

REVIEW ARTICLE

Re-examining mental health crisis intervention: A rapid review comparing outcomes across police, co-responder and non-police models

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Abstract

Police are the default first responders in most mental health crisis intervention models worldwide, resulting in a heavy burden on police, perceived criminalization of individuals with complex mental health needs, and escalation of aggression that resort to violence. Models, such as crisis intervention teams (CIT), and co-response programmes aim to improve service user experiences and outcomes by providing mental health training to police, or pairing law enforcement officers with mental health clinicians, respectively. Despite these efforts, mental health-related calls continue to result in negative outcomes, and activists and policymakers are advocating for non-police models of crisis intervention. Evidence-based practice in mental health crisis intervention is urgently needed. The present review's main objective was to examine, synthesise and compare outcomes across police, co-responder and non-police models of mental health crisis intervention internationally using a rapid review framework. A systematic search of four electronic databases of studies published between 2010–2020 and a grey literature search was conducted, yielding ($n = 1008$) articles. A total of 62 articles were included in the present review. Studies were largely observational, lacking control groups and were of low-moderate quality with a high potential for bias. Overall, there is little evidence to suggest that the CIT model impacts crisis outcomes. Co-responder models evidenced improved outcomes compared to police only models, however, evidence was often mixed. Non-police models varied significantly, and studies tended to be too low quality to make comparisons or draw conclusions, however, research on youth models and crisis resolution home treatment suggested positive outcomes. Findings highlight the need for high-quality studies and policies to facilitate the implementation and evaluation of novel approaches not involving police. Cross-sectorial collaboration and service user input are urgently needed to inform, develop, test and disseminate effective models of crisis intervention acceptable to service users.

KEYWORDS

community mental health services, crisis intervention, emergency services, mental health, police, psychiatric

1 | INTRODUCTION

Internationally, mental health-related crises represent a substantial proportion of emergency calls to police departments. In some regions, this proportion is increasing (CAMH, 2020), ranging from 3%–16% of total call volumes (Abbott, 2011; Nasser, 2020). The historical period of de-institutionalisation in the mid-20th century is one of many factors that have contributed to increased police involvement in crisis intervention (Dempsey et al., 2020; Dunn et al., 2017; Steadman & Morrisette, 2016).

In this review individuals with mental health needs who use crisis intervention services are referred to as 'service users'. The shift from institutional to community care for individuals with complex mental health needs, in concert with a lack of compensatory funding and resources for community-based services, led police officers to become de facto mental health crisis providers (Cotton & Coleman, 2006). Furthermore, police worldwide have been granted the legal power to detain and transport service users to treatment (Dempsey et al., 2020), further ratifying police involvement in mental health crisis intervention.

Without adequate mental health training and with a mandate to protect the public over the welfare of service users, increased police involvement in mental health crises has led to increased injuries and fatalities to services users (Kindy & Elliott, 2015; Saleh et al., 2018). For example, between 23% and 70% of fatalities during police encounters in Canada were related to mental health or substance use concerns (Marcoux & Nicholson, 2017; Saleh et al., 2018), and 25% of fatal police shootings in the United States in 2015 involved individuals in emotional crisis (Kindy & Elliott, 2015). Racism also plays a role (RSC, 2020), with African American race and mental illness strongly associated with police fatalities in the United States in 2015 (Saleh et al., 2018). Increased criminalization of service users is another effect of police involvement in mental health calls. A largescale United Kingdom study of 13, 472 participants found that individuals flagged as having mental health concerns were more likely to be charged with a criminal offense and more likely to spend longer in police custody than those without such flag (Kane et al., 2018). Moreover, many service users have reported feeling stigmatised and criminalised following crisis interactions with police (Boscarato et al., 2014; Lamanna et al., 2018; Puntis et al., 2018).

Efforts to improve mental health crisis outcomes have resulted in the adoption of two crisis intervention models involving police internationally: the Crisis Intervention Team (CIT) model or the 'Memphis model' (Kasick & Bowling, 2013), and the co-responder model (Shapiro et al., 2015), which resembles the 'street triage' models in the United Kingdom (Puntis et al., 2018). CIT involves 40 hr of police training on how to identify individuals with mental health issues, on verbal de-escalation, community resources, as well as partnerships with mental health providers, advocates and other stakeholders. The co-responder model involves pairing police officers with mental health clinicians, and typically functions as a secondary response (i.e. after police have deemed that the call does not present a threat of violence) (Dempsey et al., 2020). This model

What is known about this topic

- CIT and co-responder models were developed to improve the effectiveness of police officers in crisis intervention.
- Evidence in support of both CIT and co-responder models is mixed.
- Police involvement in crisis intervention is associated with violence and criminalization of service users.

What this paper adds

- There is little evidence to suggest that CIT models impact outcomes for police-led crisis intervention.
- Co-responder models may lead to improved outcomes compared to CIT.
- Significant gaps in the literature include lack of high quality, controlled studies, lack of research on civilian-led mobile crisis models, and gaps in development and evaluation of models tailored to equity-seeking communities.

varies geographically, and has been implemented in many districts in Canada (Lamanna et al., 2018; Semple et al., 2020), the United States (Morabito et al., 2018), the United Kingdom (Kirubarajan et al., 2018) and Australia (McKenna et al., 2015). While research on both of these models indicates some benefits compared to traditional policing (Shapiro et al., 2015; Watson & Wood, 2017), service user deaths by police during mental health-related calls persist (CAMH, 2020; Nasser, 2020; RSC, 2020). The death of George Floyd at the hands of a police officer in 2020 catalysed activists, policy-makers and administrators to attend to the growing need for a systemic shift in the design and implementation of law enforcement broadly, as well as in crisis-related services (CAMH, 2020; CMHA, 2020).

Alternatives to police-based crisis intervention have existed for some time, however, these services are often grassroots-led, community-based and have not been resourced to evaluate outcomes or compare to pre-established models. Examples of non-police models include civilian-led mobile crisis units, such as the PAM model in Sweden (Bouveng et al., 2017), the CAHOOTS model in Oregon, USA (Consulting, 2020), paramedic teams (Roggenkamp et al., 2018), youth-specific mobile teams (Braganza et al., 2020), emergency telehealth services (Johnston et al., 2014) and crisis resolution home treatment (Sjolie et al., 2010).

As efforts to decrease over-reliance on police-based crisis intervention models intensify, there is an urgent need for evidence-based decision making as municipalities, law enforcement, policy makers and mental health stakeholders collaborate to design effective, service user-centred crisis intervention models. There is little research to date synthesising and comparing the evidence in relation to police only models (CIT), co-responder models and non-police models. A review of the evidence is therefore urgently needed to understand

TABLE 1 Inclusion and exclusion criteria

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> English language Published between 2010 and 2020 Focus on mobile crisis intervention Include police training interventions if outcomes relate to first point of contact Emphasis on systematic reviews and meta-analyses Explicit mental health focus (versus. violence) Focus on first point of contact in crisis, can include triage to 2nd point of contact Available to general population/exclude population-specific programming 	<ul style="list-style-type: none"> Models with population-specific focus or programming Forensic-specific/violence-specific articles related to intervening in situations involving domestic violence Emergency department models/inpatient programmes Assertive Community Treatment (ACT) team models Articles that do not include effectiveness or efficacy outcomes

the effectiveness of current models, and inform the development of new, effective, evidence-supported crisis intervention models. The aim of the current study was to ascertain the state of the evidence on the effectiveness of mental health crisis intervention models with and without police. It is important to note that the current review represents the state of the literature on crisis intervention prior to the COVID-19 pandemic, which has affected the structure, and operations of crisis intervention, as well as access to many crisis intervention services.

1.1 | Research questions

How do police, co-responder and non-police crisis response models compare in terms of effectiveness?

1. What are the key outcomes being reported in the literature?
2. What is the quality of the evidence?
3. How effective are mental health crisis response interventions?
4. What does this information tell us about the current state of crisis intervention internationally?

2 | METHODS

Cochrane Rapid Review Guidelines and World Health Organization guidelines were used to guide the methodology of the present review (Garritty et al., 2020; Tricco, 2017). Rapid reviews are a robust tool for evidence synthesis to inform timely decision-making in healthcare (Garritty et al., 2020). Key stakeholders, including policymakers and decision-makers, were included in the process of developing research questions, inclusion and exclusion criteria, and defining population (e.g. police and service user), intervention (e.g. CIT and co-responder), comparator (e.g. CIT versus. non-CIT), and outcome (e.g. arrest rates and hospital admission) (PICO) parameters. Stakeholders also utilised service user interviews to guide the current rapid review framework. Four databases were systematically searched for relevant articles between 2010 and November 2020: Medline, Embase, PSYCIInfo and Cochrane. Databases were searched separately due to differing subject headings, and a combination of subject headings (i.e. MeSH and subject) and text

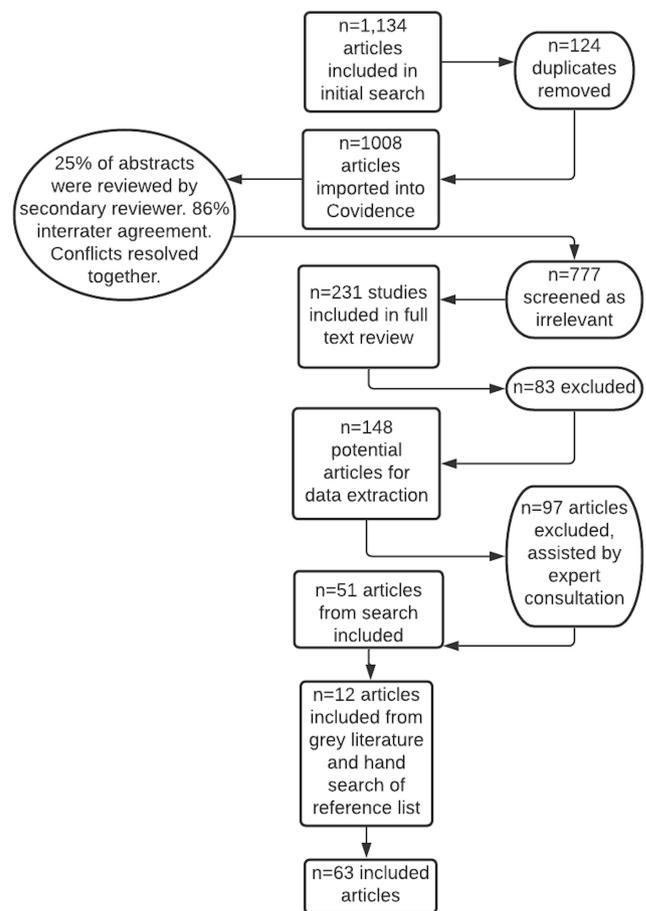


FIGURE 1 Article Inclusion and Exclusion

words were used for searching. The search strategy was developed in consultation with a Centre for Addiction and Mental Health (CAMH) librarian. Searches were saved and documented for replicability. Google Scholar and Google were used for the grey literature search, as well as a hand search of reference lists and references forwarded by experts in the field of crisis intervention to include policy and unpublished documents. See Appendix for detailed search strategy supplemental information.

Final searches were exported into Covidence software to begin screening and managing references. Screening was conducted by

the first author of this report, and in concordance with Rapid Review Guidelines (Garritty et al., 2020), 25% (approximately 250) of article titles and abstracts were screened by a second reviewer, resulting in 86% agreement between screeners. Discrepancies between reviewers were discussed and resolved. Screening was an iterative process and involved excluding duplicates and title and abstract screenings at the first stage, full-text screenings at the second stage, and another round of full-text screening at the third stage. The second author, an expert in the field of crisis intervention, assisted with the screening of articles at the final stage (Table 1).

2.1 | Screening of articles

A total of ($n = 62$) articles were included in the current review. Fifteen ($n = 15$) articles focused on police-based models, twenty-two ($n = 22$) articles on non-police models, and 25 ($n = 25$) articles described co-response models, including four literature reviews. Twenty-six ($n = 26$) studies were based in the United States, 8 ($n = 8$) in Canada, 11 ($n = 11$) in Australia, 6 ($n = 6$) in the United Kingdom, 4 ($n = 4$) articles were from northwestern Europe and 7 ($n = 7$) articles were international (these were typically systematic reviews including articles from multiple countries; Figure 1).

2.2 | Data extraction and study appraisal

Data extraction was conducted by the first author using an Excel spreadsheet, guided by PICO criteria (population, intervention, comparator and outcome). Details regarding setting, study design and cultural components, if any, were also recorded. Studies were divided into police-only, co-response and non-police models. Study design and quality of evidence were also appraised at the stage of data extraction. Study appraisal was conducted by the first author and confirmed by the second author, using the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) Guidelines, where A means high evidence quality, B moderate evidence quality, C low evidence quality and D very low evidence quality (Guyatt et al., 2011). Quality of evidence was rated for each outcome, with randomised controlled trials (RCTs) beginning with a high rating and observational studies a low rating. Ratings were decreased for high-quality studies based on limitations, risk of bias, etc., and ratings increased if outcomes had a large magnitude of effect or high replicability (Guyatt et al., 2011).

3 | RESULTS

Study outcomes were recorded during the extraction phase, and studies were grouped together based on outcome. Both descriptive studies that reported rates and studies with a comparator were included in the results. Quantitative outcomes for comparator studies included: use of force ($n = 5$), arrest rate ($n = 5$), resource/referral ($n = 9$), contact only ($n = 4$), emergency department (ED) transport/

presentation ($n = 10$), efficiency (response times and time on-call) ($n = 7$), apprehension under mental health legislation ($n = 6$) and hospital admission/stay ($n = 10$). Qualitative study outcomes included stakeholder perspectives, separated into service user, staff, executive and other stakeholder perspectives, highlighting model strengths and weaknesses. Results are reported by model (police, co-responder and non-police), and across shared outcomes. See Table 2 for a summary of the evidence and quality appraisal.

See Online Appendix for a detailed description of included models.

3.1 | Police models: CIT

3.1.1 | Use of force or injury

Rates of use of force or service user injury varied considerably across jurisdictions. Use of force rates from descriptive, observational studies varied from 3.9% of mental health-related calls in rural Virginia, USA (Yang et al., 2018), 5% of ($n = 6353$) calls in Colorado, USA (Khalsa et al., 2018) to 12% of ($n = 1153$) calls in Georgia, USA (Compton et al., 2014). A descriptive study of CIT officers in Colorado, USA found that only 0.4% of service user injuries were police-inflicted (Khalsa et al., 2018).

An observational study of police surveys ($n = 71$), where most officers were CIT-trained, found that police disproportionately exercised force during interactions with service users (3.9% of mental health calls versus 0.2% of overall calls; Yang et al., 2018). Another observational study of use of force incidents ($n = 4211$) in Portland, Oregon found that among service users, those with comorbid concerns, such as substance use were typically the most likely to have physical force used against them by police, commonly in the form of an officer pointing a firearm (46%) (Morabito et al., 2017). Two studies indicate that CIT is generally not predictive of the use of force (e.g. $\chi^2 [1, n = 444] = 0.581, p = 0.446$, quasi-experimental design of 4453 calls; Acker, 2011; Compton et al., 2014). However, another observational study found CIT officers were significantly more likely to report verbal engagement or negotiation as the highest level of force used (odds ratio [OR] = 2.00, $p = 0.016$; Compton et al., 2014). Further, contrary to hypothesis, a cross-sectional survey of CIT officers ($n = 251$) found that those who volunteered for CIT training were more likely to use force than those who were mandated (OR = 2.24, $p = 0.03$, a moderate effect; Compton et al., 2017).

3.1.2 | Arrest rates

Two descriptive studies of police found that the arrest rate for mental health-related calls was around 5% in both a study of CIT officers ($n = 6353$) and in a mixed study of CIT and non-CIT officers ($n = 428$) (Khalsa et al., 2018; Watson & Wood, 2017). Police interviews indicated that officers reported a chargeable offense in 35% of non-arrest calls, and expressed a general preference for minimising the use of arrests in

TABLE 2 Summary of evidence and quality ratings

Outcome	Models (no. of studies)	% of interactions	Effect (N)	Evidence quality
Use of force	CIT (n = 3)	4%–12%	None (3)	C
	Co-response (n = 2)	2%	None (1)* Yes (1)	B
	Non-police	4.5%	n/a	
Arrest rate	CIT (n = 3)	5%	None (2), Yes (1)	C
	Co-response (n = 2)	0.8%–2%	Yes (2)**	B
	Non-police	n/a	n/a	
Resource/Referral	CIT (n = 4)	n/a	Yes (4)*	B
	Co-response (n = 5)	17%–40%	Yes (5)**	A
	Non-police	50%–71%	n/a	
Contact only	CIT (n = 3)	35%	None (2), Yes (1)	C
	Co-response (n = 1)	23%–36%	Yes (1)	B
	Non-police	12%–57%	n/a	
ED transport/presentation	Police	45%–51%	n/a	
	Co-response (n = 5)	14%–45%	None (1), Yes (4)	B
	Non-police (n = 5)	9%–74%	Yes (5)	B
Efficiency	Police	n/a		
	Co-response	n/a	Yes (2), None (1)	C
	Response and on call time (n = 3)		Yes (3)	B
	ED time (n = 3)			
	Non-police (n = 1)	n/a	Yes (1)	C
Apprehension	Police	n/a		
	Co-response (n = 6)	6%–23%	Yes (6)*	B
	Non-police	9.2%	n/a	
Hospital admission/Stay	Police	n/a	Mixed*(1), None (2)	C
	Co-response (n = 3)	n/a		
	Non-police (n = 7)	n/a	Yes (5)*** Mixed (1)* No (1)	C
Police backup	Non-police	0%–51%	n/a	

Note:: Only studies with comparators were included here, descriptive studies excluded.
 'Yes' evidence of model effectiveness, 'None' no evidence of model effectiveness, 'Mixed' mixed evidence of model effectiveness.
 A high-evidence quality, B moderate-evidence quality, C low-evidence quality, D very low-evidence quality.
 *Number of systematic, scoping or literature reviews included (*1 review, **2 reviews, ***3 reviews).

mental health-related calls (Watson & Wood, 2017). Two studies also found that service users under the influence of substances were more likely to be arrested or transported to jail (Khalsa et al., 2018; Watson

et al., 2010). Transport to jail was also more likely for service users with a weapon, those threatening violence or at risk of suicide (Khalsa et al., 2018). Evidence is mixed on whether CIT training reduces the

arrest rate. A Chicago, Illinois, observational study using a random sample of officers ($n = 112$) (Watson et al., 2011) and a quasi-experimental comparison study found no effect of CIT-training on arrest rate ($p = 0.15$; $F[1, 437] = 0.155$, $p = 0.214$; Acker, 2011). One Georgia, US observational study of encounters ($n = 1163$) found CIT officers were less likely to arrest ($OR = 0.47$, $p = 0.007$) compared to non-CIT officers (Compton et al., 2014), yet this study had low response rates and was vulnerable to self-selection effects. Further, no significant differences in arrest were found based on volunteering versus being mandated for CIT training ($OR = 0.35$, $p = 0.13$; Compton et al., 2017).

3.1.3 | Access to or referral to resources

Research on providing access to resources or referral generally indicated that CIT officers were more likely to provide resources or referrals to service users than non-CIT officers. This finding was reported in a systematic review of quasi-experimental studies ($n = 23$; Kane et al., 2018), a quasi-experimental study in Florida ($p = 0.048$, $df = 441$) and the correlation 0.094 (Tau b) (Acker, 2011), an observational study in Chicago ($F[1, 95] = 5.35$, $p < 0.05$; Watson & Wood, 2017) and observational research in Georgia, USA ($OR = 1.70$, $p = 0.026$; Compton et al., 2014). While significant, these findings indicate a small or weak effect of CIT training on access to resources or referral. Kane et al. (2018) also indicated that observed differences may be better accounted for by self-selection of officers volunteering for CIT training. In addition, a Chicago study of police (CIT and non-CIT) found that only 7.9% of calls ($n = 428$) included referral to mental health services, a relatively low rate (Watson & Wood, 2017) and differences in referral rates were not found in 'low resource' districts of Chicago ($F[1, 95] = 0.05$, $p = 0.83$), indicating that geographic density of resources impacted access to referrals (Watson et al., 2011).

3.1.4 | Contact only or resolution on scene

'Contact only' typically refers to calls that were resolved on the scene, with no further intervention provided, such as emergency department (ED), justice system diversion or provision of resources or referrals. A Chicago study found that 35% of interactions ($n = 428$) were resolved on scene (Watson & Wood, 2017). Two observational studies found that CIT training status had no effect on 'contact only' or resolution on scene outcomes (Compton et al., 2014; Watson et al., 2010). The study of officers ($n = 112$) in different Chicago districts found that 'contact only' outcomes were lower among CIT officers in high resource districts ($F[1, 95] = 5.73$, $p < 0.05$), but not low resource districts (Watson et al., 2011), suggesting that location and density of referral resources could impact outcomes.

3.1.5 | Transport to treatment or ED presentation

Descriptive US studies of CIT and non-CIT officers in Chicago and of CIT officers in Colorado found that 45%–51% of mental health calls

resulted in transport to treatment centre or hospital (Khalsa et al., 2018; Watson & Wood, 2017). Service user characteristics associated with being transported included psychiatric diagnosis, substance use, risk of harm to self or others (Khalsa et al., 2018; Ritter et al., 2011), or being off prescribed medication (Ritter et al., 2011). However, when comparing transport to treatment versus jail, Ritter et al. (2011) found that violence towards others and substance use increased the likelihood of transport to jail instead of treatment in 2508 incidents. No comparison data were available in these studies to demonstrate the effects of CIT. A time series case study on CIT in Oakland County, Michigan found that crisis centre drop off increased following CIT implementation, such that transport to centres was much higher than projected both 1 and 6 months following the training ($p < 0.001$; Kubiak et al., 2017).

3.2 | Co-response models

3.2.1 | Use of force or injury

An international, mixed methods literature review of 21 articles on co-response models found little concrete evidence that co-response models avert injury (Shapiro et al., 2015). Two observational studies on co-responder models in Toronto, Canada found low rates of injury (2% of 2743 interactions). Furthermore, injuries were reported to be mostly minor and often self-inflicted (Lamanna et al., 2015; Lamanna et al., 2018). However, no comparison data were available to ascertain if these rates were lower than police-only models. A more recent Sherbrooke, Quebec quasi-experimental, case-control study of 399 interactions comparing regular patrols to co-response interventions found that force was used less frequently when co-responder teams attended the call ($\phi = 0.13$; $p \leq 0.01$; Blais et al., 2020).

3.2.2 | Arrest rates

Two of the systematic reviews of co-responder models, including a number of quasi-experimental studies, indicated that these models either had a positive impact on arrests or had low arrest rates (Kane et al., 2018; Shapiro et al., 2015). Study designs precluded conclusions on whether these models reduce arrest rates, however (Shapiro et al., 2015). Observational research in Toronto ($n = 2743$ interactions; Lamanna et al., 2018) and Boston, Massachusetts ($n = 1127$ calls; Morabito et al., 2018) found arrest rates to range from 0.8%–2% of interactions.

3.2.3 | Contact only or resolution on scene

The data on resolution at the scene for co-response models often did not include comparators and reported simple proportions/rates, ranging from 23% of calls ($n = 235$) in Melbourne, Australia (Huppert & Griffiths, 2015), 30% in Sherbrooke, Quebec (Blais et al., 2020), and 36% in Boston (Morabito et al., 2018). The Sherbrooke co-response

study found that service users were much more likely to be contacted only, or supported by 'their social network', compared with calls managed by typical police patrols ($\phi = 0.35$; $p \leq 0.01$; Blais et al., 2020). Another study described that arrest or transport to treatment is typically the default action for police only teams, whereas co-responder programme provided a wider range of options, including resolution on scene and frequent referrals (Helfgott et al., 2016).

3.2.4 | Resource or referral

A scoping review of co-response studies ($n = 33$) found that most co-response models described some form of follow-up, which varied from within 24–48 hr to within 7 days. Follow-up ranged from general practitioner or mental health professionals, to ensuring engagement with referrals/services, or family follow-up (Park et al., 2019). The literature review on mixed methods studies of co-response models ($n = 23$) found increased service referrals or linkage compared to police only models (Shapiro et al., 2015). This finding was replicated in three studies of co-responder models in different Canadian cities ($\chi^2[2] = 10.67$, $p = 0.005$; Semple et al., 2020), ($b = 1.3$, $\chi^2 = 92.7$, $df = 1$, $p < 0.001$; Kisely et al., 2010; $\phi = 0.32$; $p \leq 0.01$; Blais et al., 2020). Referral rates ranged from 17% of service users ($n = 235$) of the Australian Police, Ambulance and Clinician Early Response (PACER) model (Huppert & Griffiths, 2015), one-third of service users ($n = 3029$) of a Seattle, Washington unit (Helfgott et al., 2016) to 40% of service users of the Sherbrooke, Quebec co-responder model (Blais et al., 2020).

3.2.5 | Efficiency: Response times, time spent on call, and time spent in the ED.

In terms of response times, one study of co-responder interactions ($n = 4314$) in Toronto, ON found that response times (call-to-door time) took longer for the co-responder teams than police-only teams (median 13 min versus 8.7 min [$U = 12,958,393.0$, $z = 22.46$, $p < 0.001$, $r = 0.178$]; Lamanna et al., 2018). Regarding time spent on call, two case-control, interrupted time series studies found that co-responder units took less time on calls than police only models (Student's t test = 3.4, $df = 1649$, $p < 0.001$; Kisely et al., 2010; $n = 709$, $b = -48.82$, $SE = 13.20$, $p < 0.001$; Semple et al., 2020). Finally, three Canadian co-responder studies highlighted that co-responder models lead to decreased median wait times in the ED compared to police only models (Fahim et al., 2016; Lamanna et al., 2015; Lamanna et al., 2018), for example ($U = 1,580,530.0$, $z = 8.73$, $p < 0.001$, $r = 0.124$; Lamanna et al., 2015; Lamanna et al., 2018).

3.2.6 | Apprehension under the mental health act or involuntary transport rates

Apprehension rates varied from 5.6% of service users in Sherbrooke, QC (Blais et al., 2020), 8% of service users in both Melbourne

(Huppert & Griffiths, 2015) and Boston (Morabito et al., 2018), to 22.9% of service users ($n = 137$) in Queensland, Australia (Meehan et al., 2019). An international co-response systematic review included 5 studies that found the co-response model decreased the number of service users subject to Mental Health Act detention (Puntis et al., 2018). Time series studies in England (Keown et al., 2016) and Australia (McKenna et al., 2015) evidenced a reduction in apprehension rates following the introduction of a co-responder model. Comparison studies found that co-responder teams apprehend less compared to police only teams in Hamilton, Ontario ($\chi^2[2] = 10.67$, $p = 0.005$; Semple et al., 2020), Toronto ($v2 [1] = 10.95$, $p < 0.05$, $OR = 1.18$; Lamanna et al., 2015), and Sherbrooke ($\phi = 0.09$; $p \leq 0.10$; Blais et al., 2020). A Canadian study also found police only models apprehended clients less often after the implementation of the Crisis Outreach and Support Team (COAST) model ($\chi^2[2] = 17.29$, $p < 0.001$; Semple et al., 2020).

3.2.7 | Hospital transport, time spent in ED and hospital admissions

Rates of transport to treatment for co-response models varied from 14% of service users in Boston being transported to a crisis facility (Morabito et al., 2018), to 27%–32% of service users in Australian studies (Huppert & Griffiths, 2015; Lee et al., 2015), and 38%–45% of co-response interactions in Toronto, resulting in ED transport (Lamanna et al., 2015). While the Toronto study found that co-responder interactions were more likely to result in ED escort compared to police-only models ($v2 [1] = 391.05$, $p < 0.001$, $OR = 2.27$; Lamanna et al., 2015), a number of other studies have found the opposite. Observational research using time series methods in Queensland (Meehan et al., 2019) and Victoria, Australia (McKenna et al., 2015) found a reduction in ED visits following the introduction of a co-response programme. The Sherbrooke quasi-experimental study found that co-response models demonstrated a significantly lower rate of transport to hospital ($\phi = 0.53$; $p \leq 0.01$; Blais et al., 2020), and the Hamilton study, which surveyed police about actions they would have taken if the mental health worker was not present, found the co-response model resulted in a 52% reduction in potentially unnecessary ED escorts. The study also found that fewer service users were discharged by the ED physician compared to the police only model (Fahim et al., 2016).

The evidence is mixed on whether co-responder models are related to decreased hospital admissions. An international systematic review of co-responder model studies ($n = 26$) reported that four studies found fewer hospitalizations, whereas three studies found an increase in hospitalisation following the introduction of co-response models (Puntis et al., 2018). While one study of the Hamilton co-response model found no difference in voluntary admissions to hospital (Semple et al., 2020), an earlier study of the same model found a 29% higher hospital admission rate compared to police only models. This study also reported 33% fewer ED discharges than the police only model (Fahim et al., 2016). Mixed findings may be related to

increased accuracy of co-responder team assessment of the need for hospitalisation.

3.3 | Non-police models

3.3.1 | Crisis intervention outcomes

Most outcome data on non-police mobile models were observational and reported on the proportion of calls without a comparator. Only one non-police study reported on rates of use of force. An observational study of a paramedic and mental health nurse mobile crisis team in New South Wales, Australia found that 4.5% of service users ($n = 398$) were restrained, and 1.2% of service users were handcuffed (Faddy et al., 2017). A report on the Support Team Assisted Response (STAR) mobile crisis service in Denver, USA indicated that in over 400 calls, no interactions required a follow-up or backup call for police assistance (Enos, 2020). The Crisis and Helping Out on the Streets (CAHOOTS) team in Oregon reported that only 0.006% of 24,000 calls required police backup (Consulting, 2020). In contrast, a study on Stockholm, Sweden's Psychiatric Emergency Response (PAM) indicated that team collaboration with other sectors was common, including ambulance attendance in 55% of calls ($n = 1254$), and police in 49% of calls. Only 24% of cases were handled without other services involved (Bouveng et al., 2017). Similarly, police were involved in 50.8% of calls ($n = 398$) in the New South Wales mobile response team (Faddy et al., 2017). High variation in backup rates may be related to differences in how emergency calls were triaged.

In terms of 'contact only' outcomes, 33% of service users of PAM required 'no further action' (Bouveng et al., 2017), compared to 56.5% of service users ($n = 793$) remaining at home with supports in a Pennsylvania mobile crisis model (Muehsam, 2019), and only 11.9% of service users ($n = 2976$) being left to 'self-care' in Denmark's mobile response unit (Ostergaard & Lyngby, 2019). In relation to access to resources and referrals, a mental health acute assessment team in Sydney, AUS connected 69% of service users ($n = 398$) to services other than the ED (Faddy et al., 2017), and an emergency telehealth programme in New South Wales referred 71% of service users ($n = 9678$) to outpatient care with a local provider. In this programme, 50% of service users were referred for urgent follow up, with the proportion of patients in this category increasing significantly after programme implementation ($c2\ df\ 3 = 130.2, p < 0.001$; Johnston et al., 2014; Saurman et al., 2014). In terms of apprehension under the Mental Health Act, the Pennsylvania mobile crisis team study found that 9.2% of service users were brought involuntarily to hospital and 78.1% were admitted (Muehsam, 2019). Moreover, one third of admission to hospital via the Sweden PAM team were involuntary (Bouveng et al., 2017).

In terms of efficiency, one largescale study of interactions ($n = 12, 472$) in a youth mobile crisis service in Connecticut, USA found that the statewide response time for mobile services improved significantly following the introduction of the service, with 89% of interventions occurring in 45 min or less (Vanderploeg et al., 2016).

3.3.2 | Hospital transport, ED presentations, hospital admission and hospital stay

Many studies of non-police models reported on proportions/ rates of transport to treatment or ED presentation. A study of a Pennsylvania mobile crisis team found 29.6% of service users were brought voluntarily to hospital, and 4.8% were transported to a voluntary subacute facility (Muehsam, 2019). A mobile crisis unit in Denmark involved taking 8.6% of service users to a psychiatric ED, 12.9% to a medical ED, and 6.6% to a shelter (Ostergaard & Lyngby, 2019). The Australian Emergency Medical Services (EMS) model transported 74.4% of users ($n = 48, 041$) to hospital; high rates of transport in this study may reflect that calls were triaged for EMS due to high potential of service user injury (Roggenkamp et al., 2018). The PAM model study in Sweden found that 40% of all cases led to psychiatric inpatient care within 24 hr, and 78% of those admitted to the ED were admitted to inpatient care (Bouveng et al., 2017).

The observational, descriptive study on the PAM crisis response team in Sweden stated that the month PAM was initiated, a decrease of 2.4 fewer patients presenting to the ED per day was observed, however, no control or comparison data were available (Bouveng et al., 2017). A pilot study of a youth urgent evaluation model in Brooklyn, New York, found a 10% decrease in school ED referrals from the year previous to implementation, and a 44% decrease in school ED referrals during school hours (Alvarado et al., 2020). A longitudinal, quasi-experimental, population-level study ($n = 464, 880$) on a California, U.S., children's crisis prevention model found that intervention-using children had higher use of mental health emergency services, including ED presentations, prior to the introduction of the model. Post-crisis prevention model implementation, interaction terms showed significant decreases in mental health emergency services use (ages 11 to <15 (IRR = 0.82, 95% CI, 0.78–0.86, ages 15 to <18 (IRR = 0.77; 95% CI, 0.72–0.82; Cordell & Snowden, 2017). Another quasi-experimental study on a youth mobile crisis team in Connecticut, U.S. found that youth who received mobile crisis services ($n = 2532$) had a significant reduction in odds of a subsequent behavioural health ED visit compared with youth in the comparison sample (Fendrich et al., 2019). The New South Wales mental health emergency tele-access programme ($n = 9678$) found that the number of service users admitted to hospital increased by 55% after the first year of operation, then declined over the next 2 years due to a 28% reduction in the number of admissions to a psychiatric unit ($p < 0.001$; Saurman et al., 2014).

Much of the hospital admission and hospital stay evidence is based on the Crisis Resolution Home Treatment (CRHT) model, which originated in the United Kingdom. Data are mixed on whether CRHT teams are effective in reducing hospital admissions. One systematic review of 37 studies indicated that CRHT teams generally reduce hospital admissions, but that compulsory admissions may have increased since their introduction. The authors specify that data are mixed and inconclusive in regard to causality (Carpenter et al., 2013). Another literature review of ($n = 35$ studies) suggested

that admission rates have been reduced from between 10%–51%, depending on the availability of CRHT, but that in some studies differences are not statistically significant (Sjolie et al., 2010). Another systematic review of ($n = 10$ studies) on CRHT for older adults found that the literature contains low-medium quality evidence that CRHTs are effective in reducing hospital admissions for this population, and low-quality evidence suggesting reduced length of stays (Toot et al., 2011). A quasi-experimental study of primary care trusts ($n = 229$) found that after controlling for confounding factors, using different control groups and estimation methods, no significant differences in admissions between catchment areas with and without CRHT teams were found (Jacobs & Barrenho, 2011). However, a Cochrane systematic review ($n = 8$ studies) comparing crisis intervention (including CRHT, home crisis care and telephone answering services) with 'care as usual' found that crisis intervention may reduce repeat admissions to hospital at six months (1 RCT, $n = 369$, RR 0.75 CI 0.50 to 1.13, high-quality evidence; Murphy et al., 2015).

In terms of other models, a small US study ($n = 37$) examined a crisis and transitional intervention and found that service users had significantly fewer psychiatric inpatient days per participant than in the pre-intervention phase, particularly among high utilizers of the programme ($p < 0.001$ and $p = 0.03$, respectively; Newransky et al., 2019).

3.4 | Stakeholder experience and perspectives by model

3.4.1 | Service user perspectives

Police models

Regarding interactions with police (both CIT and non-CIT), most service users reported mixed, variable or negative experiences. Service users described experiences of being treated as a criminal, being offered few resources and police having insufficient training, which increased the perceived risk of criminalization or injury (Boscarato et al., 2014; Lamanna et al., 2018). In one article, participants preferred family, friends, family doctors or mental health case managers to intervene (Boscarato et al., 2014). Another study found that family members described they were often themselves disturbed by witnessing or being involved in the crisis but were rarely offered education or support (Brennan et al., 2016). Finally, a review of the literature indicated that nine studies described service user interactions with police as traumatic or extremely stigmatising (Puntis et al., 2018).

Co-responder models

In terms of experiences with co-responder models, service users reported generally positive perceptions of services (Shapiro et al., 2015). Many participants reported that the mental health clinician on the co-response team was able to de-escalate crisis using empathy, effective communication, compassion and mental health specific knowledge (Daggenvoorde et al., 2018; Evangelista

et al., 2016; Kisely et al., 2010; Lamanna et al., 2015; Lamanna et al., 2018). Service users also reported a preference for unmarked vehicles and plainclothes officers in co-response models (Evangelista et al., 2016; Puntis et al., 2018). Overall, feedback on co-responder models was more positive than police only models (Puntis et al., 2018).

Non-police models

Regarding non-police models, service users described generally positive experiences. In particular, service users were satisfied with CRHT (Winness et al., 2010; Carpenter et al., 2013) reporting benefits to resolving crisis at home, where family can be involved, and cultural components of healing can be maintained (Winness et al., 2010). Patients in non-police crisis intervention (including CRHT and other community crisis care) were more satisfied with care 20 months after crisis, compared to hospitalisation or care as usual in one RCT included in the Cochrane review (Murphy et al., 2015). In terms of mobile interventions, service users have described active participation in decision making (Lindström et al., 2020) and high satisfaction with worker understanding and support (Braganza et al., 2020).

3.5 | Staff, executive and other stakeholder perspective

3.5.1 | Model strengths and facilitators

CIT model

In terms of the CIT model, staff and executive stakeholders reported increased collaboration, communication and understanding between mental health and criminal justice services (Skubby et al., 2013). Benefits to the community include increased community trust and improved protocols for dealing with mental health calls (Skubby et al., 2013). In addition, many officers reported subjective benefits of CIT training, including improved confidence in dealing with mental health calls, de-escalation skills (Canada et al., 2012; Kubiak et al., 2017; Pelfrey & Young, 2020) and improved perception of people with mental illness (Kubiak et al., 2017; Pelfrey & Young, 2020).

Co-responder

Staff described improved perceived outcomes for service users in co-response models compared to CIT models (Lee et al., 2015), improved perception of people with mental illness among officers (Shapiro et al., 2015), and increased options for outcomes of crisis calls in terms of referrals or resolution on scene (Kirst et al., 2015). In terms of programme facilitators, many studies indicated that increased inter-agency collaboration is key to model success (Bailey et al., 2018; Horspool et al., 2016; Lee et al., 2015; Puntis et al., 2018; Shapiro et al., 2015). Specifically, strong executive-level support (Shapiro et al., 2015) and the creation of inter-agency committees to facilitate the integration of services is needed for effective implementation (Robertson et al., 2020). Multiple studies described

the need for information sharing of service user health and criminal history data for successful implementation (Bailey et al., 2018; Horspool et al., 2016; Park et al., 2019). Finally, one study found that ability to make referrals to mental health services was key to the success of the programme (Horspool et al., 2016).

3.5.2 | Model weaknesses and barriers

CIT model

A number of CIT model drawbacks and weaknesses have been described, including lack of adequate resources and options for resolving mental health-related calls (Wood et al., 2020), high levels of both officer and service user fear (Yang et al., 2018), use of force and arrests in complex interactions (Pelfrey & Young, 2020), and friction and cultural differences between police and health services sectors (Yang et al., 2018).

Co-responder

In terms of co-responder challenges, staff described lack of clear triaging, policy and procedures and confusion within police services about the role of the co-responder team, resulting in underutilization of the service (Bailey et al., 2018). Similar to the CIT model, cultural and values clashes and differences in mandate from health-care workers and police officers within teams was reported (Kirst et al., 2015), as well as overall lack of availability of the co-responder teams (Kisely et al., 2010; Morabito et al., 2018; Puntis et al., 2018), particularly in areas involving small pilots of the programme. Finally, lack of robust evaluation plans was cited as a barrier to widespread implementation of the programmes (Robertson et al., 2020).

No data were available on staff, executive and other stakeholder perspectives for non-police models.

4 | DISCUSSION

This review aimed to ascertain the evidence for police, co-responder and non-police or civilian-led models of mental health crisis intervention. While CIT may improve referral to services (Kane et al., 2018) and in some cases improve transport and linkage to care (Watson et al., 2021), there is little evidence to suggest that CIT models averted arrests (Acker, 2011; Watson et al., 2010), impacted use of force (Acker, 2011; Compton et al., 2014; Yang et al., 2018), or resolution of crisis calls on scene (Compton et al., 2014; Watson et al., 2010, 2011) compared to standard policing. Even within the police force, one survey found that 50% of officers did not believe that CIT officers are more effective at de-escalation compared to non-CIT officers (Yang et al., 2018). Rates of arrest and use of force varied considerably across jurisdictions and were influenced by many variables such as neighbourhood density of CIT programming (Morabito et al., 2012). Geographic analysis is key to future programme implementation, as location of resources such as crisis

centres may significantly impact service user diversion from jail and the ED (Comartin et al., 2019).

Service users reported negative experiences with police only models (which typically involved CIT officers), including fear for safety and being treated as criminals (Boscarato et al., 2014; Brennan et al., 2016; Lamanna et al., 2018). There is some evidence from systematic reviews to suggest that co-responder models may lead to lower rates of arrest, use of force and injury than police-only models, however, evidence remains mixed and is subject to bias (Blais et al., 2020; Kane et al., 2018; Shapiro et al., 2015). Notably, co-responder models were related to decreased apprehensions under the Mental Health Act compared to police-only models across jurisdictions (Keown et al., 2016; Lamanna et al., 2018; McKenna et al., 2015; Meehan & Stedman, 2012; Puntis et al., 2018; Semple et al., 2020), which likely enhanced service user experience and decreased unnecessary ED visits.

Many co-responder studies indicated a reduction in ED visits (Blais et al., 2020; Fahim et al., 2016; McKenna et al., 2015; Meehan et al., 2019), however, findings were mixed (Lamanna, 2015; Lamanna et al., 2018), reflecting local practice variations in model implementation. Many service users reported that the mental health clinician on the co-response team was able to de-escalate using empathy, compassion and mental health specific knowledge (Daggenvoorde et al., 2018; Evangelista et al., 2016; Kisely et al., 2010; Lamanna, 2015; Lamanna et al., 2018). Similarly, feedback on non-police models emphasised active participation in decision making (Lindström et al., 2020) and high satisfaction with worker understanding and support (Braganza et al., 2020). It appears that the addition of mental healthcare providers adds to the quality and experience of services, thus highly trained providers should be an integral aspect of crisis intervention. A shift away from relying on the CIT model for crisis intervention is necessary to support the development of alternative, evidence-based models that prioritise the lived experience of service users.

Good quality research on non-police models overall was lacking, and non-police models varied from crisis resolution home treatment (CRHT) to civilian-led mobile crisis interventions, indicating high variation in structure of services and variation across the crisis continuum. Outcomes such as need for police backup in non-police models varied across models significantly, and likely has to do with how emergency calls were triaged. For example, dispatchers are trained to identify mental health calls that are non-violent for the CAHOOTS Oregon model, which reported only 0.006% of calls needed police backup (Consulting, 2020). However, other policy and contextual factors likely contributed to high variation in police backup rates, as Sweden's PAM model, including triage at dispatch, reported police backup in more than half of calls (Bouvang et al., 2017). As described in the online appendix, non-police services also varied in dispatch approaches. It is likely that non-police crisis services will be most accessible if still dispatched via 911 or the local emergency number. An emphasis on effective assessment and triage of calls will be essential in determining if police backup is necessary.

There is some evidence from systematic reviews and meta-analyses to suggest that non-police models such as CRHT are effective in reducing hospital admission (Carpenter et al., 2013; Murphy et al., 2015; Sjolie et al., 2010; Toot et al., 2011), though evidence is mixed (Carpenter et al., 2013; Jacobs & Barrenho, 2011). The option of involuntary transport to the ED likely remains necessary within non-police crisis models (Bouveng et al., 2017; Muehsam, 2019), and mental health legislation changes to enable service user detainment by crisis workers may be necessary to decrease over-reliance on police in mental health crisis intervention. Furthermore, more research is needed on rates of detainment in non-police models. Studies using a comparator, particularly in child and youth mobile models, suggest a significant reduction in ED referrals among non-police models (Alvarado et al., 2020; Cordell & Snowden, 2017; Fendrich et al., 2019) and reduced hospital stays (Mukherjee & Saxon, 2019; Newransky et al., 2019; Toot et al., 2011). Finally, many non-police interventions reported a treatment or follow up component, which is likely an important aspect of holistic crisis care and ED diversion.

Co-responder studies suggest incremental improvements in outcomes likely due to mental health clinician involvement, however, these data may perpetuate a reliance on police on the front lines of crisis intervention. A commentary by Watson and Compton (2019) who authored multiple CIT studies, suggested that a research focus on CIT and co-responder models will preclude testing models that improve the mental health system's ability to provide crisis response and thus decrease reliance on law enforcement in this sector. Ultimately, a large paradigm shift may be necessary to transform the current state of crisis intervention. International research implications on crisis intervention involving police generally described future aims that involve cross-systems collaboration to decrease the involvement of police in crisis intervention (Horspool et al., 2016; Kirst et al., 2015; Lamanna, 2015). A (2021) article by Balfour et al., 2021 called for a shift from 'crisis services' to 'crisis systems' that integrate and coordinate crisis lines, mobile crisis teams, community crisis facilities and postcrisis care that ultimately decrease jail, ED and inpatient admissions. Beyond police training and frontline collaboration with healthcare workers, a holistic crisis response involves avoiding police involvement and offering community-based alternatives with varying levels of care, tailored to service user needs (Steadman & Morrissette, 2016). This would represent a shift from a risk management to a trauma-informed paradigm that is compassionate and considers the lived experiences of service users. Not only would this benefit service user but also law enforcement, healthcare and public systems more broadly. For instance, there is evidence to suggest that co-responder and non-police models are associated with cost savings due to decreased use of police funds, justice system diversion and providing alternatives to ED visits and hospitalisation (Carpenter et al., 2013; Consulting, 2020; Hoffberg et al., 2020; Mukherjee & Saxon, 2019; Newransky et al., 2019). There have been numerous recent calls to defund police departments (Fleetwood & Lea, 2020; Jacobs et al., 2021). Re-directing funds from law enforcement to healthcare and other municipal services may be necessary to support and sustain shifts in the field of crisis intervention.

4.1 | Policy and practice implications

As there is little evidence to support police involvement in mental health crisis intervention, models and interventions that decrease police involvement in mental health crisis response should be prioritised. Cross-sectoral collaboration and stakeholder engagement including police, civic and mental health leaders are needed to ensure coordination, service mapping and ongoing improvement efforts (Horspool et al., 2016; Robertson et al., 2020; Shapiro et al., 2015). Moreover, engagement of people with lived experience, families and mental health experts in service planning is essential in ensuring evidence-based approaches, service user acceptability and integration with local service delivery systems (Puntis et al., 2018). Collaboration with universities and other research institutions to develop well-designed research and evaluation studies of local crisis response models and common outcome measures, for cross-jurisdictional comparisons, are highly recommended (Shapiro et al., 2015). Additionally, advancement or adaptation of models that are culturally specific is urgently needed.

Finally, interventions along the continuum of service needs are needed (Steadman & Morrissette, 2016). This may range from public education on mental health first aid (Jorm, 2012) to empowering families to rely less on crisis services, to increasing access to crisis lines, peer support, mobile non-police crisis intervention, highly skilled crisis resolution teams, and community-based crisis stabilisation beds, as an alternative to hospitalisation. A holistic crisis care system spanning the crisis continuum, including follow up services, could help to prevent crises and address the needs of repeat service users (Wood et al., 2020). Finally, a triage system managed by mental health professionals is instrumental in matching service users to the appropriate level of support, including the decision to engage police responders if necessary.

4.2 | Knowledge gaps

The current rapid review revealed significant gaps in the literature. First, there were no research on culturally informed and culturally specific models to meet the needs of Black, Indigenous and people of colour (BIPOC), as well as Two-Spirit, lesbian, gay, bisexual, transgender and queer (2SLGBTQ+) individuals, who have all historically been disproportionately impacted by police interactions (Martin et al., 2019). Collecting data on race, gender identity and sexual orientation may provide information on key moderators of effectiveness in crisis intervention. Overall, there is little literature describing inclusion of service user perspectives in the design and implementation of services, which needs to be addressed in future studies. Second, given the dearth of high-quality studies, more rigorous research is needed to ensure crisis models are effective and meet stakeholder needs. Third, there was a lack of comparison of first versus secondary response models in co-responder systematic reviews and meta-analyses, which may significantly impact outcomes like apprehension, arrest and use of force. Further examination of the

service delivery context when comparing police models is needed to clarify the effectiveness of these models.

4.3 | Limitations

Overall, the research included in this review was low-moderate quality, with a dearth of randomised controlled trials. In addition, variation in legal contexts and criminal justice systems across jurisdictions could significantly impact outcomes. It is important to note that use of police data (encounter forms filled out by officers), as well as studies conducted internally (within the police force) (Watson & Fulambarker, 2012; Watson et al., 2011; Watson & Wood, 2017), introduce significant bias, as forms are less likely to be filled when the outcome of an encounter is negative (Compton et al., 2014). Moreover, most police studies involved voluntary participation by police officers and tended to have low response rates, introducing high risk of self-selection biases and underestimated rates of use of force, arrest and detentions in police interactions. In terms of co-responder studies, the majority were observational and lacked a robust control group, thus precluding firm conclusions on effectiveness (Park et al., 2019).

Much of the literature on civilian-led mobile intervention was sparse and lacking in rigour, (Bouveng et al., 2017; Ostergaard & Lyngby, 2019; Roggenkamp et al., 2018). Many of these studies were located in the grey literature search and were unpublished or based on community reports (Consulting, 2020; Enos, 2020). In terms of CRHT, systematic reviews demonstrate a lack of good quality, well-designed trials, which makes evaluation and conclusions regarding its effectiveness challenging (Toot et al., 2011). Finally, rapid review methodology presents limitations in comparison with scoping or systematic reviews, including narrowed scope that was limited to effective outcomes and inter-rater reliability used for a portion compared to all included articles. Additionally, the present review did not present an exhaustive summary of all available evidence (Tricco et al., 2017).

5 | CONCLUSION

Good quality evidence in the field of crisis intervention is lacking overall, with existing evidence providing little support for police involvement in crisis intervention. Internationally, a cross-sectoral re-design of crisis intervention is necessary to best support service users with complex mental health needs, and reduce police, hospital and emergency department burden. Rigorous research and evaluation plans that involve stakeholders across sectors, including service users, are needed to ascertain evidence-based practice in crisis intervention.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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