

**Title: The burden of mental disorders and access to mental health and psychosocial support services in Syria and among Syrian refugees in neighbouring countries: A systematic review.**

**Short title: Systematic review of Syrian mental health needs**

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## **Abstract**

### **Background**

Exposure to conflict, violence and forced displacement can increase poor mental health among affected populations. Our aim was to examine evidence on the burden of mental disorders and access to and effectiveness of mental health and psychosocial support (MHPSS) services in Syria and among Syrian refugees in neighbouring countries.

### **Methods**

A systematic review following PRISMA criteria. Twelve bibliographic databases and additional grey literature sources were searched for quantitative and qualitative studies. Descriptive analysis and quality assessment were conducted.

### **Results**

Twenty-eight eligible studies were identified, of which two were with conflict-affected populations within Syria. Levels of post-traumatic stress disorder ranged from 16% to 84%, depression from 11% to 49%, and anxiety disorder from 49% to 55%.

Common risk factors were exposures to trauma and having a personal or family history of mental disorder. Financial and socio-cultural barriers were identified as the main obstacles to accessing MHPSS care. Evaluations of MHPSS services, albeit from predominantly non-randomised designs, reported positive treatment outcomes.

## **Conclusions**

The MHPSS burden was high, but with considerable variation between studies.

There are key evidence gaps on: MHPSS burden and interventions – particularly for those living within Syria; access and barriers to care; and implementation and evaluation of MHPSS interventions.

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## **BACKGROUND**

Over half of the Syrian population has been forcibly displaced since the start of the Syrian conflict in March 2011, with six million internally displaced persons (IDPs), five million Syrians refugees in neighbouring countries and nearly one million seeking asylum in Europe. In addition, there are many non-displaced persons within Syria requiring humanitarian assistance.(1) Due to the Syrian conflict, the Syrian people have experienced major known risk factors for poor mental health(2-6), including exposure to traumatic events, forced displacement and ongoing stressors such as unemployment, impoverishment, social dislocation and loss of social support.

In the decades before the conflict, health indicators showed some improvement despite low government expenditure on health. Life expectancy had increased significantly, and infant and maternal mortality had dropped. However, the health system was challenged by inequity, poor transparency, lack of standardized quality care, inadequate numbers of health staff, and uneven distribution of services in the regions due to an uncontrolled expansion of private services.(7) The mental health system was characterised by: low government expenditure, with 2% of the total health budget going to mental health; being heavily skewed towards hospital care rather than primary care, with 94% of the total mental health budget allocated to mental health hospitals; and limited mental health care staff.(8)

The health system in Syria then severely deteriorated due to the conflict and deliberate attacks on health facilities resulting in the unavailability of health workers

and medicines, destroyed health facilities, and loss of financing.(9, 10) Similarly, health systems in neighbouring countries have been challenged by the influx of Syrian refugees requiring care for both physical and mental health needs.(11) Initiatives by national and international organisations have sought to increase the availability of services for MHPSS,(12) but the burden of mental disorders among Syrians living in Syria and neighbouring countries, and access to effective interventions has not been systematically examined since the onset of the conflict.

Our aim was to examine the evidence on MHPSS burden and access to and effectiveness of MHPSS interventions in Syria and among Syrian refugees in neighbouring countries. The specific objectives were to: (i) describe the evidence on the burden of mental disorders and psychosocial distress, and their associated risk and protective factors; (ii) examine evidence on access to and utilisation of MHPSS services, including the effectiveness of MHPSS services; and (iii) appraise the quality of evidence.

## **METHODS**

The Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) was followed (see Supplementary File A).(13) The research protocol is available from the corresponding author upon request.

### **Inclusion criteria**

Populations of interest were conflict-affected Syrian nationals in Syria, including IDPs; and Syrian refugees living in neighbouring countries (e.g. Turkey, Lebanon, Jordan, Iraq). Primary outcomes were mental disorders and psychosocial distress

(defined as an “unpleasant emotional experience of a psychological (cognitive, behavioural, emotional), social, and/or spiritual nature that may interfere with the ability to cope effectively” (14)). We also examined evidence on access, utilisation and effectiveness of MHPSS interventions (defined as “any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorder”).(15)

Primary quantitative and qualitative research from published and grey literature published between 1 January 2011 (onset of the Syrian conflict) and 30 June 2017 were eligible. See online Supplementary File B for further information on inclusion criteria.

### **Information sources and search strategy**

English (Medline, Web of Science, Embase, PsychInfo, Scopus, CINAHL, LILACS, SciELO) and Dutch (LIMO, VUBIS, Narcis, Catalogus Universiteit van Amsterdam) bibliographic databases were searched (Dutch databases were included because the primary author spoke Dutch). Search terms included a combination of: (i) general MHPSS terms or specific mental disorders; AND (ii) country related terms. Grey literature was examined by searching online databases and websites of international organisations working in Syria or with Syrian refugees. The full search strategy and search terms are included in online Supplementary File C. Reference lists of eligible articles were checked for additional relevant sources.

### **Study selection and data extraction**

Citations from the search results were imported from the bibliographic databases into EndNote and duplicates were removed. Titles of articles were screened and studies

not meeting eligibility requirements were excluded. This was followed by screening of abstracts, and full-texts.

A data extraction sheet was created. Key extraction variables include those shown in Tables 1 and 2, and quality appraisal criteria. Double, independent data extraction was conducted.

### **Data synthesis and analysis**

Data were synthesised descriptively due to heterogeneous study designs and outcomes. The types of interventions were categorised according to the Inter-Agency Standing Committee MHPSS guidelines.<sup>(15)</sup> Penchansky and Thomas's dimensions of access (i.e. availability, accessibility, accommodation, affordability and acceptability) guided synthesis of findings on access to MHPSS.<sup>(16)</sup>

### **Quality appraisal**

Quantitative observational studies were appraised by using the Newcastle-Ottawa Scale (NOS),<sup>(17)</sup> the CONSolidated Standards of Reporting Trials (CONSORT) was used for RCTs,<sup>(18)</sup> and the Critical Appraisal Skills Programme (CASP) was used for qualitative study designs.<sup>(19)</sup> Supplementary File D summarizes the scoring of quality appraisal tools. Studies were not excluded based on quality.

## **RESULTS**

We identified 28 eligible studies (Figure 1).<sup>(20-47)</sup> Of the 28 studies, 27 were conducted with Syrian refugees in Turkey (n=14), Lebanon (n=7), Jordan (n=5), and Iraq (n=1); and two focused on IDPs in Syria. One study covered both IDPs and Syrian refugees. For studies with refugees, ten took place in refugee camps, ten in

non-camp settings, and four in both settings. Four papers did not provide information on the setting. Eight studies focused on children and adolescents. The following study designs were used: RCTs (N=2), cross-sectional (N=14), before/after design (N=6), ecological (N=1), and mixed quantitative and qualitative studies (N=5). All studies were in English.

### **Mental disorders, psychosocial distress and associated risk-factors**

In studies covering the burden of MHPSS problems (n=26), the mental health outcomes included were PTSD (n=12), depression (n=8), anxiety (n=4), other MHPSS outcomes such as trauma and stress (n=8) and other negative emotions and behaviours (n=12), such as anger, aggression, sleeping problems and substance misuse. Findings on these 3 main outcomes are outlined below; and summarized in Table 1, including the specific outcomes and measures used.

#### Post-traumatic stress disorder (PTSD)

Twelve studies examined PTSD burden.(20, 21, 24, 26, 27, 32, 34, 39, 41, 44-46) PTSD levels varied for adults from 16% in a cross-sectional study (45) to 84% in a health-facility based pilot RCT (21) and for children in pre-post designs from 23% (7-12 years) (46) to 45% (9-18 years).(44) Lifetime prevalence of PTSD among Syrian refugees in Lebanon was 35%.(39) One study observed a higher prevalence among IDPs in Aleppo and Idlib (31.8%) compared to Syrian refugees in the Netherlands (23.4%) but the authors do not report whether the difference was statistically significant.(24) In a retrospective study of Syrian refugees in Turkey, 89% of the PTSD cases were found to be chronic (symptoms persisting over 3 months) and 12% of past PTSD cases had spontaneously remitted.(26)

Factors associated with PTSD included: war-related violence and/or traumatic related experiences,(24, 26, 32, 35, 40, 45, 48) cumulative trauma exposure,(45) displacement in a camp,(20) trauma centrality (degree to which experienced trauma lends meaning and identify),(32) lower self-efficacy,(32) personal (20, 26, 40) or family (26) history of mental health problems, poor physical health and previous chronic conditions (unspecified),(24, 26, 34) being a housewife or student,(20, 26) lack of coverage of basic needs,(45) unavailability of medication,(27) and being unemployed.(27) Female gender was associated with higher PTSD rates in two studies (20, 26) but not in others.(27, 39, 41, 47) PTSD was also associated with anxiety,(24, 32, 41) depression,(24, 32) and physical health problems.(24, 32, 34)

### Depression

Eight studies looked at depression (symptoms, disorders, feelings).(20, 25, 40-44, 46) For adults, the lowest reported rate was 11% in a study of patients admitted to a psychiatric hospital in Lebanon that used convenience sampling (40) and the highest rate was 49% in an urban setting in Lebanon and a camp setting in Jordan.(25) For children, rates ranged from 18% in a convenience sample (7-12 years) (46) to 74% in a random sample of school-going girls (12-16 years).(42).

Associated risk factors for depression were: living in a camp,(20) personal or family history of mental health problems,(20) and witnessing torture of a loved one.(20) Female gender was significantly associated with depression,(20, 44) although this was not found in other studies.(41, 43, 49) Age was not a significant predictor for depression in adults,(41, 43) although older children (10 to 12 years old) had higher rates of depression than younger children (7 to 9 years old) in one study.(49)

Unemployment was significantly associated with depression in one study,(20) but not in another.(43)

### Anxiety

Four included studies examined anxiety disorder and fear-related symptoms (n=3 with adults, n=1 with minors).(24, 25, 41, 46) Levels of anxiety and fear in adults ranged from 49% experiencing specifically existential annihilation anxiety (which is anxiety that originates from threats to the personal identity, collective identity, and threats from severe societal structural inequalities) in a population level study with IDPs using convenience sampling (mean age 35 years) (24) to 55% in a population level study with refugees in Jordan using snowball sampling (mean age 36 years).(25) For children in Turkey (7-12 years), clinical anxiety symptoms were found to be at 14%.(46) Anxiety was not found to be significantly associated with age, gender or marital status.(41)

### Other MHPSS outcomes

Three studies reported on outcomes of other mental health and psychosocial problems, such as stress, psychological distress, or trauma-related emotions or behaviour (28, 31, 33).

### **Access and barriers to care**

Five studies discussed access and barriers to MHPSS services. Jefee-Bahloul and colleagues investigated access to care, specifically, the acceptability of store-and-forward telepsychiatry (i.e. the transmission of recorded clinical material to a

specialist in a non-live manner) amongst providers in Syria (37) and of referral for telepsychiatry based on views from Syrian patients.(38) In this study, 34% (the majority being women) of refugees reported wanting to consult a psychiatrist, but less than half (53/120) were accepting telepsychiatry because of poor internet security, preferring in-person communication, and not knowing what telepsychiatry is.(38)

A pilot (21) and definite RCT (22) on Eye Movement Desensitization and Reprocessing (EMDR) in Turkey reported barriers to care, and identified that having a therapist or interpreter of the opposite gender could be problematic, and that some husbands did not allow their wives to participate in the study.

In a refugee camp in Jordan, 46% believed that psychological therapy and support was needed, out of which 15% reported receiving such therapy.(28)

### *Interventions*

Eight studies evaluated MHPSS interventions.(21-23, 30, 34, 36, 46, 47) Table 2 provides an overview of these intervention studies. Acarturk et al. provided EMDR to patients with PTSD in a health facility in Turkey.(21, 22) The recall of traumatic memories whilst being bilaterally stimulated by being tapped or by eye movement had a significant decrease in PTSD symptoms; this effect was maintained for up to 11 weeks after, while for depressive symptoms the effect was maintained for 5 weeks.(22) Weinstein et al observed a reduction in self-reported depression, but not in PTSD among urban refugees in Jordan that were offered a one-week intervention aimed at increasing need-satisfying experiences.(47)

Gormez, Kılıç (36) found that 8 sessions of psychosocial support based on Cognitive Behaviour Therapy (CBT) among refugees in Turkey significantly reduced anxiety and psychological distress in 10 to 15 year olds, but did not impact behaviour or

conduct. For 7 to 10 year olds in Turkey, Ugurlu, Akca (46) observed a significant reduction in trauma, depression and anxiety symptoms after a 5-day art therapy. Akoury-Dirani, Sahakian (23) recorded improved knowledge, practices and readiness to deliver psychological first aid (PFA) by training field workers in Lebanon for two and a half days. Budosan, Benner (30) also achieved improved knowledge and competency for MHPSS in health care workers, leading to increased well-being and resilience in their patients in Turkey. The provision of meaningful activity (such as language or computer classes or support groups) for 2 months increased positive and decreased negative coping strategies in urban refugees in Turkey.(34)

### **Quality of the evidence**

Most quantitative studies appraised by the NOS cross-sectional scale (19/26) scored five or less out of ten stars. Many (18/26) relied on self-report by the study participants for assessment of MHPSS outcomes. Ten studies used validated measurement tools for the ascertainment of the exposure. Samples in seven studies were representative of the target population by using random sampling, however, sample sizes were justified in seven studies only. A satisfactory response rate (i.e.  $\geq 70\%$ ) and discussion of comparability between non-respondents and respondents was presented in two studies. Over half of the sources (15/27) described the statistical tests used and levels of statistical significance.

CONSORT results indicate that the two included RCTs were of high quality. Trial design, participants, setting, intervention, randomisation, blinding and statistical methods were appropriately described. One study lacked clarity on the number of

participants included in the analysis and both studies could have improved the discussion of possible harms for participants.

CASP findings showed that three of out of the five qualitative studies clearly stated their aims and findings, and used an appropriate methodology and study design. Data were analysed rigorously in two out of five studies. Four of the five studies used an appropriate recruitment strategy for qualitative research. None explicitly commented on the relationship between researcher and participant. Two of the five studies described ethical issues in their research.

See Supplementary File D for further detail on quality appraisal results.

## **DISCUSSION**

### **Main findings of this study**

The majority of research took place in Turkey, followed by Jordan and Lebanon, reflecting the number of Syrian refugees hosted in these countries.(50) There is a lack of research from within Syria reflecting the extreme insecurity in the country but highlighting the need for further research on MHPSS burden and access to effective MHPSS services within Syria.

About half of the included studies were conducted in refugee camps, although most Syrian refugees live in non-camp settings in predominantly urban areas(e.g. 94% in Turkey; 92% in Lebanon; 79% in Jordan).(51, 52) The types of mental health stressors and access to, and quality of, MHPSS services may be very different in non-camp urban settings compared to camps and so further research is required in non-camp settings in urban areas.

Only seven of the studies included children and adolescents, despite some estimates suggesting they make up over 50% of the refugee population.(31, 49) There are clearly additional ethical requirements for conducting research with children, but further research is required to better understand their specific needs.(53)

The burden of mental disorders varied considerably between studies, with no notable patterns between locations, setting, population, or time of study. Large variations in prevalence rates have been found in other reviews with conflict-affected populations and may reflect the varying levels of stressors, coping and support mechanisms, as well as methodological differences such as sampling designs, outcome measures and diagnostic cut-off scores being used.(2, 3, 6, 54)

Research on access and barriers to MHPSS services was extremely limited. Five studies explored barriers towards the possible and actual implementation of two specific interventions and two studies looked at health seeking and utilisation of MHPSS.(28, 38) Studies with other conflict-affected populations have highlighted key barriers of cost, language, cultural understanding, limited availability and quality of services, poor quality of services, low knowledge of mental disorder symptoms, lack of awareness of MHPSS services, and stigma and discrimination.(12, 55, 56)

The MHPSS interventions included art therapy, social interventions, CBT-based psychosocial intervention, EMDR and training in MHPSS or PFA for service providers. All interventions reported positive outcomes in decreased symptomatology, improved well-being or coping or in improved competency of service providers. The interventions were brief (with the longest follow-up point being 2 months (22, 30)) and it would be valuable for studies to record effectiveness over a longer-period of time. Interventions were also small scale, one was a pilot, and no evaluations of larger-scale interventions implemented across different cities or camps

were identified. Future evaluations should also seek to measure not only effectiveness, but also the cost-effectiveness, feasibility and implementation processes of the interventions in order to support their future scale-up and help address the high-levels of needs.(57) In addition, there were no studies which examined contact coverage of MHPSS services, and evidence from elsewhere suggests that data on MHPSS coverage for conflict-affected Syrians are lacking.(58)

Overall, the quality of the identified studies was limited. For example, most studies used instruments that were not validated for the Syrian context nor adapted to local idioms of distress or cultural symptoms of disorders.(59) Results in terms of PTSD, depression and anxiety were largely based on self-report screening measures of symptoms, rather than in-depth diagnostic interviews, which introduces potential measurement bias. Convenience or snowball sampling was frequently used,(24, 25, 29, 37, 41, 43, 49) risking substantial selection bias.

### **What is already known on this topic**

Evidence globally has highlighted the impact of armed conflict and forced migration on mental health outcomes, and the range of other risk-factors related to ongoing daily stressors during and after displacement.(2, 6, 54) However, evidence on access to MHPSS services remains more limited.(56) Similarly, evidence on the effectiveness of MHPSS services remains moderate.(60, 61)

### **What this study adds**

To the best of our knowledge, this is the first systematic review of the burden of mental disorders and access to services among Syrian refugees in Syria and neighbouring countries. The study highlights key evidence gaps – particularly for

those living within Syria and refugees living in non-camp settings. There is also very limited evidence to help improve access to effective to MHPSS services. The quality of the evidence was also quite limited and methodological improvements are required – particularly for sampling and outcome measurement.

### **Study limitations**

We did not search for or included sources in Arabic and other national languages. However, checks for Arabic-language papers in the retrieved studies suggested there would have been very few eligible Arabic language papers. A meta-analysis was not conducted due to the wide variety of outcomes, measures, and methods used in the selected studies. Lastly, the NOS scale is only partly validated and largely used to appraise case-control and cohort studies rather than cross-sectional studies.(17)

### **Conclusions**

The levels of common mental disorders in the identified studies was high but with wide variations reported. Research on access to MHPSS and evaluations of interventions was particularly scarce. More rigorous research on access to, and effectiveness of, MHPSS services is urgently required to help scale up efforts to address the mental health burden in Syria and with refugees in neighbouring countries.

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### **Acknowledgements**

Not applicable.

## **Conflicts of interest**

None.

## **Ethical standards**

This review was ethically approved by the MSc Research Ethics Committee of the London School of Hygiene & Tropical Medicine.

## **Availability of data and materials**

Supplementary File A contains the PRISMA-P checklist.

Supplementary File B lists the inclusion and exclusion criteria.

Supplementary File C contains the detailed search strategy and the search terms used.

Supplementary File D contains quality appraisal tools and results.

The data extraction Excel database can also be shared upon request to the Corresponding Author.

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Table 1: Summary of findings on burden of PTSD, depression, anxiety and other MHPSS outcomes

First author (year)	Country (sample size)	Study design & setting	Outcome measure	Findings
<b>PTSD</b>				
Acarturk (2015)	Turkey (n=29)	RCT (pilot); camp	Impact of Event Scale-Revised	Prevalence (Prev) probable PTSD 83.5%
Acarturk (2017)	Turkey (n=781)	Cross-sectional; camp	Impact of Event Scale-Revised	Prev. probable PTSD 83.4%
Al Ibraheem (2017)	Syria (n=195 IDP + 111 refugee)	Cross-sectional; urban	Clinician Administered PTSD Scale; Cum. trauma disorder for complex PTSD	Prev. PTSD 24.9%; Prev. Complex PTSD 39.5%
Alpak (2015)	Turkey (n=352)	Cross-sectional; camp	Diagnostic psych.interview;DSM-IV criteria	Prev. PTSD 33.5%
Al-Smadi (2016)	Jordan (n=765)	Cross-sectional; urban	PTSD	Prev. higher PTSD scores 18.43%; lower PTSD scores 81.57 % (cut-off scores not mentioned)
Chung (2017)	Turkey (n=792)	Cross-sectional; urban & camp	Centrality of Event Scale; Generalized Self-Efficacy Scale	Prev. PTSD 52%
DeMarinis (2016)	Turkey (n=171)	Pre-post; urban	Primary Care PTSD Scale	Prev. PTSD 23%
Kazour (2017)	Lebanon (n=452)	Cross-sectional; camp	Mini International Neuropsych. Interview	Point prev. PTSD 27.2%; lifetime prev. PTSD 35.4%
Marwa (2016)	Turkey (n=95)	Cross-sectional; camp	Impact of Event Scale Revised	Prev. PTSD 61.1%
Özer (2013)	Turkey (n=311); (9-18 years)	Cross-sectional; camp	Children's Revised Impact of Events Scale	Prev. PTSD 45%
Taha (2016)	Iraq (n=820)	Cross-sectional; camp	Harvard Trauma Questionnaire	Prev. PTSD symptomatology 16.3%
Ugurlu (2016)	Turkey (n=63) (7-12 years)	Pre-post; urban	UCLA Post-Traumatic Stress Disorder Parent version - DSM-IV	Prev. PTSD symptoms 23.4%
<b>Depression</b>				
Acarturk (2017)	Turkey (n=781)	Cross-sectional; camp	Beck Depression Inventory	Prev. probable depression 37.4%
Al-Fahoum (2015)	Jordan (n=120)	Cross-sectional; camp	Questionnaire developed by researchers	49% of men felt depressed
Lama (2016)	Lebanon (n=150)	Ecological; urban	DSM-IV diagnosis in chart (retrospective) by treating psychiatrist	Prev. suicidal ideation 9.1% (before war); 24.5% (after war); prev. suicidal attempts 6.8% (before war); 14.2% (after war); prev. depression 25% (before war); 11.3% (after war)
Marwa (2016)	Turkey (n=95)	Cross-sectional; camp	Hospital Anxiety and Depression Scale	Prev. pathologic depression 27.4% Prev. borderline depression 37.9%
Mhaidat (2016)	Jordan (n=210) (female 12-16 years)	Cross-sectional; urban	Own scale using list of adjusted symptoms (Derogatis); controlling anger (Lynett); feeling safe (Maslow); self-esteem (Al-Khateeb)	Prev. depression 73.97%

Naja (2016)	Lebanon (n=310)	Cross-sectional; urban	Mini International Neuropsychiatric Interview	Prev. current major depressive disorder 43.9%; prev. past (lifetime) major depressive disorder 27.1%; prev. pre-war depression 6.5%
Özer (2013)	Turkey (n=311) (9-18 years)	Cross-sectional; camp	Children's Depression Inventory	Prev. depressive disorder 20% (54% for girls, 26% for boys)
Ugurlu (2016)	Turkey (n=63) (7-12 years)	Pre-post; urban	Children's Depression Inventory	Prev. severe depression symptoms 17.6%
<b>Anxiety</b>				
Al Ibraheem (2017)	Syria (n=195 IDP) + the Netherlands (111 refugees)	Cross-sectional; urban	Existential Annihilation Anxiety scale	Prev. existential annihilation anxiety 40.5%
Al-Fahoum (2015)	Jordan (n=120)	Cross-sectional; camp	Questionnaire developed by researchers	55% of men felt anxious
Marwa (2016)	Turkey (n=95)	Cross-sectional; camp	Hospital Anxiety and Depression Scale	Prev. pathologic anxiety 52.6%; Prev. borderline anxiety 18.9%
Ugurlu (2016)	Turkey (n=63) (7-12 years)	Pre-post; urban	State-Trait Anxiety Scale	Prev. state anxiety symptoms severe (= clinically significant) 14.4%; moderate 45.3%; mild 38.3%; Prev. trait anxiety symptoms severe 31.1%; moderate 36.7%; mild 19.2%
<b>Other MHPSS outcomes</b>				
Basheti (2015)	Jordan (n=73)	Cross-sectional; camp	Derived from previously published research, self-report	56% of respondents suffered from one or more of following: anger, fearfulness, nervousness, difficulty falling asleep or staying asleep, hopelessness about the future, and spells of terror or panic; 37.3% suffering from all 6 distresses
Cartwright (2015)	Syria and Turkey (n=106)	Cross-sectional; camp and urban	Pediatric Emotional Distress Scale (PEDS) Strengths and Difficulties Questionnaire (SDQ)	62.3% felt fearful 45.3% had emotional symptoms 37.7% had behavioural problems
CLMC (2016)	Lebanon (n=486)	Cross-sectional and qualitative; not mentioned if camp or urban	Questionnaires and focus groups administered by trained psychologists and social workers	Most children developed some type of symptoms associated with trauma, with no discernible patterns by gender. Strong role of family support. School enrolment not associated with improved mental health status but did appear to improve behaviour and social networks. Most commonly mentioned coping needs were recreational opportunities, language classes, more friends.

Table 2: Overview of included intervention studies with outcome measures and main findings

First Author (year)	Participants (sample size in final analysis) & country	Study design & Setting	Intervention	Outcome measure	Main findings on effectiveness of intervention
Acarturk (2015)	Adult Syrian refugees with PTSD symptoms in Turkey (n=29)	Pilot RCT; camp setting	Eye Movement Desensitization and Reprocessing: recalling most traumatic experience while making horizontal eye movements or tapping. 7 90-minute sessions conducted over 11 weeks	Impact of Event Scale Revised; Beck Depression Inventory scores (baseline, after 4 and 11 weeks post-intervention end)	Decrease in PTSD symptoms scores pre vs. post intervention (M=22.87, SD=20.27 vs. M=54.21, SD=16.26), $p < .001$ and depression (M_10.15, SD_9.60 vs. M_20.79, SD 7.92) in EMDR group. PTSD improvements maintained at 11 weeks follow up
Acarturk (2016)	Adult Syrian refugees with PTSD diagnosis in Turkey (n=70)	RCT; camp setting	Eye Movement Desensitization and Reprocessing: recalling most traumatic experience while making horizontal eye movements or tapping	Impact of Event Scale Revised; Beck Depression Inventory scores Measured at baseline, 1 and 5 weeks post-intervention end.	-Decrease in PTSD symptoms (IES-R: $F_{1,67.03} = 84.92$ , $p < 0.001$ , $\omega^2 = 0.44$ ) and depression (BDI: $F_{1,62.75} = 48.94$ , $p = 0.001$ , $\omega^2 = 0.35$ ) scores in EMDR group. PTSD and depression improvements were maintained at 5 weeks follow up
Akoury-Dinari (2015)	People working with Syrian refugees in Lebanon (n=60)	Pre-post design (setting not specified)	Psychological First Aid (PFA) training of 2.5 days for workers with a background in mental health or social work who work with Syrian refugees	Self-report evaluation form for knowledge and readiness to deliver PFA. Compared pre-, after, and 1 month post intervention	Increase in knowledge: 5-15% on definitions of disorders ( $p = .382$ ), 15-45% on PFA principles and practices ( $p < .001$ ); Increase in readiness to deliver PFA ( $p < .001$ )
Budosan (2016b)	Providers (N=381) and service users (n=1196) in Turkey	Pre-post design; urban setting	1-MHPSS training for health care workers; 2-MH intervention; 3-social intervention	1-Perceived competencies scale and multiple-choice knowledge test (pre-post, providers); 2/3-Camberwell Assessment of Needs Short Appraisal Schedule and modified resilience scale (single measure post, beneficiaries)	1-Improved competencies by 12, knowledge score 61.6%. 2-Well-being improvement 15.3%. 3-Resilience improvement 17.1%
DeMarinis (2016)	Assyrian-Syrian Christian refugees in Turkey (n=171)	Pre-post; urban setting; Istanbul	Provision of activity: language learning, computer classes, culture events, sports, support groups, teaching children for circa 2 months	Patient Health Questionnaire; Brief R-COPE; General Self-Efficacy Scale; Connor-Davidson Resilience Scale; Primary Care Post Traumatic Disorder Scale; Compared pre- and 2 months post	Increased positive ( $p < .08$ ) and decreased negative ( $p < .05$ ) coping strategies on R-COPE

Gormez (2017)	Syrian refugee students (10-15 years) in Turkey (n=32)	Pre-post; urban setting in Istanbul	Eight sessions of 70-90 minutes of psychosocial support programme based on CBT principles, delivered by Arabic-speaking teachers.	Child-post traumatic stress reaction index ; Spence children's anxiety scale; Strengths and difficulties questionnaires	Reductions in anxiety scores on SCAS (M= 53.28, SD = 13.78, p = -0.001), in total PTSD (p = -0.011), and psychological distress scores (p = -0.008) on CPTS-RI. No significant change in conduct (p = 0.32), hyperactivity (p = 0.20), peer-relationships related problem areas (p = 0.51), or prosocial behavior (p = 0.039) in SDQ
Ugurlu (2016)	Syrian refugee children (7-12 yrs) in Turkey (n=30)	Pre-post; urban setting in Istanbul	5-day art therapy based on "Skills for Psychological Recovery", with music, movement and drawing by 3 licenced art therapists, at 3 sessions per day, in 3 age groups	Stressful Life Events Questionnaire; Child Depression Inventory; State-Trait Anxiety Scale; UCLA Post-Traumatic Stress Disorder index for DSM-IV (parent version); Compared pre- and 1 week post.	Significant reduction in: trauma symptoms (pre: M = 29.80, SD = 10.50 vs. post: M = 15.32, SD = 9.59, p < .05, g = 1.00, 95% CI [.46, 1.52]); depression symptoms (pre: M = 9.97, SD = 1.01 vs. post: M = 6.0, SD = 4.54, t(29) = 3.95, p < .05, g = .72, 95% CI [.20, 1.24]); trait anxiety symptoms (pre: M = 36.92, SD = 6.96 vs. post: M = 30.30, SD = 7.39, t(24) = 4.37, p < .05, g = .80, 95% CI [.27, 1.32])
Weinstein (2016)	Adult Syrian refugees in Jordan (n=41)	Pre-post with parallel group; urban setting	One-week intervention to increase need-satisfying experiences, working on competence, relatedness and autonomy.	Revised Basic Psychological Needs scale; Centre for Epidemiological Studies Depression Scale; Perceived Stress Scale; State Trait Anxiety Inventory; PTSD symptoms scale; Compared baseline and after intervention.	Reduced self-reported depression (p < .001) and generalised stress symptoms (p = .001); No reduction in PTSD symptoms (p = .32); Need frustration same in comparison (p = .43) but lower in intervention group (p < .001)