







Effectiveness of psychological first aid in infectious disease pandemics: An overview of systematic reviews

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Abstract

There is insufficient research on the usefulness of psychological interventions, such as psychological first aid (PFA), during outbreaks. We searched for and critically appraised systematic reviews that examined the effectiveness of PFA during infectious disease outbreaks, such as the novel coronavirus disease (COVID-19). Systematic reviews that examined the efficacy of PFA in the severe acute respiratory syndrome, Middle East respiratory syndrome coronavirus, Ebola virus disease, and COVID-19 outbreaks were searched through PubMed on February 19, 2021. The three included systematic reviews were critically appraised and assessed using AMSTAR-2. One review's overall confidence in its findings was evaluated as "high," which suggested that PFA training had a favorable effect on healthcare personnel. Furthermore, the review also demonstrated that PFA was commonly used during outbreaks and could be delivered through multiple methods, such as a phone or video call. Although it was anticipated that PFA would improve subjective well-being, reports showed no evidence of reduced depression or insomnia. Future studies should examine additional numbers of PFA recipients and conduct quasi-experimental studies to better understand the effectiveness of PFA. Evidence on its effectiveness in infectious disease outbreaks is still lacking, along with research and evaluation methods. Quasi-experimental studies, such

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as comparisons with other psychological interventions, are required to better understand the effectiveness of PFA.

KEYWORDS

mental health, pandemic, psychological first aid, psychosocial support

INTRODUCTION

Infectious diseases outbreaks can significantly impact the mental health of individuals who are infected. Psychological distress due to exposure to infectious diseases can cause various mental health problems, including anxiety, depression, and post-traumatic stress disorder, in both the general population and healthcare workers.¹⁻³ Additionally, the tension, fear, and anxiety caused by an outbreak can disrupt civil society and have adverse economic, political, psychological, and physical effects.^{4,5} Given the potentially serious effects of psychological distress during an infectious disease outbreak, interventions that alleviate psychological discomfort and encourage adaptive coping mechanisms are necessary. We chose psychological first aid (PFA) as the focus of this review owing to its unique potential for widespread implementation, particularly during a global crisis, such as the coronavirus disease (COVID-19) pandemic. Unlike some other psychological interventions, PFA can be delivered by various individuals, including nonprofessionals, after receiving appropriate training. This flexibility makes PFA especially valuable in situations where mental health resources may be scarce or inaccessible. Moreover, it is designed to address immediate psychological needs and foster resilience, crucial aspects of mental health support during infectious disease outbreaks.⁶

PFA, an intervention to alleviate psychological discomfort,⁷⁻¹⁰ offers compassion and help to people in need who have survived a natural disaster or catastrophic economic crisis. It involves a range of activities, including listening, offering consolation, and facilitating interpersonal connections. Furthermore, it is open to both the general population and mental health professionals. Research on PFA interventions in general disasters, excluding infectious diseases, has shown mixed results, with some studies reporting positive outcomes, such as reduced psychological distress.⁶ In contrast, other studies report limited or inconclusive evidence of its effectiveness.¹¹ Given these inconsistent findings, examining the effectiveness of PFA during infectious disease outbreaks, such as the COVID-19 pandemic, is important for crisis-response strategies and optimizing psychological support for the affected populations.

However, the extent to which PFA was effective during an infectious disease outbreak was unknown. The worldwide COVID-19 pandemic increased stress and anxiety levels, even though its long-term effects on stress levels were unclear.¹⁰⁻¹² Social isolation, due to the COVID-19 pandemic, has had a significant psychological impact on people globally.^{4,5} Therefore, this study aimed to determine the value of PFA in an infectious disease pandemic and whether it contributed against mental illness caused by the COVID-19 pandemic.

METHODS

We conducted a literature search using the overview method and searched the PubMed database on February 19, 2021 for articles on the effectiveness of PFA, regardless of language or publication year.¹³ An overview of systematic reviews was selected as it considered the broad range of available evidence, could assess the risk of bias, and provide a comprehensive perspective.¹⁴ While systematic reviews answered specific research questions, overviews offered a further extensive examination of the existing literature, which we deemed was more suitable for the current research on PFA during infectious disease outbreaks, which included the COVID-19 pandemic. We aimed to examine multiple systematic reviews, synthesize the diverse evidence available, identify gaps in knowledge, and provide a further informed foundation for future research on PFA in this context. Studies were included if they mentioned “psychological first aid” in either the title or abstract and were related to major infectious disease outbreaks since 2000. There are several existing PFA models, such as the World Health Organization's PFA (WHO-PFA), the National Child Traumatic Stress Network PFA (NCTSN-PFA), and the Johns Hopkins Guide to PFA (RAPID-PFA) model.¹⁵ These models aimed to provide immediate support to individuals who were distressed; however, they differed in their specific approaches and guidelines. In this overview, we conducted a search, regardless of the type of PFA employed, to gain a broader understanding of its effectiveness during infectious disease outbreaks. A pandemic was classified as an outbreak that affected people worldwide, crossed international borders, and involved many people.¹⁶ The severe acute respiratory syndrome (SARS), Middle East respiratory syndrome (MERS), Ebola virus disease (EVD), and COVID-19 outbreaks were included. The complete search list is shown in Table 1.

To incorporate reproducible methods, we included systematic reviews of randomized controlled trials (RCTs) or prospective or retrospective cohort studies. We also accepted qualitative reports, with or without meta-analysis, and did not have language restrictions. This study did not consider the participants' sexes, nationalities, or races. Before the review began, psychological interventions were deemed to have been performed in one of the following infectious disease environments: SARS, MERS, EVD, or COVID-19. Therefore, we also included other psychological interventions. M.A. confirmed the methods, M.K. and T.H. performed the screening, and A.I. extracted data. M.K. and K.Y. independently evaluated the studies via AMSTAR-2.¹⁷ The Preferred Reporting Items of Systematic Reviews and Meta-Analysis (PRISMA) guidelines were followed.¹⁸ An ethical review was not required since this was a secondary data study.

RESULTS

The flowchart of this study is shown in Figure 1. In total, three systematic reviews were identified during the screening phase. After an evaluation for their eligibility, all were judged consistent with the study's objectives.

TABLE 1 Search syntax.

(psychological first aid[Title/Abstract]) AND ((severe acute respiratory syndrome OR SARS OR middle east respiratory syndrome* OR Middle East Respiratory Syndrome Coronavirus OR Mers OR Middle Eastern Respiratory Syndrome* OR MERS-CoV OR MERSCoV* OR coronavirus OR coronavirus* OR coronavirus infections OR COVID-19 OR 2019-nCoV OR SARS-CoV-2 OR Ebola)) AND (((systematic review[ti] OR systematic literature review[ti] OR systematic scoping review[ti] OR systematic narrative review[ti] OR systematic qualitative review[ti] OR systematic evidence review[ti] OR systematic quantitative review[ti] OR systematic meta-review[ti] OR systematic critical review[ti] OR systematic mixed studies review[ti] OR systematic mapping review [ti] OR systematic Cochrane review[ti] OR systematic search and review[ti] OR systematic integrative review[ti]) NOT comment[pt] NOT (protocol[ti] OR protocols[ti])) NOT MEDLINE [subset] OR (Cochrane Database Syst Rev[ta] AND review[pt]) OR systematic review[pt]))

Abbreviations: 2019-nCoV, 2019 novel coronavirus; COVID-19, coronavirus disease 2019; MERS-CoV, Middle East respiratory syndrome coronavirus; SARS, severe acute respiratory syndrome; SARS-CoV-2, severe acute respiratory syndrome coronavirus-2.

A critical appraisal of the review articles using the AMSTAR-2 is provided in Table 2. Review article (1) Pollock et al.¹⁹ was rating “high,” which implied that the findings were accurately and comprehensively summarized. However, the other two review articles, (2) Yue et al.,²⁰ and (3) Cénat et al.,²¹ were rated “critically low” as one or more fatal flaws existed. Hence, they were deemed unreliable for providing an accurate and comprehensive summary.

In total, 16 studies were included in Pollock et al.,^{19,22-37} 32 in Yue et al.,^{20,35-68} and 11 in Cénat et al.^{21,65-75} All the reviews included PFA as an intervention; however, various other interventions, such as cognitive behavioral therapy (CBT) and counseling, were also practiced. (1) Pollock et al.¹⁹ and (2) Yue et al.²⁰ included the COVID-19 pandemic, while (3) Cénat et al.^{21,65-75} dealt only with the Ebola outbreak. Populations targeted by the interventions varied between (2) Yue et al.²⁰ and (3) Cénat et al.,²¹ which included various people, while Pollock et al.¹⁹ only included healthcare workers who worked at the front lines (Table 3).

DISCUSSION

This study overviewed three systematic reviews to determine the effectiveness of PFA during infectious disease outbreaks. Although three systematic reviews were identified, only (1) Pollock et al.¹⁹ had an AMSTAR-2 overall confidence rating of “high.” Meanwhile (2) Yue et al.,²⁰ and (3) Cénat et al.²¹ were rated “critically low.” The AMSTAR-2 was used to appraise the methodological quality of

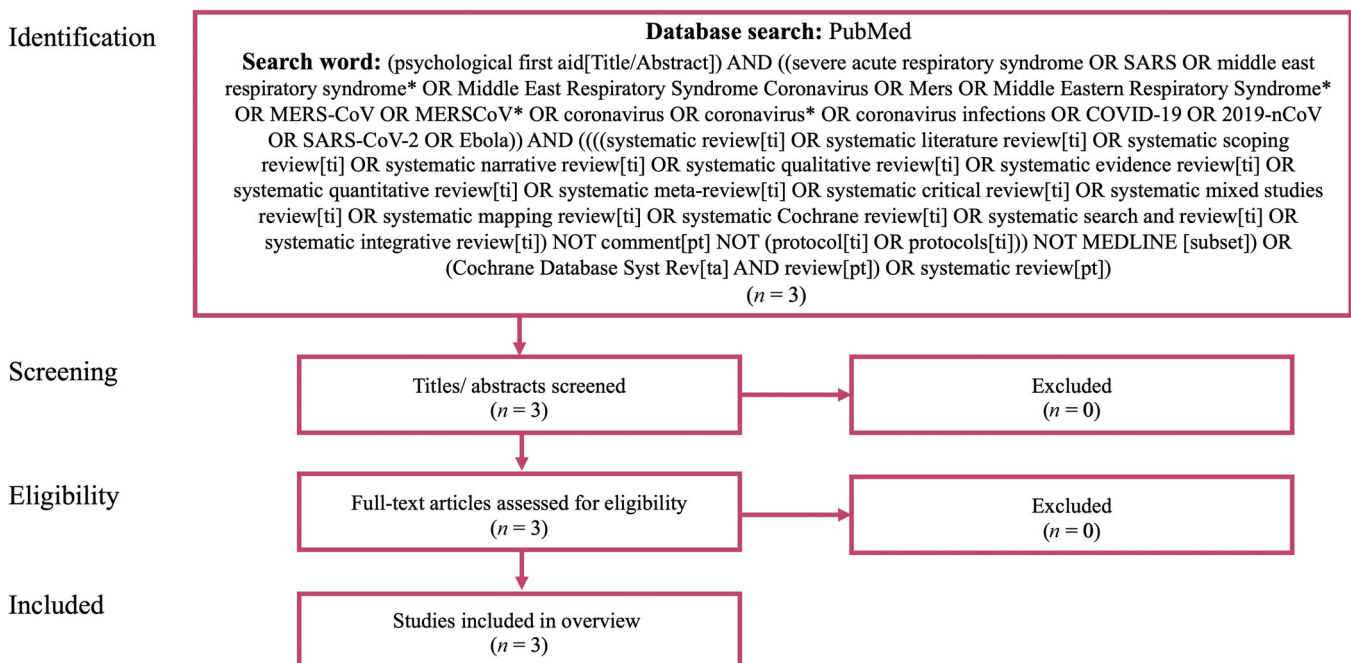


FIGURE 1 Flow chart. The PubMed database was systematically searched on February 19, 2021, using the terms “psychological first aid” in the title or abstract, restricted to articles published since 2000 related to major infectious disease outbreaks. In total, three systematic reviews were examined for eligibility and judged to be consistent with the study's objectives.

TABLE 2 The AMSTAR-2 assessment.

SRs	Item																Overall quality	
	1	2 ^a	3	4 ^a	5	6	7 ^a	8	9 ^a	10	11 ^a	12	13 ^a	14	15 ^a	16		
Pollock et al. ¹⁷	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	NMC	NMC	Y	Y	NMC	Y	High
Yue et al. ¹⁸	Y	N	Y	PY	Y	Y	N	PY	PY	N	NMC	NMC	N	Y	NMC	Y	Y	Critically low
Cénat et al. ¹⁹	Y	N	Y	N	N	N	N	PY	N	Y	NMC	NMC	N	Y	NMC	Y	Y	Critically low

Notes: Item 1, "Did the research questions and inclusion criteria include components of the clinical question (patients, intervention, comparison, and outcome)?"; Item 2, "Did the report contain an explicit statement that the review methods were established prior to the review being conducted and justify any significant protocol deviations?"; Item 3, "Did the authors explain their selection of the studies for inclusion?"; Item 4, "Did they use a comprehensive literature search strategy?"; Item 5, "Did they perform study selection in duplicate?"; Item 6, "Did they perform data extraction in duplicate?"; Item 7, "Did they provide a list of excluded studies and justify them?"; Item 8, "Were the included studies described in adequate detail?"; Item 9, "Was a satisfactory technique used to assess the risk of bias (RoB) in the individual included studies?"; Item 10, "Did they report the sources of funding for the studies included?"; Item 11, "If a meta-analysis was performed, did they use appropriate methods for statistical combination of the results?"; Item 12, "If a meta-analysis was performed, did they assess the potential impact of the RoB in individual studies on the results of the meta-analysis or other evidence synthesis?"; Item 13, "Did they account for the RoB in individual studies during the interpretation/discussion of the results?"; Item 14, "Did they provide a satisfactory explanation for and discussion of any heterogeneity in the results?"; Item 15, "If they performed quantitative synthesis, was an adequate investigation of publication bias (small study bias) conducted and its likely impact on the results discussed?"; Item 16 "Did they report any potential sources of conflict of interest, including any funding they received for conducting the review?"

Abbreviations: N, no; NMC, no meta-analysis conducted; PY, partial yes; Y, yes.

^aCritical domains.

the identified systematic reviews, which included the Cochrane review by Pollock et al. This evaluation tool was widely recognized for assessing the quality of systematic reviews.¹⁴ Although the Cochrane review had the highest quality, the inclusion of other systematic reviews, along with their AMSTAR-2 assessments, provided a further comprehensive understanding of the available evidence on PFA during infectious disease outbreaks. Furthermore, it enabled us to identify the potential biases and limitations in the additional reviews and allowed for a further cautious interpretation of their findings. As a result of possible bias, (2) Yue et al.²⁰ and (3) Cénat et al.²¹ should be interpreted with caution. Both failed to develop and report on the review process before the study was executed, did not compile a list of the excluded studies, and failed to apply the bias risk effectively in the interpretation and discussion. However, it was important to consider their findings as they may provide valuable insights on the investigated topic.

In the context of general disasters not related to infectious diseases, the effectiveness of PFA remains debatable. Some studies demonstrated positive outcomes, such as reduced psychological distress and improved coping mechanisms.⁶ However, others yielded limited or inconclusive evidence regarding PFA's effectiveness in these situations.¹¹ This inconsistency underscored the need for further investigation and for methodologically rigorous studies to better understand the potential benefits and limitations of PFA interventions across various disaster contexts, which included infectious disease outbreaks, such as the COVID-19 pandemic.

We included other interventions, such as CBT, to provide a further comprehensive view of the existing literature on psychological interventions during outbreaks and highlight potential alternative or complementary approaches explored in the context of infectious disease outbreaks. Although our primary focus was on PFA, our

literature overview revealed that many systematic reviews also discussed other interventions, such as CBT, which we have included in our discussion for a comprehensive understanding of the field.

PFA

The main goal of the (1) Pollock et al. study¹⁹ was to evaluate the efficacy of treatments intended to improve resilience among frontline healthcare personnel. The study found that training healthcare workers to practice PFA that measured burnout was effective. However, confidence in the effectiveness was low.³⁰ Nevertheless, this study showed that healthcare workers could experience positive changes through PFA techniques. These included an improved ability to understand people's reactions and control one's emotions; improved relationships with friends, family, and colleagues; and development of better self-care strategies. PFA was also commonly used in other settings, such as in Sierra Leone where 14 nurses were trained in PFA for Ebola,⁶⁸ as well as teams of food providers, contact tracers, and transportation operators to households during quarantine.⁷² In Guinea, 46 traditional healers and 154 imams were trained in PFA and psychosocial support by the Red Cross.⁷¹ Other interventions included a combination of PFA and group-based CBT.⁶⁷ However, while PFA was beneficial as an early intervention for individuals in distress, its effectiveness was not always particular. While trainers received training to conduct PFA, this training was often shorter and incomplete compared with the standard.⁷⁶ In the systematic reviews included in our study, the specific PFA model employed was not always clearly identified. However, most studies may have focused on the WHO-PFA model, given its widespread recognition and use.¹⁵ The RAPID-PFA model, a more recent

TABLE 3 Overview of the key characteristics of the included reviews.

Author	Included databases	Search date	Included study design	A limited selection of studies (if any)			Target population	Mental healthcare/psychological intervention	Outcomes
				Infectious disease	Infected disease	Infected disease			
Pollock et al. ¹⁷	Cochrane Database of Systematic Reviews, Global Index Medicus databases, CENTRAL, MEDLINE, Embase, Web of Science, PsycINFO, CINAHL, WHO Institutional Repository for Information Sharing, Trials Registrations, and Google Scholar	May 28, 2020	One mixed-method design described the implementation and evaluation of an intervention and included a qualitative interview component and a cohort study, while two quantitative study designs included some descriptive data. Six qualitative study designs, one mixed-method design that reported results from quantitative questionnaires and qualitative interviews, one that described the implementation and evaluation of an intervention, and five that did both.	All articles from 2002 onwards, with no language restrictions.	Four COVID-19 Nine EVD One MERS Two SARS	Health and social care professionals who worked at the front line during infectious disease outbreaks (epidemics and pandemics).	Interventions at the workplace, including training, structure, and communication (six studies); approaches for psychological support, including counseling and psychological services (eight studies); and multimodal interventions (two studies).	General mental health and resilience, psychological signs of anxiety, depression, or stress, burnout, other mental health disorders, workplace staffing, and adverse events resulting from the interventions were examined to determine the impact of work-based interventions. The results provided very low-certainty evidence regarding the impact of training frontline healthcare workers to provide psychological first aid on a measure of burnout.	
Yue et al. ¹⁸	PubMed, Web of Science, Embase, PsycINFO, WHO Global Database on COVID-19, and MedRxiv	May 5, 2020	One RCT, one quasi-experimental intervention, four pre-post interventions, one intervention development, one quantitative interview, eight reports, 14 commentaries, and two reviews.	Excluded non-English publications	23 COVID-19 Seven EVD One MERS One SARS	Healthcare workers, psychiatric patients, individuals who were quarantined, family members, older adults, and children.	Group-based cognitive behavioral therapy, PFA, community-based psychological art program, and other culturally adapted interventions.	To improve mental health response capacity for ongoing and upcoming infectious disease outbreaks, culturally appropriate, financially viable, and easily accessible strategies integrated into the local and national public health emergency response and	

(Continues)

TABLE 3 (Continued)

Included databases	Search date	Included study design	A limited selection of studies (if any)	Infectious disease	Target population	Mental healthcare/psychological intervention	Outcomes
Céna et al. 19	Not stated	Any research plan, analysis, or summary of successfully implemented and assessed psychosocial treatments (no statement).	Those launched between 2013 and 2019.	11 EVD	Those who have experienced EVD (survivors, health workers, volunteers, other frontline workers, children, adults, etc.). Two programs focused on impacted children and families, while four programs offered MHPSS to employees and volunteers. Communities and ETCs established other unique programs.	Five programs incorporated the concepts of PFA.	established medical systems were likely to be effective. Although tele-mental healthcare services were important essential elements of care for managing infectious disease outbreaks and providing routine assistance, the value and constraints of distant healthcare delivery should also be acknowledged. Findings indicated improvements in both children's and adults' mental health. (Culturally tailored MHPSS programs may benefit both adults and children afflicted by EVD and have a positive influence on the relationship between the emotional consequences of EVD and use of preventative measures.)

Abbreviations: COVID-19, coronavirus disease 2019; ETCs, Ebola treatment centers; EVD, Ebola virus disease; MERS, Middle East respiratory syndrome; MHPSS, mental health and psychosocial support; PFA, psychological first aid; RCTs, randomized controlled trials; SARS, severe acute respiratory syndrome.

development, has not been as extensively documented, and its effectiveness during infectious disease outbreaks should be further investigated.¹⁰ Future research should explore the potential benefits and limitations of the different PFA models, including the RAPID-PFA, to gain a better understanding of their applicability and effectiveness in various contexts.

CBT

Another strategy supported by evidence was CBT. A study on 253 staff members from an Ebola treatment center found that small-group CBT delivered in eight sessions over 6 weeks improved staff anxiety, depression, and dysfunction.³⁷ Another study, which administered PFA to staff who worked at an Ebola treatment center and CBT intervention to a group that exhibited high anxiety and depression, found that stress, anxiety, depression, and anger all improved. Furthermore, the interventions protected the staff from adverse psychological outcomes. However, they also found that the team lacked the motivation to participate in CBT, which underscored the importance of motivation.^{66,67} Given the availability of online and mobile application platforms in addition to in-person encounters, CBT has the potential to be accessible to a wide audience.²⁰ Some telemental health services were offered in China during the COVID-19 pandemic, and online self-help psychotherapy, such as CBT for insomnia and depression, was also provided.⁶³

Other interventions

The SMART group debriefing (Strength-Focused and Meaning-Oriented Approach for Resilience and Transformation) included 51 patients who were chronically ill from Hong Kong after the SARS outbreak. Participants' depressive symptoms decreased, and their attitudes regarding SARS underwent an adaptive change.⁵⁷ In addition, during the Ebola epidemic in Sierra Leone, a model was developed to help healthcare workers manage psychological risk and resilience.³⁴ The model was based on self-triage, in which healthcare providers anticipated their own stress experiences, developed a plan to increase resilience, and deterred stress reactions by activating the program when exposed to stress. Self-triage was a promising method to avoid dysfunction, and preliminary studies showed that it was feasible. Other interventions adapted to different cultures, such as Playing to Live in Liberia,⁶⁵ ultra-brief psychological intervention in Malaysia,⁵⁴ and peer support among university students in Iran using social media platforms,⁵⁵ also alleviated psychological malaise during infectious disease outbreaks.

PFA in the context of general disasters

In addition to its use in infectious disease outbreaks, PFA has also been employed in various noninfectious contexts, including natural

disasters, terrorist attacks, and other traumatic events. Understanding its effectiveness in these situations can provide valuable insights into its overall utility across different types of crises. Some studies demonstrated the positive impact of PFA on coping, resilience, and mental health outcomes in noninfectious settings.¹⁵ However, evidence remains limited, especially in the context of infectious disease. Furthermore, methodological issues in the existing literature must be addressed to draw further robust conclusions.¹¹

What providers should be aware of when implementing interventions

According to the high-quality (1) Pollock et al.¹⁹ review, there were two reported barriers to intervention for frontline healthcare workers. Healthcare workers and their organizations lacked the necessary knowledge to assist their mental health. Furthermore, healthcare workers lacked the tools, staff time, and expertise required to perform the intervention, as mentioned above.

Social relations

It is essential to be aware of how society views patients with infectious diseases, as this can significantly influence their hospitalization and reintegration into the community. During the Ebola epidemic, previous studies found that stigma, discrimination, and social rejection were significant problems for patients.^{77,78} Although there has been no particular research on this during the COVID-19 pandemic, patients could have had comparable problems. Therefore, it is essential to be mindful of this when working with patients with infectious diseases and encourage society to reduce the related stigma.

Limitations

This study has several limitations. First, the review compiled was limited to studies that implemented PFA interventions, such as PFA for outbreaks. Furthermore, limited studies with substantial evidence, such as RCTs, were identified. Moreover, evaluation methods across studies were heterogeneous. Hence, it was challenging to construct a meta-analysis or other high level of evidence. Second, a significant challenge was the need for further research on PFA during infectious disease outbreaks and in disaster situations. PFA was anticipated to be a practical approach for mental health and psychosocial support during infectious disease outbreaks; however, there was insufficient evidence to substantiate this approach. Additional evidence should be gathered in the future. Nevertheless, the limited time and resources available during disasters made it difficult to conduct rigorously controlled studies. Consequently, it was essential to further accumulate findings from various research designs, such as quasi-experimental and controlled intervention

studies. Additionally, in regions where English was not the native language, the number of publications in English may be limited, which could result in an evidence gap if only English-language literature was considered.⁷⁹ Therefore, a comprehensive survey that encompassed non-English-language literature should be conducted. Third, a key issue in conducting research during a disaster was ethical considerations.^{80,81} Given a disaster's chaotic and often dangerous nature, researchers are required to take extra care and ensure that the participants understand what they have consented to and that they are not being coerced into participating. Researchers should be sensitive to participants' potential mental and emotional distress and take steps to minimize any risks associated related to their participation. Therefore, quasi-experimental studies on PFA that consider the ethical aspects of the people who are affected are desirable. Quasi-experimental studies that compare the results of PFA interventions with other types of interventions, examine medium- and long-term effects, or compare the results of PFA administered by different providers (e.g., mental health professionals or nonprofessionals) would be useful in understanding its multifaceted effects.

CONCLUSION

PFA is becoming more widely used in infectious disease outbreaks. Although the results of high-quality systematic reviews are limited, many reports have demonstrated its effectiveness. During implementation, it is essential for providers to be aware of the mental well-being of COVID-19 patients and behave in a way that reduces the social stigma attached to them. However, evidence on PFA being an effective tool for mental health and psychosocial support in outbreaks is still insufficient due to lacking studies, designs, and evaluation methods. While considering the ethical considerations of the people who are affected, quasi-experimental analyses, such as comparisons with other psychological interventions, are required to better understand the effectiveness of PFA.

AUTHOR CONTRIBUTIONS

Masahide Koda, Toru Horinouch, and Nozomu Oya designed the study. Masahide Koda and Toru Horinouchi wrote the first draft of the manuscript. Masahide Koda, Toru Horinouchi, Nozomu Oya, Morio Aki, Akihisa Iriki, Kazufumi Yoshida, and Yusuke Ogawa performed a literature search and analysis. Masahide Koda and Kazufumi Yoshida evaluated the past systematic reviews via the AMSTAR-2. All the authors made a substantial contribution to the manuscript, and approved of the final draft.

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CONFLICT OF INTEREST STATEMENT

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DATA AVAILABILITY STATEMENT

None.

ETHICS APPROVAL STATEMENT

Since this study was a review, ethical approval was not necessary. This study followed the PRISMA guidelines.

PATIENT CONSENT STATEMENT

None.

CLINICAL TRIAL REGISTRATION

None.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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