



Research article

Mental health and psychosocial interventions for children and adolescents in street situations in low- and middle-income countries: A systematic review



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ARTICLE INFO

Article history:

Received 18 March 2016

Received in revised form 8 September 2016

Accepted 11 September 2016

Available online 22 September 2016

Keywords:

Mental health

Intervention

Psychosocial

CASS

Street children

ABSTRACT

This article reviews the available quantitative literature on mental health and psychosocial interventions among children and adolescents in street situations (CASS) in low- and middle-income countries (LAMIC). PRISMA standards for systematic reviews were used to search five databases as well as grey literature. There were four inclusion criteria; studies had to involve a description of an external (i.e. outside of the home) mental health or psychosocial intervention/treatment, must be focused in LAMIC, must be focused on CASS, and must empirically evaluate the effectiveness of the intervention described. A quality assessment tool was used to assess the risk of bias in included articles. Five studies were included. A multidisciplinary care approach was significant in reducing psychological distress, substance use and improving sleeping arrangements ($p < 0.001$, $n = 400$). Residency step programmes were on average 52% successful in reintegrating children back into communities ($n = 863$). Resilience training significantly increased psychological well-being components ($p < 0.001$, $n = 60$). Emotional regulation training had a beneficial improvement in emotional regulation. FORNET (Forensic Offender Rehabilitation Narrative Exposure Therapy) ($n = 32$) reduced the number of self-reported offenses committed [$t(19.26) = 1.81$, $p = 0.043$]. There are not enough credible studies available to develop a firm conclusion on the effectiveness of mental health and psychosocial interventions delivered to CASS in LAMIC. The limited amount of studies, inconsistent outcome measures, interventions and imperfect study designs maintain that this is an area in need of greater attention and research focus.

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1. Introduction

It is difficult to determine the number of children and adolescents living in street situations in low- and middle-income countries (LAMIC). It has been estimated that there are more than 100 million street children worldwide (OHCHR, 2012), however, it has been argued that figures are often inflated, particularly within LAMIC, with the intent of receiving greater donations and international funding (Aptekar & Stoecklin, 2014). The ever-changing definition used to define this population may also affect the ability to determine the prevalence of CASS (Thomas de Benítez, 2011). The term 'street situations'

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identifies every aspect of a child's life that may be affected by the street, such as living on the street, working or loitering on the street (Lucchini, 2007; Stoecklin, 2007). This term acknowledges that should a problem with a child on the street occur, it is the situation on the street in which that child finds themselves rather than the child itself (Hossain & Coren, 2015; Terres des Homes, 2010). Therefore, the definition used in this review will refer to children and adolescents in street situations (CASS), which is consistent with the term used in Berckmans, Velasco, Tapia, and Loots (2012) review and is comparable to the term used in Coren et al. (2013) review; street-connected children.

Research shows that CASS have a greater risk of developing mental health problems and impairments compared to any other group of children (Moolla, Myburgh, & Poggenpoel, 2008). Increased risk of feelings of hopelessness, depression, lack of self-worth, learning disabilities, psychiatric disorders, serious emotional and behavioural problems, self-harming behaviours and suicide can cause detrimental mental health and psychosocial outcomes for these children, which are only further intensified by the street life culture (Cauce et al., 2000; Kerfoot et al., 2007; Myburgh, Moolla, & Poggenpoel, 2015; Richter & Van der Walt, 2003; Seager & Tamasane, 2010; Sen, 2009; Tischler, Karim, Rustall, Gregory, & Vostanis, 2004; Uys & Middleton, 2010). These poor outcomes are moderated by antisocial and self-destructive behaviour, such as substance abuse, gang participation and engagement in crime (Lockhart, 2008; Schimmel, 2006). Researchers have noted a need for effective mental health and psychosocial interventions that can be offered to CASS as a pathway out of poverty (Myburgh et al., 2015; Sen, 2009; Scivoletto, Silva, Cunha, & Rosenheck, 2012; Vostanis, 2007).

Most of the literature to date examines the prevalence of CASS, the 'push' and 'pull' factors that lead children and adolescents to live life on the street, the challenges CASS face, the difficulties providing support for them and their vulnerabilities towards substance abuse (Berckmans et al., 2012; Kudrati, Plummer, & Yousif 2008; Vameghi, Sajadi, Rafiey, & Rashidian, 2014; Woan, Lin, & Auerswald, 2013). The majority of interventions promote the attainment of legal income and education, increase awareness of the health and risk factors of living on the street, and increase resiliency (Dybicz, 2005; Hiemdal, Aune, Reinfjell, Stiles, & Friberg, 2007; Lee, Liang, Rotheram-Borus, & Milburn, 2007). Coren et al. (2013) argue that underlying mental health and psychosocial factors, such as traumatic experiences of physical and sexual abuse, addiction and/or social exclusion, impede CASS from successfully completing programmes designed to support them. Permanent mental health and psychosocial services must be set in place to continuously offer support to CASS, working alongside and complementing other vocational, educational, harm reduction and/or prevention programmes.

Quantitative research evaluating the effectiveness of mental health and psychosocial interventions for CASS in LAMIC remains limited (Ferguson, Dabir, Dortzbach, Dyrness, & Spruijt-Metz, 2006; Nabors et al., 2003; Woan et al., 2013). This is in keeping with the review by Berckmans et al. (2012) which concluded that not enough effective interventions are being implemented in policies to aid children and adolescents living in street situations. The scarcity of this literature has been suggested to be due to the lack of consistent outcome measurements (Karabanow & Clement, 2004) and reliably cultural measures (O'Callaghan, 2014). A reliable cultural measure relies on much more than the mere translation of a Western psychological measure in order to use it in a non-Western culture. Summerfield (2002) disputes that mental health frameworks are developed based on cultural norms and beliefs. Western and non-Western cultural norms can be quite different; therefore using psychological measures in LAMIC that were developed in Western countries may not be very valid or indeed, reliable. Available literature has reviewed and summarised the effectiveness of various interventions for homeless youth, including interventions focusing on mental and psychosocial health (Altena, Brilleslijper-Kater, & Wolf, 2010). These authors failed to include CASS in LAMIC, despite their unrestricted inclusion criteria to all types of locations and subgroups of those living on the street and those in service-supported accommodation. However, their findings provided promising results with improved outcomes after exposure to a mental health and psychosocial intervention. However, as mentioned previously, the implementation of non-culturally relevant services from high-income countries in LAMIC may be inappropriate and unsuccessful in resource limited settings.

This review aims to encourage and inform non-government organisations (NGOs) and policy makers of the existing effective mental health and psychosocial interventions available to CASS in LAMIC, and the importance of continuous evaluation of their effectiveness, ensuring continuous 'good practice'. This review will focus on children and adolescents in street situations, with or without contact with their family. External interventions, i.e. those outside of the home, that focus on reducing psychological distress and improving psychosocial outcomes increasing overall general well-being will be examined to determine their effectiveness with this population.

1.1. Review questions

- 1 What are the mental health and psychosocial interventions available for CASS in LAMIC?
- 2 Are these interventions effective in improving mental health and psychosocial outcomes for CASS?
- 3 What are the long-term outcomes of these interventions? (A long-term outcome refers to the lasting outcome effects one year post intervention).

2. Method

An initial scoping search was conducted, developing research questions and a review protocol to act as a guideline; this is available on request by emailing the first author. This review adhered to the PRISMA standards for systematic reviews (Moher, Liberati, Tetzlaff, & Altman, 2009). The following databases were searched: PsychINFO 1806 to present, SCOPUS,

WebOfScience, PILOTS, and Clinical Trials Registers with the following search terms: ('child' or 'adolescent') and ('intervention' or 'treatment') and ('psychosocial' and 'mental health') and ('street'); ('street children' or 'street-connected children') and ('intervention' or 'treatment') and ('psychosocial' and 'mental health'); (CASS or "children and adolescents in street situations") and ('intervention' or 'treatment') and ('psychosocial' and 'mental health'). In addition, the grey literature was hand searched for non-peer-reviewed reports from NGO's, national or international bodies, as well as online articles and references found in other sources. Lead authors in this field of research were contacted by email and reference lists in included studies were hand searched in order to access grey literature which might have been prone to publication and location bias. Systematic searches were performed on 09/04/15, 19/06/15 and 27/01/2016.

First, all of the studies found were examined by title and abstract, and were screened based on the inclusion criteria. Second, studies were selected for a full examination of their content if the title and abstract met the inclusion criteria, or had insufficient reason for exclusion. Third, studies were selected for inclusion in this review based on all of the inclusion criteria being met after full examination of the content. Two reviewers independently carried out the search strategy. One reviewer examined the full-texts and decided whether the study should be included.

2.1. Inclusion criteria

- 1 Involves the description of an external/outreach psychosocial or mental health treatment/intervention (outside of the home).
- 2 Focuses on low- and middle-income countries (LAMIC) following definitions of the World Bank (2015).
- 3 Publication focuses on CASS, street children, former street children and children working on the street. Studies must include more than one participant.
- 4 Empirically examines the effectiveness of the intervention described.
- 5 Adopts the following study designs: RCT, Non-RCT, Quasi-Experimental Design, Cohort Study (prospective or retrospective – with/without control group, Case Control, Case Series, Cross Sectional).

Analysis of selected publications was conducted by one reviewer over several steps. First, the article was read and re-read by the reviewer and summarized in order to become familiar with the content. Second, an in-depth study characteristics table was developed including details about the setting, country, study design, sample size, target group, intervention, core intervention focus, outcomes and follow-up (see [Appendix A](#)). Third, the three research questions were examined more closely. This process was repeated to ensure data was accurately extracted.

The quality assessment tool used for this review was obtained from the National Institute for Health Care Excellence, which is a modified version of the 'Graphical appraisal tool for epidemiological studies (GATE)', established by [Jackson et al. \(2006\)](#). This is a tool which provides a framework for appraising studies based on a quantitative/empirical outcome ([NICE, 2012](#)). The criteria used in this quality assessment tool addressed both internal and external issues such as generalizability, selection bias, attrition bias, reliability of outcome measure, relevance of the intervention, withdrawals and drop-outs, consistency of method used, and validity of measures used. Therefore, all of these factors were considered when assessing the quality of the included studies. There were no pre-established quality criteria necessary for inclusion within this review; this decision was made based on the limited material found during the original scoping search. Therefore, quality assessment was conducted prior to data extraction by one reviewer.

3. Results

The search results yielded 368 studies (319 from PsychINFO, 18 from PILOTS, 12 from WebOfScience, 15 from SCOPUS, and 7 from ClinicalTrials.gov). [Fig. 1](#) graphically presents the systematic search results. After removing duplicates, 336 studies remained to be examined. Based on title and abstract, 305 studies were excluded, because they failed to include a mental health or psychosocial intervention, were not conducted in a LAMIC, and/or did not focus on CASS; leaving 31 studies to be reviewed based on a thorough evaluation of the article. After full-text screening, 27 articles were excluded because they were not empirically evaluated and did not consist of an external mental health or psychosocial intervention (i.e. outside of the home). Two articles included in this review were found through hand searching and emailing expert authors in this area.

Of the five studies included in this review, only one study conducted a randomised controlled trial ([Crombach & Elbert, 2015](#)), two employed quasi-experimental designs ([Dousti, Pourmohamadreza-Tajrishi, & Ghobari bonab, 2014](#); [Moshtaghi, Zarebahrabadi, & Zahrakar, 2014](#)) and two studies used a case series study design ([Harris, Johnson, Young, & Edwards, 2011](#); [Souza, Porten, Nicholas, & Graiss, 2010](#)). Only one study received a high quality methodology rating ([Crombach & Elbert, 2015](#)) whereas the rest of the included studies received a poor quality rating. The main reasons studies received a poor quality rating includes lack of randomisation procedures ([Harris et al., 2011](#); [Souza et al., 2010](#)), lack of a control/comparison group ([Harris et al., 2011](#); [Souza et al., 2010](#)), lack of a long-term follow-up ([Crombach & Elbert, 2015](#); [Dousti et al., 2014](#); [Harris et al., 2011](#); [Moshtaghi et al., 2014](#)), high attrition rates ([Harris et al., 2011](#); [Souza et al., 2010](#)) and lack of a treatment fidelity strategy ([Dousti et al., 2014](#); [Moshtaghi et al., 2014](#)). The RCT maintained single blind measures, randomised procedures and allocation concealment ([Crombach & Elbert, 2015](#)). Although the authors state that the psychological measures used were culturally validated in LAMIC ([Crombach & Elbert, 2015](#)), the reliability of Western developed criteria symptoms and

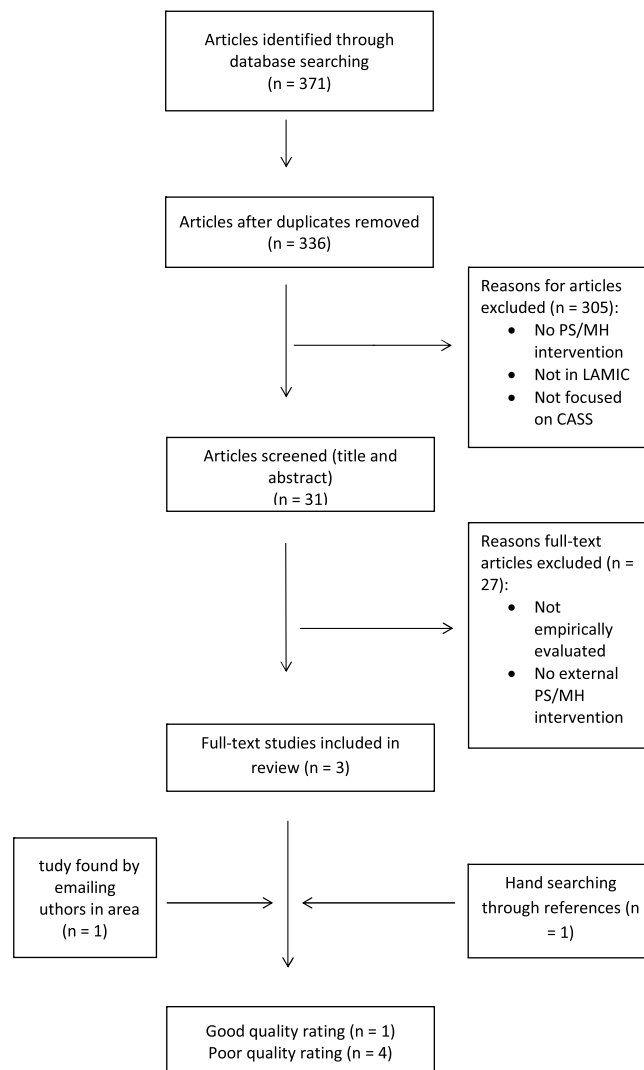


Fig. 1. Graphical summary of the process of study selection.

a manual employed in a non-Western culture is debateable. [Table 1](#) summarises the methodology quality of the included studies.

The publication dates of the included studies ranged from 2010 to 2015, and the data collection was carried out between 1994 and 2015. The five studies included consisted of six interventions conducted in various countries; Honduras, Brazil, Peru, Iran and Burundi, all listed as LAMIC according to the World Bank (2015). Outcome measures varied addressing sleeping arrangement, reintegration, appetitive aggression, offenses committed, psychological distress, PTSD, substance use and emotional regulation. Four of these interventions provided in-house residential care for CASS and one provided a drop-in service between 10.00 a.m. and 2.00 p.m. ([Souza et al., 2010](#)). One intervention was conducted in a school – the Society for the Defending of Street and Working Children in Tehran ([Dousti et al., 2014](#)). Three of these interventions involved male children, adolescents and young adults only ([Crombach & Elbert, 2015](#); [Harris et al., 2011](#)) and three interventions included both males and females ([Dousti et al., 2014](#); [Moshtaghi et al., 2014](#); [Souza et al., 2010](#)). The study characteristics table provides a quick overview of the five studies that were included in this review (see [Appendix A](#)).

3.1. Research question 1: what mental health and psychosocial interventions are available to CASS in LAMIC?

Five mental health and psychosocial interventions were found; a multidisciplinary care approach, a residency step programme, resilience training, psychodrama and forensic offender rehabilitation narrative exposure therapy (FORNET).

Table 1

Methodology quality of included articles.

Study Design	Souza et al. (2010) Case Series	Harris et al. (2011) Case Series	Dousti et al. (2014) Quasi-Experimental	Moshtaghi et al. (2014) Quasi-Experimental	Crombach and Elbert (2015) RCT
Randomisation Procedures			✓	✓	✓
Control/ Comparison Group			✓	✓	✓
Long-term follow-up	✓				
High Attrition Rates	✓	✓			
Treatment Fidelity	✓	✓			✓
Single Blind Measures					✓
Allocation Concealment					✓
Validated and culturally relevant outcomes					
Quality Rating	Poor	Poor	Poor	Poor	High

Table 2

Overview of study outcome measures.

	Souza et al. (2010)	Harris et al. (2011)	Dousti et al. (2014)	Moshtaghi et al. (2014)	Crombach and Elbert (2015)
Sleeping Arrangements	✓				
Reintegration		✓			
Appetitive Aggression					✓
Offenses					✓
Psychological distress	✓		✓		
PTSD					✓
Substance Use	✓				
Emotional Regulation				✓	

3.2. Research question 2: are these interventions effective in improving mental health and psychosocial outcomes for CASS?

An overview of the outcome measures is presented in Table 2. Although some of the outcome measures are similar, there is no common outcome to all studies. The multidisciplinary care approach was statistically significant in reducing psychological distress, substance use and improving sleeping arrangements ($p < 0.001$). The residency step programme has an average success rate of 52% of reintegrating CASS back into their families and communities. Resilience training yielded a high impact on increasing psychological well-being among CASS with high levels of externalising behaviour ($p < 0.001$). Psychodrama is beneficial in improving emotional regulation and promoting positive developmental change. FORNET appeared to reduce the number of self-reported offenses committed among male CASS; [$t(19.26) = 1.81, p = 0.043$], and significantly lower physical health complaints compared to the control group; [$F(1, 29) = 3.56, p = 0.035, \eta_p^2 = 0.11$]. However, both the intervention group and the control group reported a significant increase in PTSD severity; [$F(1, 30) = 6.97, p = 0.013, \eta_p^2 = 0.19$]. Finally, there was a slight non-significant reduction in appetitive aggression; [$F(1, 30) = 3.98, p = 0.055, \eta_p^2 = 0.12$].

3.3. Research question 3: what are the long-term outcomes of these interventions (a long-term outcome refers to the lasting outcome effects one year post intervention)?

The multidisciplinary care approach reported data over a three year follow-up at 12 months, 24 months and 36 months. A reduction in psychological symptoms was reported; for males, the difference of means were; -0.23 (12 months), -0.47 (24 months), -0.70 (36 months) and for females; -0.76 (12 months), -1.53 (24 months), -2.29 (36 months), all of which were statistically significant ($p < 0.001$). A reduction in the number of substance use score levels was reported (males 18%; females 15%). However, the drop-out rate over the three years of the study was substantial (males 82.1%; females 75.6%). An overall improvement in sleeping arrangements was noted. The residency step programme was examined over a five year period. One intervention in this study carried out a follow-up every 15 days to three months after the child left the programme, however, the full-text article failed to report the results (i.e. if the child was still living at home or in the community).

4. Discussion

This review focuses on mental health and psychosocial outcomes of CASS in LAMIC, therefore, only studies that empirically evaluated interventions were included. Five articles were found, a surprisingly small number given the enormity of this population and the vast amounts of literature detailing the high prevalence of poor mental and psychosocial health. The outcome measures in the included studies are not sufficiently similar for the results to be combined; a consistent finding among the literature (Karabanow & Clement, 2004). Therefore, it was not considered appropriate to synthesize the results to get an overall measure of effect and thus a meta-analysis was deemed inappropriate. Mental health and psychosocial interventions offered to CASS in LAMIC vary; consisting of a multidisciplinary care drop-in centre, residency step programmes, 15 sessions of resiliency training, 10 sessions of emotional regulation training and 5 sessions of FORNET (Forensic Offender Rehabilitation Narrative Exposure Therapy).

Interventions using a residential approach showed effectiveness in reducing psychological distress, substance use, improving sleeping arrangements and successfully reintegrating CASS back into their families and communities, similar to intensive care management programmes used in high-income countries (Altena et al., 2010). Resilience training appears effective in increasing psychological well-being among CASS with high levels of externalising behaviours (Dousti et al., 2014). Psychodrama was reported as effectively improving emotional regulation. FORNET reported a reduction in self-reported violent behaviour and an increase in PTSD severity (Crombach & Elbert, 2015). This is contrary to previous research which has reported that mental health interventions using NET can have significant reductions in trauma symptoms and psychological distress (Neuner et al., 2010; Ruf et al., 2010). The significant increase in PTSD symptoms among both groups; control and intervention group, is worrying. Highlighting the adverse effects interventions can cause should not be disregarded. The authors suggested that the increased PTSD symptoms may be a result of an increased willingness from participants to discuss the severity of their symptoms and the timing of the study (end of the school year). Regardless, this is an important finding that should not be ignored. Acknowledging what affects the success of an intervention (i.e. timing, measurements used, rapport with participants), can provide greater insight into developing more effective interventions.

The limited findings presented do not provide robust support for determining 'best practice' among CASS in LAMIC. Only one intervention addressed the long-term outcomes, focusing on the psychological symptoms, substance use levels, sleeping arrangements of the participants, yet improvements appear to be small (Souza et al., 2010). With an 80% attrition rate, it is difficult to draw any conclusions on the long-term effects. Previous research has highlighted numerous contextual, cultural and service-engagement factors that can mediate and moderate the success of an intervention (Hossain & Coren, 2015). Due to the overall poor methodological rigor of the included studies, it is difficult to conclude on the overall success of these interventions in improving mental health and psychosocial outcomes among this population. In comparison, a systematic review evaluating mental health and psychosocial interventions among war-affected youth in LAMIC reported moderate effect sizes and the authors concluded that there is a great need for more methodologically rigorous research and more multi-level interventions in the field (Jordans, Pigott, & Tol, 2016).

It is difficult to determine the core aspects of what makes an intervention effective due to limited research, the enormous heterogeneity of approaches, outcomes, study design flaws and limitations (Hossain & Coren, 2015). Only one of the interventions addressed substance use (Souza et al., 2010), a prevalent issue among CASS. As the majority of interventions, particularly in-house shelters, require CASS to reduce or even quit substance use to avail of support, no programme was found that offered a detoxification service. Surprisingly, no intervention used a cognitive-behavioural component (CBT), despite the noted benefits of this approach among CASS in high-income countries (Altena et al., 2010; Lynk, McCay, Carter, Aiello, & Donald, 2015). In addition, a trauma focused CBT (TF-CBT) intervention was not found which has been a requested intervention among researchers, particularly with regards to CASS in LAMIC (Pluck, Banda-Cruz, Andrade-Guimaraes, Ricaurte-Diaz, & Borja-Alvarez, 2015). The majority of the studies relied solely on self-reported measures which can affect the validity and reliability of interventions due to response bias and social-desirability bias. Lack of long-term follow ups limits the ability to confidently conclude the long lasting effects of an intervention as well as an intervention's ability to provide long lasting social support, which is vital when considering the vulnerability of CASS. However, this could be due to the high attrition rate which is considered unavoidable among this population (Harris et al., 2011; Plummer et al., 2007; Turnbull, Hernández, & Reyes, 2009). This raises the dilemma of how future research can gather long-term follow up data while tackling the challenge of seemingly unavoidable high attrition rates among this population.

This review highlights the debate surrounding institutionalized versus non-institutionalized care. Previous research has suggested that providing support within the individual's own terms, such as a drop-in centre, may be a more successful and efficient way of developing a trusting therapeutic relationship with CASS, thus a more effective approach to offering support (Slesnick, Prestopnik, Meyers, & Glassman, 2007). This may explain the beneficial improvements noted in the multidisciplinary care approach (Souza et al., 2010). Perhaps, a drop-in centre may be more realistic for CASS whose families depend on their financial contributions, whereas a residential approach could be more beneficial for individuals with addiction issues. This review suggests that positive outcomes are evident among interventions that primarily provide for the individual needs of the child, tailor programmes to suit specific needs and include the child in the planning process of their intervention. The results do not provide a clear conclusion as to whether a group approach is more effective than an individual approach, yet they appear to suggest that treatment programmes may only work best on individuals who voluntarily want to get off the streets (Harris et al., 2011).

The generalizability of the included studies remains limited. One intervention administered a questionnaire that required participants to be literate and to have attained at least a fifth grade education (Dousti et al., 2014). This automatically excludes a high rate of potential participants due to the high illiterate rates among CASS and a lack of formal education (Shephard, 2014). Caution should also be taken when applying these findings to CASS who do not avail of support services which could be due to greater and severe mental health and psychosocial needs. In addition, similar caution should be taken when implementing a mental health and/or psychosocial treatment for female CASS. The small sample of female CASS considered in this review makes it difficult to synthesize the impact and effectiveness of these interventions across genders. Perhaps the small and scarce sample size could be explained by the likelihood of female CASS being employed/coerced as domestic or sex workers and are therefore more vulnerable on the streets. Although two reviewers conducted the search strategy and applied the inclusion criteria, only one reviewer decided whether a study should be included in the final selection for inclusion, conducted the quality assessment and data extraction. To minimise the risk of random errors of data extraction, the process was carried out twice; a week between each extraction in order to ensure data was extracted correctly. Finally, no additional analysis was performed among the included studies. Although this was due to heterogeneity of included articles, an overall effect size comparing the effectiveness of interventions could not be determined. This limits the ability to confidently conclude on the best approach to carry out 'good practice' among CASS in LAMIC. This review also failed to assess the risk of bias across studies which may have affected the interpretation of the findings. The search strategy was limited to the methods described, potentially omitting articles and findings highlighting unconventional constructs and interventions that may be effective in improving mental health and psychosocial outcomes among CASS in LAMIC.

Numerous gaps remain in this area of research, such as, the evaluation of mental health and psychosocial interventions for CASS in LAMIC, cross-cultural measures of mental health and psychosocial constructs, longitudinal data, and the integration of multiple measures rather than relying solely on self-reported measures. Measuring treatment acceptance could add considerably to the literature on the effectiveness of interventions, particularly when considering the appropriateness of interventions for such a vulnerable population in a resource-limited setting (Hossain & Coren, 2015). Including a greater input from CASS regarding effectiveness could provide a greater insight into intervention provided to support them, as noted with vulnerable children in high-income countries (Alderson, 2008). Lack of longitudinal data results in an inability to determine the long-term effects of interventions, which is arguable the largest gap in this literature (Aptekar & Stocklin, 2014). Caution should be taken when assessing the validity and reliability of cross-cultural measures of mental health and psychosocial constructs.

5. Conclusion

There is an urgent need to empirically evaluate the existing mental health and psychosocial interventions offered to CASS with the hopes of unravelling and maintaining the best means of offering support to such a vulnerable population, particularly within resource limited settings. Promising results cater to the individual needs of the child and offer a specialised treatment programme suited to their needs. Encouraging the development of protective factors to strengthen resilience is also beneficial in improving mental health and psychosocial outcomes among CASS. Researchers need to determine evidence-based interventions that improve the long-term outcomes of CASS to improve the quality of life for all children, particularly those in street situations.

Conflict of interest

There is no conflict of interest.

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Appendix A.

See Table A1

Table A1
Study characteristics table.

Study & Study Design	Country & Intervention Setting	Intervention, duration of treatment	Core Intervention Focus	Sample Size & Target group (age range)	Outcomes	Follow-Up
Souza et al. (2010) Case Series	Tegucigalpa, Honduras Drop-in centre	Multidisciplinary case management therapeutic drop-in centre (Between March 2005 and January 2009)	Psychological distress, substance abuse and social situation (living conditions/sleeping arrangements).	400 Male and Female street youth (under 25 years)	Reduction in psychological symptoms, reduction in substance use and improvement social situations (living conditions/sleeping arrangements).	No formal follow-up carried out after successfully completing the programme.
Harris et al. (2011) Case Series	Campinas, Brazil (APOT) and Lima, Peru (IML) Residential and outreach institutions	APOT: Outreach centre and residential home with three stages towards successfully reintegration. IML: Foster home for street children with five stages towards successful reintegration (Between 1994 and 1999)	Facilitate recovery from substance use and to provide a supportive environment to encourage rehabilitation, re-socialisation and successful reinsertion into the community through educational and vocational training.	863 (536 in APOT & 327 in IML) male children and young adults (12–19 years)	APOT: 56% of children were successfully reinserted into the community after they left the programme. IML: 48% were successfully reinserted into the community after they left the programme. Children and youth who stayed in the programme longer were 1.9 times more likely to be successfully reintegrated back into the community.	APOT: no formal follow-up was completed after reinsertion. IML: occurred every 15 days to 3 months after the child left the programme. Staff met with children 3–4 times every 2 months for up to three years to monitor their adaption.
Dousti et al. (2014) Quasi-Experimental Design	Tehran, Iran School – the Society for the Defending of Street and Working Children in Tehran	Resiliency training programme 15 sessions	Increase psychological well-being through encouragement, coping skills training, searching for meaning in life, cognitive restructuring and constructive thinking patterns, rational-emotive therapy and attribution styles.	60 (30 male and 30 female) Male and female street youth with externalising disorders (aged 12–16 years)	A positive increase in self-acceptance, positive relationships, environmental mastery, purpose in life, and personal growth; all components of psychological well-being. No difference found between genders.	Post-test was conducted 5 weeks after the initial assessment.
Moshtaghi et al. (2014) Quasi-Experimental Design	Karaj, Iran Residential centre	Psychodrama 10 sessions	Increase emotional regulation such as rejection of emotional responses, impulse control difficulties, lack of emotional awareness, limited access to emotion regulation strategies and a lack of emotional clarity.	Sample size not stated. Street children (aged 14–18 years)	Significantly improved emotional regulation abilities.	Post-test was conducted 10 weeks after the initial assessment.
Crombach and Elbert (2015) RCT	Bujumbura, Burundi Residential centre	Forensic Offender Rehabilitation Narrative Exposure Therapy (FORNET) 16 sessions	Reduce involvement in everyday violence and produce beneficial effects for mental and physical health.	32 Male children and adolescents (aged 11–23 years)	Significantly reduced amount of offenses committed and fewer physical-health complaints compared to the control group.	4–7 months post intervention (12–15 months after the initial assessment).