpreparedness for the epidemic is perhaps another factor that may have limited the focus of the researchers.

Support on inference: This inference resonates with various scholars such as Murray et al. (2021) who observed that the Sierra Leonean government could not provide support because of scarcity of resources, and this combined with other factors caused distrust in government.

Supporting literatures on inference: Not knowing how survivors coped and their satisfaction with life constitutes a gap in knowledge and practice with regards to mental health management. Considering the need to bridge KAP gaps (Olowookere et al., 2015) and strengthen government's healthcare systems (Simen-Kapeu et al., 2021), the implication of this observation is identified imperativeness for further studies.

4.1.3 Quality of Literature

Findings as per result section: The McMaster appraisal tool was adapted to evaluate ten parameters of each study. Out of twenty-four, two scored ten over ten, half of the total number scored nine, and the rest were eight and below.

Out of the whole, only 13% reported on dropouts of participants in the studies, and overall, the quality of over half of the reviewed studies were good (Table 3). All the studies stated their research objectives, research designs and sample sizes. Conversely, about one third did not indicate whether they utilised outcome measures and a similar number did not mention how they reviewed literature.

Inference of the findings being reported: Despite the quality of the research articles, there is still lack of coverage on the phenomena of interest. For instance, the expected reporting items of 17/24 (71%) for outcome measures, 22/24 (92%) on clinical implication are good. However, the overall quality score of 8.3/10 (83%) implies 17% deficiency or gap in reports that calls for further research inquiry.

Support on inference: The observed deficiency in literature is supported by existing reports. For instance, it has been reported that notwithstanding abundance of research on the impact of the COVID-19 pandemic, knowledge gaps still existed in the literatures (Ferro, 2019).

Supporting literatures on inference: The gap in knowledge is empirical evidence of need for further research. There have been reports highlighting some knowledge gaps (Alhaji et al., 2018; Olowookere et al., 2015; Simen-Kapeu et al., 2021), especially for primary healthcare services for infectious disease outbreaks. This constitutes justification for the doctoral research work on psychosocial impact of epidemics and pandemics.

4.2 Focus on Specific Objectives

4.2.1 Experiences of traumatic

It is possible that the adoption of infection prevention and control approaches such as health education in combination with appeals from community and traditional leaders were not feasible. Despite dissemination of infection control measures in communities, the introduction of rigid EVD control measures could have negatively affected the functionality of various aspects of life leading to trauma. Murray et al. (2021) reported that EVD epidemic did not only disrupt and negatively impact adult EVD survivors, but this disruption also closed schools thus, negatively impacted on education and traumatised children. Bah et al. (2020) observed high level of trauma symptoms among residents

of the northern province of Sierra Leone almost a decade after the epidemic, Jalloh et al. (2018) further illustrates the magnitude of the mental health problems that would arise from the negative impact of the EVD epidemic. In agreement with other researchers, Keita et al. (2023) attests that the EVD was a major source trauma and emphasised that the outlook of the negative impacts may not have been fully understood considering the shortage of mental healthcare professionals. Meanwhile, Nyanfor Jr & Xiao, (2020) who compared the impact of EVD to other disasters in Liberia, maintained that many EVD survivors were traumatised because of the negative impact of the EVD epidemic. McMahon et al. (2016) focused on negative impacts of the EVD epidemic on peripheral healthcare workers in Sierra Leone and observed that not much attention had been paid. Similarly, Overholt et al. (2018) and Schindell et al. (2024) reported on the levels and negative impacts of continuous stigmatisation of EVD survivors in Liberia and Sierra Leone.

The current trauma caused by the COVID-19 pandemic has implications for EVD survivors. First, the EVD survivors who were young during the epidemic are now adults who has experienced two major outbreaks back-to-back. Second, taking cognisance of the bleak projection of the mental health outcomes in this population points to increased burden of those requiring mental health care in communities that have low mental healthcare resources including professionals. Finally, a high prevalence of mental health problems among the young can erode productivity and development.

This brings to light that less emphasis is laid on the levels of trauma EVD survivors endured and, this is reflected in literature, where out of 33 reviewed articles only 9% concentrated on trauma that affected EVD survivors. This finding provides an opportunity for further research on levels of trauma among the 2014-16 EVD survivors. Knowledge from this review can help mental health interventions such as education of healthcare workers to enable evidence-based care for survivors. This finding enhances e.g., nurses understanding that many people were traumatised by the EVD epidemic and some of those people migrated to countries such as Australia undiagnosed therefore healthcare provision should be aware of existence of such cohorts since trauma impacts on people in different ways and past trauma affects the impact of present trauma.

4.2.2 Level of social support the EVD survivors received during the epidemic

Though people appreciated social support by nongovernment organisations, it appears as if they would have preferred governments' support. Nevertheless, supports from other sources which included families, friends and nongovernment organisations mitigated the impacts of the trauma. This is in line with reports by Crea et al. (2022) and Rabelo et al. (2016) who proffered that family and community support enhanced EVD survivors' coping during the post EVD treatments period. It is significant to note that social supports during and after an unfortunate event such as the EVD epidemic not only alleviate the impact of the event but enhance survivor resettlement and reintegration. Therefore, knowledge of social support should be factored in nursing education curricula because nurses are at the centre of disaster relief and support, which is the bedrock of commencement of recovery.

While Gamma et al. (2017) and Carter et al. (2017) reported on the positive health enhancing behaviours of Guinea-Bissau and Sierra Leoneans during the epidemic, Carter et al. (2017); Mohammed et al. (2015); Rabelo et al. (2016) and Crea et al. (2022) reported on support provided by family and nongovernment organisations and further outlined the levels of supports required for individuals associated to the EVD infection. Governments' inability to provide support did not only cause distrust but negatively impacted the psychosocial health of survivors and such observations were noted by Murray et al. [29] who observed that the government of Sierra Leone fuelled distrust in government and its institutions and also triggered feelings of uncertainty among EVD survivors.

The significance of projecting that the 2014-16 EVD survivors did not receive support from their governments is to highlight the levels of emotional and social trauma that were endured during that period. Moreover, this finding provides an understanding of reviewers' perspectives of recommending precise and targeted government support for people facing disasters. Implications of including provision of social supports in nurse training for victims of disastrous events provides a central opportunity for nurses to help with their specialist caring and protection roles. Thus, giving assurance which can be protective in relieving stress and resilience building on route to recovery. This

move would minimise the symptoms of psychosocial impact of the event, thus gradually fading the strong emotional attachment and memory of what happened. Is that nurses will give informed care that is guided by research.

4.2.3 The strongest memory of events during the epidemic

The negative experiences included witnessing the deaths and living with dead bodies in treatment centres for long periods, ambulances taking sick family members and not seeing them again, disruption of socioeconomic lives of people and financial and food acquisition difficulties. Taking cognisance of the scale of the outbreak, it could be argued that the delays in removing dead bodies were due to the protocols for safely removing, transporting and burying the bodies. This could have been worse in situations where workers became fearful, anxious, and distressed over infection and death of close individuals and workmates. Though the safe burial of EVD bodies was a vanguard of breaking infection dissemination in communities, there could have been reservations about the process and how dead bodies were treated and their whereabouts. Murray et al. (2021) identified this problem among his cohort and reported such concerns to negatively impact on attitudes of Sierra Leoneans towards infection control. In consonance with this, Ji et al. (2017) observed varying degrees of fear, anxiety and depression among their cohort and associated such feelings to fear of the disease especially when their colleagues were getting infected and dying. These authors further explained that the levels of anxiety, depression and fear was also related to levels of education. The safe removal and burial of bodies could have required trained healthcare workers, which may have contributed to the delays, and also stressed and traumatized inmates at treatment centres.

Some reviewed articles highlight of improvements in the health behaviours of people during the EVD epidemic, which assisted in improving the infection prevention and control initiatives. This finding resonates with Gamma et al. (2017) and Jalloh et al. (2018) who articulated that improvement in health behaviours, which they noted resulted from improved information, education and communication styles through radio on the one hand and the lived experiences of survivors. Research needs to ascertain if this positive behavior change was a result of the strict IPC measures or effective infection prevention

education and information, or it was willingness of the people to embrace positive behavioral strategies to stay safe from the EVD. This is important especially when taking cognisance of their experiences. It is possible that a combination of factors contributed to the positive changes in behaviour.

The health implications of these findings are that first, delayed removal of corpses could cause fear, distress, and demoralise others receiving treatments, which will further delay the full mental recovery and integration into society. Moreover, because healthcare staff fear the infection with the virus, the perceived risk being infected by this delay in removing corpses could cause increased rates of absenteeism. Therefore, there was the need for the provision of additional educational and protective resources which includes debriefing of staff and awarding regular leave/breaks for the safety of staff. These experiences indicate the need for continuous and intensive education of the nurses and for individuals' seeking treatments at such units to mitigate against such fears. Healthcare staff as well as EVD survivors should be regularly assessed for trauma to enhance positive mental and physical health outcomes.

This review has highlighted the gap in literature about Australian based West Africans who survived the EVD epidemic. Therefore, knowledge gained from this review can be modified and adapted into nurses and other healthcare training curriculum so that they are equipped deal with such people in the future. The relevance is that it will create awareness and provide the knowledge about the scale of the problem. Community and psychosocial services should be merged into the general mental health services to address EVD survivors' mental health needs.

4.2.4 The impact of surviving the EVD epidemic

The positive behaviour change includes health enhancing behaviours that aided infection prevention and control. This behaviour change might have been either as a result of peoples acquired experiences during the EVD epidemic or the positive impact of information, education dissemination. The negative influence includes negative psychosocial impacts which caused symptom such as fear and anxiety. Carter et al. (2017) reported that people embraced treatment seeking behaviours possibly because of the

close proximity of healthcare facilities to communities and this caused individuals to cooperate with health agencies. A positive community reaction to EVD patients could have encouraged others to come forward for screening and treatment thus helping the infection and prevention efforts. This finding resonates with Mohammed et al. (2015) who observed widespread community support for most of the EVD survivors. It could be argued that these positive behaviours were due to prior preparation for an EVD outbreak as in the case of Nigeria Ebola preparedness (Mohammed et al., 2015) or a result of involvement of community leaders in the EVD infection control interventions as was the case later in Sierra Leone. Indeed, prior preparation and effective planning and intervention helped control of EVD epidemic in Nigeria. The negative influence dwelled on how the EVD triggered fear, anxiety, nightmares, distrust, stigmatisation among people in affected places (Ji et al., 2017) even after the epidemic. These behaviours could have emerged from experiences with the disease and its socio-economic impact on the lives of the EVD survivors. Another negative influence was lockdowns in communities that became a burden because of the physical and socioeconomic limitations (Rabelo et al., 2016).

The EVD epidemic could have just exacerbated the existing socioeconomic problems. This finding is buttressed by Murray et al. (2021) that community lockdowns though useful in mitigating the spread of infection among and between communities, negatively affected community members and therefore influenced negative perceptions about the government's EVD epidemic management strategies. This finding implies that there no singular response to unpleasant past event. Therefore, nurses' placements in healthcare areas should encourage flexibility in dealing with various people considering their unknown historical background, which might include frightening and sad events. The implication for nursing education is the continued requirement of upscaling mental health education protocols and development of courses that focus on promoting nurse technical skills in handling the psychosocial complications of infectious diseases outbreaks in the future.

Knowledge gained from this review could be adapted into both research and practice to better prepare student nurses for evidence-based practice. The relevance of this finding to nursing practice and education is that it helps nurses

identify stress and adjust accordingly to enable them to maintain good health. Furthermore, since their line of duty includes dealing with people who might be stressed by their conditions, improved knowledge can help forestall future negative psychological or mental health influences on this scale. People should also be provided with social and mental health support services during and the post outbreak era.

4.2.5 Coping strategies

Whilst majority of the participants adopted positive coping strategies, scientific evidence-based care was scarce. This lack of care could have been associated with the scarcity of mental health care professionals in the epicentre of the 2014-16 EVD epidemic. Despite this scarcity some people reverted to traditional cultural treatments for mental health woes. The selection of traditional psychological and mental health treatments over conventional hospital or clinic-based treatments signalled either the absence or less accessibility of the service in Sierra Leone. It is also possible that traditional treatments were presumed to be a more accessible, less expensive, and culturally adaptable option or it was a combination of all the points. The latter could have been the case which is, in the absence of hospital or clinic-based treatments people opted for the only available option at their disposal which was the traditional treatment.

In light of the above points, James et al. (2019); Bah et al. (2020) observed that individuals attempted to utilise customary and traditional services to manage their psychological problems in Sierra Leone because there were few professionals. Similarly, Rabelo et al. (2016) undoubtedly noted on the significance of family and friends' supports and prayers enhancing EVD survivors' coping efforts in Liberia. Though use of nonorthodox customary treatments to cope with large scale trauma caused by the EVD epidemic may not be appealing to healthcare professionals, such a move is indicative that people recognised the need for mental health care and that it contributed to positive mental health and solution of the problem. Conversely, the non-utilisation of conventional treatment options created the opportunities for further entrenchment of people into the utilisation of the practice which may worsen the mental health problem.

Findings from this review is additional evidence of difficulties in coping with the EVD epidemic

and despite this, many people learnt how to cope by utilising nontraditional methods. Governments affected by the EVD epidemic should recognise the urgent need for more training of mental health nurses, nurse psychologists and other related healthcare professionals. Utilisation of non-government agencies to provide the necessary equipment, infrastructure and expertise regarding knowledge acquisition is vital in training that will help in managing such situations.

Findings can be integrated into nurse training programmes to enhance the utilisation of positive coping strategies in times of need. Moreover, this review provided evidence that people utilise multiple coping strategies. In the absence of appropriate standardised coping aids, other traditional techniques including folklore such as stories and prayers can be utilised to help people cope. Conventional psychological first aid can help individuals to cope and, timely interventions reinforce resilience and coping, which relieve the trauma and mental health burden of those affected.

4.2.6 Current level of psychological distress

Despite psychosocial distress being related to a spectrum of challenges and fear instilling situations such as EVD infection and death from it, there could be more narratives for this prevalence of psychological distress symptoms. First, survivors' personal experiences which included avoidance of healthcare facilities arising from fear of being infected or family members being sick with the virus and subsequent deaths in some cases. Second, economic problems such as financial hardship that followed the deteriorating health that negatively impacted their physical activities which in turn affected economic activities such as trade and farming. Finally, the effects of maladaptive antisocial behaviours, which included rejection and stigmatisation of recovering EVD survivors and sometimes their families that were encountered during the epidemic. The fear of EVD infection could have cut across all aspects of human activities including refusal to seek healthcare in hospitals. It could be argued that even though clinics and hospitals provided care for distressed sick individuals during the epidemic, healthcare service providers and their facilities could have been potential sources of infections, which caused fear, stress, and distress.

This position resonates with Brolin-Ribacke et al. (2016) and McMahon et al. (2016) who observed that hospitals and clinics were avoided out of fear of contracting EVD at such places. McMahon et al. (2016) further observed that psychosocial problems strained relationships within communities and coworkers, which was a source of distress for healthcare workers. Furthermore, even though poverty and financial hardship affected individuals before the EVD epidemic, the introduction of IPC measures negatively impacted trade coupled with the effects of compromised health exacerbated the situation further and, could have been another source of distress. There might be general healthcare for EVD survivors in the epicentre of the epidemic, but the inability to independently provide financial and food to support themselves could be challenging especially for the provider. In line with this, Jalloh et al. (2018) associated the unavailability of finance and food in EVD survivors as a source of anxiety and potentially distress. Alternatively, irrespective of the fact that the course of the EVD infection caused distress and emotional pain for survivors, the accompanying antisocial conjectures such as stigmatisation directed at survivors, may have significantly contributed to high level of psychosocial distress. This point resonates with Schindell et al. (2024) who observed that psychosocial distress levels were high in the epicentre of the epidemic.

This finding implies that the psychosocial impacts of the EVD epidemic is persisting in the communities and would further imply that mental health nursing education and healthcare in general should be more robust. It demonstrates the need of more focused mental health interventions in terms of regular screening and supports to facilitate permanent healing. Overall, as these studies have associated a plethora of psychological experiences to surviving EVD, a deliberate and guided intervention efforts should be made to prevent a further deterioration into more serious mental health conditions. Remedying this situation would entail training of healthcare workers who are mainly nurses to quickly identify and direct victims to appropriate resources for help. It is further suggested that ongoing assessment of EVD survivors for symptoms of mental health problems, strengthening clinical care, which can help mitigating the outcomes that would improve wellbeing and satisfaction with life.

Knowledge gained from this review can be utilised in practice where nurses and allied healthcare professionals could employ skills in not only identifying symptoms of psychological distress but the combination of flexible conventional distress relieving skills in the form of psychological first aid to relieve distress. As this review has exposed the void in this aspect of the EVD response and management, its findings would help in filling that void by providing necessary literature that could be adapted to guide future interventions into similar events. Furthermore, this review could raise the awareness to the magnitude of the problem in affected EVD areas and enable the planning of appropriate interventions to save the situation.

4.2.7 Life satisfaction during the EVD epidemic

Though an assessment of individuals' satisfaction with life in the past could have given an insight into peoples' wellbeing, most of the articles dwelled only on other aspects of psychosocial problems that affected their respondents rather than life satisfaction during the epidemic. The low-level satisfaction could have emanated from an array of either physical or psychosocial health problems, endured before and during the epidemic. On the other hand, one could consider other feelings that were possibly responsible for the low level of life satisfaction. Some of the reasons could have been illness and death of significant members of their family, the impact of strict imposition of lockdowns, which impacted on physical outdoor movements and exercise. Loss of socio-economic activities, job losses, absence of a steady stream of family income which in turn resulted to hardships in the absence of government relief support. This finding is in agreement with Murray et al. (2021) and Bah et al. (2020) who observed that significant members of families fell sick and died from the EVD. Moreover, Bah et al. (2020) reported that the lack of exercise after falling sick coupled with inter and intra community movement limitations may have negatively impacted peoples' wellbeing and perception of life.

The absence of studies focusing on life satisfaction may be taken to mean that there is less emphasis of peoples' wellbeing and quality of life. This oversight can ignite negative psychosocial feelings such as isolation, depression, anxiety, and rejection. If these feelings are not detected early, they might lead to

bigger mental health problems. This finding highlights the paucity of studies pertaining to life satisfaction during the 2014-16 Ebola epidemic and trigger interest in investigating this phenomenon. This can provide literature and knowledge about life satisfaction among Ebola survivors thus, information on an individuals' wellbeing. The resultant relevance is that there would be increased demand for healthcare because of the large population of EVD survivors needing healthcare help. Moreover, a more supportive role should be carved for nurses to aid improvement in accessibility and care of EVD survivors who are struggling with their mental health. As the foundation is being laid in Sierra Leone, improved mental healthcare should be reflected in the teaching curriculum of nursing education.

The consequences of this flows to the immediate COVID-19 pandemic and the associated discussion on preparedness for future infectious disease outbreak. One study has suggested that further research is needed into both direct and indirect consequences on mental health with a view to improve "care planning and for preventive measures during potential subsequent pandemics" (Vindegaard & Benros, 2020). The implications for healthcare service delivery is also known (Pfefferbaum & North, 2020).

5. CONCLUSION

This is a first part of the literature review on a bigger project on psychosocial impact of COVID-19 pandemic on Australia-based West Africans who survived the 2014-16 EVD epidemic. This review has identified and examined research on the psychosocial impact of EVD. None of the articles completely addressed all of the seven phenomena of interests for the proposed bigger project. This indicates a void in literature which this review has demonstrated, and this study topic will provide information in that space. Though studies have revealed various psychosocial issues affecting EVD survivors, it also indicates that literature in connection coping, social support, and life satisfaction for those in the phenomenon of interest is terse and therefore, further assessment of the support needs of EVD survivors will help greatly. The major implication of these findings from this review is a justification that further research is needed to identify persisting psychosocial impact symptoms and learn from the past infectious disease outbreaks such as the EVD and COVID-19.

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DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of this manuscript.

CONSENT

It is not applicable.

ETHICAL CONSIDERATION

Although ethics clearance is not applicable for this literature review, there is ethic committee approval for the main study.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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