Scoping review of the literature on the psychosocial impacts Ebola virus epidemic on West Africans in Victoria

ABSTRACT

Introduction*:* COVID-19 pandemic has been a focus of various research interests in recent years. However, the psychosocial impacts of other infectious disease outbreaks such as the Ebola virus disease (EVD) of 2014 – 16 in West Africa are yet to be clearly established and how they dove-tailed into COVID-19.

Methods*:* This is a systematic review focussing on seven items/questions, with critical appraisals based on standard McMaster tool and the protocol is as published.

Results*:* Twenty-four from over 24,193 articles are included for critical appraisal and 54% of the inclusions are quantitative studies. Critical appraisal of the quality of the studies indicates an average score of 83%. Further evaluation of the articles regarding the research questions indicates about 30% of the questions/items of interest were addressed, and coping strategies was least investigated.

Conclusion*:* 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 [1, 2], 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 [1, 3]. Although there have been EVD outbreaks in Africa after 1976 when it was reported in DR Congo, little was reported before 2014–16 epidemic [3]. This epidemic resulted in many deaths, and it negatively affected the psychosocial and physical health of survivors [4, 5]. These psychosocial impacts are projected to last for short or long periods of time [6]. 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 [6] 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 [7, 8] and quickly spread to Liberia, Sierra Leone and, to a lesser extent, Nigeria and Mali [9, 10]. This epidemic resulted in many infections and deaths in Liberia, Guinea, and Sierra Leone [11, 12].

1.2. Factors which Impacted the EVD Epidemic Response

According to the Centers for Disease Control and Prevention [13], 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 [10, 14], which destroyed their healthcare infrastructure and capacity to cope with an infectious disease such as the 2014–16 EVD epidemic [15, 16] . Second, these countries lacked the preparedness to respond to a disease outbreak on the scale of the EVD epidemic [17]. 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 [16]. 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 [16]. 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. [18], 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. [19] and Shoman et al. [16] 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 [20]. 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 [21, 22]. 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 [23-25] considering the scale of trauma [21]. 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 [26]. Van Bortel et al [6] 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. [27] 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 [30, 31] . 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

[32]. Long after the the epidemic, EVD survivors continue to experience stigmatisation in communities [33], indicative of social rejection and discrimination.

Murray et al. [29] 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. [34] 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. [22] proffered on the long-term physical sequelae of the 2014–16 EVD, and Secor et al. [31] and Cenat et al. [35] 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 [36].

Buseh et al. [14] reported that the lack of appropriate treatment and vaccines contributed to fear and panic and Delamou et al. [36] 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. Bolin-Ribacke et al. [19] reported on how healthcare utility among women dropped out of fear of EVD infection. McMahon et al. [37], 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, Kamorudeem et al. [38] 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 [37].

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. [39] who deliberated on the residual physical and psychological impacts of surviving the EVD on the lives of survivors, and Nyanfor Jr & Xiao [40] on post trauma stress disorders among EVD survivors in Liberia. Jalloh et al. [26] drew attention to residual psychological impacts of surviving EVD, and Overholt et al.[41] deliberated on the psychosocial impacts of stigma on those who survived the EVD. Mohammed [42] 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 [44]. 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 [46], [47].

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's. [31] 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. [31] 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., [48] and Jalloh et al., [49] noted that EVD survivors displayed similar symptoms depicting psychological distress and PTSD and Schindell et al., [33] 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. [50] 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 review protocol [51], 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

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 [52].

Further, this literature review on EVD, specifically focused on the 2014–16 West African epidemic and its psychosocial impacts on survivors. To achieve this, the qualitative research SPICE framework was utilised to inform the development of the search strategy for this literature review (Table 1).

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 [54]. The analysis for characteristics and quality of articles utilized the McMaster tool [55], as indicated in published protocol [52]. 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.

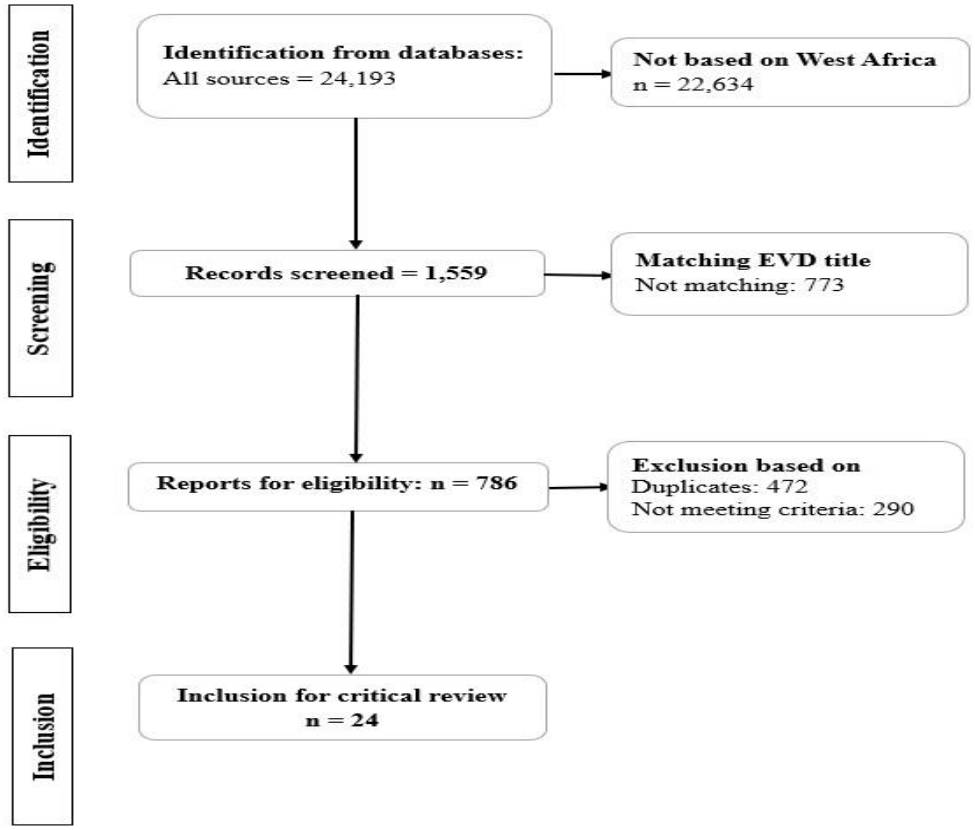

Fig 1: PRISMA flow chart results of search strategy for the literature on the EVD epidemic

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. (2015)	An evaluation of psychological distress and social 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**
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.

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.

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 question

4.DUSCUSSION

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 (Figure 1). Many identified studies were not based on West Africa, and some did not match the topic under investigation.

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.[39] observed that management of the epidemic was delayed. Schindell et al. [56] 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. [57] 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 [58], and strengthen government's healthcare systems [59], 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 [60].

Supporting literatures on inference: The gap in knowledge is empirical evidence of need for further research. There have been reports highlighting some knowledge gaps [58, 59, 61], 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

Itis 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. [29] 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.[48] observed high level of trauma symptoms among residents of the northern province of Sierra Leone almost a decade after the epidemic, Jalloh et al. [26] 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. [62] 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, [40] 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 [37] 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. [41] and Schindell et al. [33] 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.

4.3.2. 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. [63] and Rabelo et al. [27] 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. [64] and Carter et al.[28] reported on the positive health enhancing behaviours of Guinea-Bissau and Sierra Leoneans during the epidemic, Carter et al. [28]; Mohammed et al. [42]; Rabelo et al. [27], and Crea et al. [63] 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. [29] identified this problem among his cohort and reported such concerns to negatively impact on attitudes of Sierra Leoneans towards infection control. Inconsonance with this, Ji et al. [65] 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. [64] and Jalloh et al. [49] 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 highlights 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. [28] 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. [42] 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 [66] or a result of involvement of community leaders in the EVD infection control interventions as was the case later in Sierra Leone[26]. 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 [65] 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 [27].

The EVD epidemic could have just exacerbated the existing socioeconomic problems. This finding is buttressed by Murray et al., [29] 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. [39]; Bah et al. [67] 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. [27] 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. [19] and McMahon et al. [37] who observed that hospitals and clinics were avoided out of fear of contracting EVD at such places. McMahon et al. [37] 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. [26] 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. [33] 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.[29] and Bah et al. [48] who observed that significant members of families fell sick and died from the EVD. Moreover, Bah et al. [48] 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.

5. CONCLUSION

This first part of the literature review has identified and examined research on the psychosocial impact of EVD. The findings from this review justify further research to identify persisting psychosocial impact symptoms and learn from the past infectious disease outbreaks such as the EVD and COVID-19. Moreover, as none of the articles completely addressed the phenomenon of interest 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.

ACKNOWLEDGEMENT

This work is part of doctoral thesis by SLM who wrote the first draft. PTB and EUN supervised the work in second step of literature search process and revising the manuscript drafts for intellectual content. The systematic review process was supported by the university library department as a Librarian was second party at first step of literature search process. Support from the university research development, especially in editing is also acknowledged.

COMPETING INTERESTS

There are no competing interests.

ETHICAL CONSIDERATION

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

CONSENT

Not applicable.

REFERENCES

1. Van Bortel T, Basnayake A, Wurie F, Jambai M, Koroma AS, Muana AT, Hann K, Eaton J, Martin S, Nellums LB: Psychosocial effects of an Ebola outbreak at individual, community and international levels. *Bull World Health Organ* 2016, 94(3):210-214.
2. Hasan S, Ahmad SA, Masood R, Saeed S: Ebola virus: A global public health menace: A narrative review. *J Family Med Prim Care* 2019, 8(7):2189-2201.
3. Barry M, Traoré FA, Sako FB, Kpamy DO, Bah EI, Poncin M, Keita S, Cisse M, Touré A: Ebola outbreak in Conakry, Guinea: epidemiological, clinical, and outcome features. *Med Mal Infect* 2014, 44(11-12):491-494.
4. Mohammed A, Sheikh TL, Gidado S, Poggensee G, Nguku P, Olayinka A, Ohuabunwo C, Waziri N, Shuaib F, Adeyemi J *et al*: An evaluation of psychological distress and social support of survivors and contacts of Ebola virus disease infection and their relatives in Lagos, Nigeria: a cross sectional study--2014. *BMC Public Health* 2015, 15:824.
5. Chan M: Ebola virus disease in West Africa--no early end to the outbreak. *N Engl J Med* 2014, 371(13):1183-1185.
6. Van Bortel T, Basnayake A, Wurie F, Jambai M, Koroma AS, Muana AT, Hann K, Eaton J, Martin S, Nellums LB: Psychosocial effects of an Ebola outbreak at individual,

community and international levels. *Bulletin of the World Health Organization* 2016, 94(3):210.

7. Hasan S, Ahmad SA, Masood R, Saeed S: Ebola virus: A global public health menace: A narrative review. *Journal of Family Medicine and Primary Care* 2019, 8(7):2189-2201.
8. Barry M, Traoré FA, Sako FB, Kpamy DO, Bah EI, Poncin M, Keita S, Cisse M, Touré A: Ebola outbreak in Conakry, Guinea: Epidemiological, clinical, and outcome features. *Médecine et Maladies Infectieuses* 2014, 44(11):491-494.
9. Mohammed A, Sheikh TL, Gidado S, Poggensee G, Nguku P, Olayinka A, Ohuabunwo C, Waziri N, Shuaib F, Adeyemi J *et al*: An evaluation of psychological distress and social support of survivors and contacts of Ebola virus disease infection and their relatives in Lagos, Nigeria: a cross sectional study--2014. *Biomedical Central Public Health* 2015, 15:824.
10. Chan M: Ebola Virus Disease in West Africa — No Early End to the Outbreak. *The New England Journal of Medicine* 2014, 371(13):1183-1185.
11. Secor A, Macauley R, Stan L, Kagone M, Sidikiba S, Sow S, Aronovich D, Litvin K, Davis N, Alva S *et al*: Mental health among Ebola survivors in Liberia, Sierra Leone and Guinea: results from a cross-sectional study. *British Medical Journal Open* 2020, 10(5):e035217.
12. Yerger P, Jalloh M, Coltart CEM, King C: Barriers to maternal health services during the Ebola outbreak in three West African countries: a literature review. *British Medical Journal Global Health* 2020, 5(9).
13. 2014-2016 Ebola Outbreak in West Africa [https://www.cdc.gov/vhf/ebola/history/2014-2016-outbreak/index.html]
14. Buseh AG, Stevens PE, Bromberg M, Kelber ST: The Ebola epidemic in West Africa: challenges, opportunities, and policy priority areas. *Nursing Outlook* 2015, 63(1):30-40.
15. Park YS, Konge Larsn Artino, Anthony R: The positivism paradigm of research. *Academic Medicine* 2020, 95(5):690-694.
16. Shoman H, Karafillakis E, Rawaf S: The link between the West African Ebola outbreak and health systems in Guinea, Liberia and Sierra Leone: a systematic review. *Globalization and Health* 2017, 13(1):1.
17. Delamou A, Delvaux T, El Ayadi AM, Beavogui AH, Okumura J, Van Damme W, De Brouwere V: Public health impact of the 2014-2015 Ebola outbreak in West Africa:

seizing opportunities for the future. *British Medical Journal Global Health* 2017, 2(2):e000202.

18. Oleribe OO, Momoh J, Uzochukwu BS, Mbofana F, Adebiyi A, Barbera T, Williams R, Taylor-Robinson SD: Identifying Key Challenges Facing Healthcare Systems In Africa And Potential Solutions. *International Journal of General Medicine* 2019, 12:395-403.
19. Brolin-Ribacke, Brolin KJ, van Duinen AJ, Nordenstedt H, Höijer J, Molnes R, Froseth TW, Koroma AP, Darj E, Bolkan HA *et al*: The impact of the West Africa Ebola outbreak on obstetric health care in Sierra Leone. *Public Library of Science One* 2016, 11(2):e0150080.
20. Overholt L, Wohl DA, Fischer WA, Westreich D, Tozay S, Reeves E, Pewu K, Adjasso D, Hoover D, Merenbloom C *et al*: Stigma and Ebola survivorship in liberia: Results from a longitudinal cohort study. *Public Library of Science one* 2018, 13(11):e0206595-e0206595.
21. Jalloh MF, Li W, Bunnell RE, Ethier KA, O'Leary A, Hageman KM, Sengeh P, Jalloh MB, Morgan O, Hersey S *et al*: Impact of Ebola experiences and risk perceptions on mental health in Sierra Leone, July 2015. *British Medical Journal Global Health* 2018, 3(2):e000471.
22. Mayrhuber EA-S, Niederkrotenthaler T, Kutalek R: "We are survivors and not a virus": Content analysis of media reporting on Ebola survivors in Liberia. *Public Library of Science neglected tropical diseases* 2017, 11(8):e0005845.
23. Esterwood E, Saeed SA: Past epidemics, natural disasters, COVID19, and mental health: learning from history as we Deal with the present and prepare for the future. *Psychiatric quarterly* 2020:1-13.
24. Mboussou F, Ndumbi P, Ngom R, Kassamali Z, Ogundiran O, Van Beek J, Williams G, Okot C, Hamblion EL, Impouma B: Infectious disease outbreaks in the African region: overview of events reported to the World Health Organization in 2018. *Epidemiology & Infection* 2019, 147.
25. Subissi L, Keita M, Mesfin S, Rezza G, Diallo B, Van Gucht S, Musa EO, Yoti Z, Keita S, Djingarey MH *et al*: Ebola Virus Transmission Caused by Persistently Infected Survivors of the 2014–2016 Outbreak in West Africa. *The Journal of Infectious Diseases* 2018, 218(suppl_5):S287-S291.
26. Jalloh MF, Li W, Bunnell RE, Ethier KA, O'Leary A, Hageman KM, Sengeh P, Jalloh MB, Morgan O, Hersey S: Impact of Ebola experiences and risk perceptions on mental

health in Sierra Leone, July 2015. *British Medical Journal global health* 2018, 3(2):e000471.

27. Rabelo I, Lee V, Fallah MP, Massaquoi M, Evlampidou I, Crestani R, Decroo T, Van den Bergh R, Severy N: Psychological Distress among ebola survivors Discharged from an ebola Treatment Unit in Monrovia, liberia–a Qualitative study. *Frontiers in public health* 2016, 4:142.
28. Carter SE, O'Reilly M, Frith-Powell J, Umar Kargbo A, Byrne D, Niederberger E: Treatment Seeking and Ebola Community Care Centers in Sierra Leone: A Qualitative Study. *Journal of Health Communication* 2017, 22:66-71.
29. Murray RT, Drew LB, Memmott C, Bangura Y-M, Maring EF: A community's experience during and after the Ebola epidemic of 2014—2016 in Sierra Leone: A qualitative study. *Public Library of Science neglected tropical diseases* 2021, 15(2):e0009203.
30. Smith WC: Consequences of school closure on access to education: Lessons from the 2013-2016 Ebola pandemic. *International Review of Education* 2021, 67(1-2):53-78.
31. Secor A, Macauley R, Stan L, Kagone M, Sidikiba S, Sow S, Aronovich D, Litvin K, Davis N, Alva S: Mental health among Ebola survivors in Liberia, Sierra Leone and Guinea: results from a cross-sectional study. *British Medical Journal open* 2020, 10(5):e035217.
32. James PB, Gatwiri K, Mwanri L, Wardle J: Impacts of COVID-19 on African Migrants' Wellbeing, and Their Coping Strategies in Urban and Regional New South Wales, Australia: a Qualitative Study. *Journal of Racial and Ethnic Health Disparities* 2023.
33. Schindell BG, Kangbai JB, Shaw SY, Kindrachuk J: Stigmatization of Ebola virus disease survivors in 2022: A cross-sectional study of survivors in Sierra Leone. *Journal of Infection, Public Health* 2024, 17(1):35-43.
34. Yadav S, Rawal G: The Current Mental Health Status of Ebola Survivors in Western Africa. *Journal of Clinical Diagnosis Research* 2015, 9(10):La01-02.
35. Cénat JM, Mukunzi JN, Noorishad P-G, Rousseau C, Derivois D, Bukaka J: A systematic review of mental health programs among populations affected by the Ebola virus disease. *Journal of Psychosomatic Research* 2020, 131:109966.
36. Delamou A, Delvaux T, El Ayadi AM, Beavogui AH, Okumura J, Van Damme W, De Brouwere V: Public health impact of the 2014–2015 Ebola outbreak in West Africa: seizing opportunities for the future. *British Medical Journal Global Health* 2017, 2(2).

37. McMahon SA, Ho LS, Brown H, Miller L, Ansumana R, Kennedy CE: Healthcare providers on the frontlines: A qualitative investigation of the social and emotional impact of delivering health services during Sierra Leone's Ebola epidemic. *Health Policy and Planning* 2016, 31(9):1232-1239.
38. Kamorudeen RT, Adedokun KA, Olarinmoye AO: Ebola outbreak in West Africa, 2014 – 2016: Epidemic timeline, differential diagnoses, determining factors, and lessons for future response. *Journal of Infection and Public Health* 2020, 13(7):956-962.
39. James PB, Wardle J, Steel A, Adams J: Post-Ebola psychosocial experiences and coping mechanisms among Ebola survivors: a systematic review. *Tropical Medicine & International Health* 2019, 24(6):671-691.
40. Nyanfor Jr SS, Xiao S: The Psychological Impact of the Ebola epidemic among Survivors in Liberia: A retrospective cohort study. *Public Library of Science neglected tropical diseases* 2020.
41. Overholt L, Wohl DA, Fischer WA, Westreich D, Tozay S, Reeves E, Pewu K, Adjasso D, Hoover D, Merenbloom C: Stigma and Ebola survivorship in Liberia: results from a longitudinal cohort study. *Public Library of Science One* 2018, 13(11):e0206595.
42. Mohammed A, Sheikh TL, Gidado S, Poggensee G, Nguku P, Olayinka A, Ohuabunwo C, Waziri N, Shuaib F, Adeyemi J *et al*: An evaluation of psychological distress and social support of survivors and contacts of Ebola virus disease infection and their relatives in Lagos, Nigeria: a cross sectional study − 2014. *BioMed Central Public Health* 2015, 15(1):824.
43. Qureshi AI, Chughtai M, Loua TO, Pe Kolie J, Camara HFS, Ishfaq MF, N'Dour CT, Beavogui K: Study of Ebola Virus Disease Survivors in Guinea. *Clinical Infectious Diseases* 2015, 61(7):1035-1042.
44. Bianca C-SD, Ramona PL, Ioana MV: The relationship between coping strategies and life quality in major depressed patients. *The Egyptian Journal of Neurology, Psychiatry and Neurosurgery* 2022, 58(1):110.
45. Gu J, Jia S, Chao H, Chen T, Wu X: Predictive factors based on the health belief model on cancer screening behaviour in first degree relatives of patients with Lynch syndrome-associated colorectal cancer. *International Journal of Nursing Sciences* 2023, 10(2):251-257.
46. Patierno C, Fava GA, Carrozzino D: Illness Denial in Medical Disorders: A Systematic Review. *Psychotherapy and Psychosomatics* 2023, 92(4):211-226.

47. Korem N, Ben-Zion Z, Spiller TR, Duek OA, Harpaz-Rotem I, Pietrzak RH: Correlates of avoidance coping in trauma-exposed U.S. military veterans: Results from the National Health and Resilience in Veterans Study. *Journal of Affective Disorders* 2023, 339:89-97.
48. Bah AJ, James PB, Bah N, Sesay AB, Sevalie S, Kanu JS: Prevalence of anxiety, depression and post-traumatic stress disorder among Ebola survivors in northern Sierra Leone: a cross-sectional study. *BioMedical Central public health* 2020, 20(1):1-13.
49. Jalloh MF, Sengeh P, Bunnell RE, Jalloh MB, Monasch R, Li W, Mermin J, DeLuca N, Brown V, Nur SA *et al*: Evidence of behaviour change during an Ebola virus disease outbreak, Sierra Leone. *Bulletin of World Health Organisation* 2020, 98(5):330-340b.
50. Kubzansky LD, Kim ES, Boehm JK, Davidson RJ, Huffman JC, Loucks EB, Lyubomirsky S, Picard RW, Schueller SM, Trudel-Fitzgerald C *et al*: Interventions to Modify Psychological Well-Being: Progress, Promises, and an Agenda for Future Research. *Affective Science* 2023, 4(1):174-184.
51. Mandoh SL, Bwititi PT, Nwose EU: Study protocol for psychosocial impacts of COVID-19 pandemic on Australian based West Africans who survived the 2014-2016 Ebola ep. In: *Nursing, Paramedicine and Rural Health.* Edited by University CS, vol. PhD. Figshare: Charles Sturt University,; 2024.
52. Mandoh SL, Bwititi PT, Nwose EU: The psychosocial impacts of COVID-19 pandemic on Australian based West Africans who survived the 2014-2016 Ebola epidemic: A scoping review protocol. In: *Figshare.* Online: Figshare; September 24, 2024.
53. Booth A: Clear and present questions: formulating questions for evidence based practice. *Library Hi Tech* 2006, 24(3):355-368.
54. JBI: Critical appraisal tools. 2024. Available online at: https://jbi.global/critical-appraisal-tools
55. James PB, Wardle J, Steel A, Adams J: Post-Ebola psychosocial experiences and coping mechanisms among Ebola survivors: a systematic review. *Trop Med Int Health* 2019, 24(6):671-691.
56. Schindell BG, Fredborg B, Kowalec K, Shaw S, Kangbai JB, Kindrachuk J: The state of mental health among Ebola virus disease survivors through a cross-sectional study in Sierra Leone. *BMJ Global Health* 2024, 9(5):e015098.
57. Davies C, Fisher M: Understanding research paradigms. *Journal of the Australasian Rehabilitation Nurses Association* 2018, 21(3):21-25.

58. Olowookere SA, Abioye-Kuteyi EA, Adepoju OK, Esan OT, Adeolu TM, Adeoye TK, Adepoju AA, Aderogba AT: Knowledge, Attitude, and Practice of Health Workers in a Tertiary Hospital in Ile-Ife, Nigeria, towards Ebola Viral Disease. *Journal of tropical medicine* 2015, 2015:431317.
59. Simen-Kapeu A, Lewycka S, Ibe O, Yeakpalah A, Horace JM, Ehounou G, Boima T, Wesseh CS: Strengthening the community health program in Liberia: Lessons learned from a health system approach to inform program design and better prepare for future shocks. *J Glob Health* 2021, 11:07002.
60. Ferro MA, Meyer SB, Yessis J, Reaume SV, Lipman E, Gorter JW: COVID-19-related psychological and psychosocial distress among parents and youth with physical illness: A longitudinal study. *Front Psychiatry* 2021, 12:761968.
61. Alhaji NB, Yatswako S, Oddoh EY: Knowledge, risk perception and mitigation measures towards Ebola virus disease by potentially exposed bushmeat handlers in north-central Nigeria: Any critical gap? *Zoonoses Public Health* 2018, 65(1):158-167.
62. Keita MM, Taverne B, Sy Savane S, March L, Doukoure M, Sow MS, Toure A, Etard JF, Barry M, Delaporte E: Depressive symptoms among survivors of Ebola virus disease in Conakry (Guinea): preliminary results of the PostEboGui cohort. *Biomedical Central Psychiatry* 2017, 17.
63. Crea TM, Collier KM, Klein EK, Sevalie S, Molleh B, Kabba Y, Kargbo A, Bangura J, Gbettu H, Simms S *et al*: Social distancing, community stigma, and implications for psychological distress in the aftermath of Ebola virus disease. *Public Library of Science One* 2022, 17(11):e0276790.
64. Gamma AE, Slekiene J, Von Medeazza G, Asplund F, Cardoso P, Mosler HJ: Impact of Ebola experiences and risk perceptions on mental health in Sierra Leone, July 2015. *BioMedical Central Public Health* 2017, 17(1).
65. Ji D, Ji YJ, Duan XZ, Li WG, Sun ZQ, Song XA, Meng YH, Tang HM, Chu F, Niu XX: Prevalence of psychological symptoms among Ebola survivors and healthcare workers during the 2014-2015 Ebola outbreak in Sierra Leone: a cross-sectional study. *Oncotarget* 2017, 8(8):12784.
66. Mohammed A, Sheikh TL, Gidado S, Poggensee G, Nguku P, Olayinka A, Ohuabunwo C, Waziri N, Shuaib F, Adeyemi J *et al*: An evaluation of psychological distress and social support of survivors and contacts of Ebola virus disease infection and their relatives in Lagos, Nigeria: a cross sectional study − 2014. *BioMed Central Public Health* 2015, 15(1):824.

67. Bah AJ, James PB, Bah N, Sesay AB, Sevalie S, Kanu JS: Prevalence of anxiety, depression and post-traumatic stress disorder among Ebola survivors in northern Sierra Leone: a cross-sectional study. *BMC Public Health* 2020, 20(1):1391.