Evidence for suicide prevention and response programs with refugees: A systematic review and recommendations

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List of abbreviations

BIC	Brief Intervention and Contact
CARE	Cooperative for Assistance and Relief Everywhere
C-CASA	Columbia Classification Algorithm of Suicide Assessment
CASP	Contact and Safety Planning
CV	Community Volunteer
EAAD	European Alliance Against Depression
HIC	High Income Countries
IASC	Inter-Agency Standing Committee
ICRC	International Committee of the Red Cross
IMC	International Medical Corps
GODORT	Intergovernmental Organization Search Engine
IGOs	Intergovernmental organizations
IOM	International Organization for Migration
LMIC	Low- and Middle-Income Countries
MDD	Major Depressive Disorder
MSF	Medécins Sans Frontières
NGOs	Nongovernmental Organizations
PTSD	Posttraumatic Stress Disorder
RCTs	Randomized Control Trials
UNICEF	United Nations Children's Fund
UNHCR	United Nations High Commissioner for Refugees
WMAT	White Mountain Apache Tribe’s
WHO	World Health Organization

EXECUTIVE SUMMARY

The number of people displaced from their homes, including refugees, is at an historic high worldwide. People fleeing war and persecution are at heightened risk of injury, disease, and psychological stress. While mental health and psychosocial support is increasingly getting attention in humanitarian agencies, the issue of suicide has gotten significantly less consideration.

There have been few epidemiologic studies examining suicide and associated behaviors in refugee and displaced populations. The little research that has been done suggests that displaced persons are at increased risk of such behaviors, particularly during the emergency phase and in the context of protracted displacement. Suicidal behaviors (i.e. deaths, attempts, and self-injurious behaviors) have a devastating effect on individuals, families and communities. As such, there is an urgent need to better understand the scope of the problem and how to address it in these vulnerable populations.

The aim of this report was to review relevant peer-reviewed and grey literature to identify promising suicide prevention and response programs that have been implemented with refugee or similar populations. This report presents findings from this review, along with key recommendations about how to address the limitations of what is currently done with refugees related to suicide.

After reviewing over *N*=732 records from peer-reviewed and grey sources, only 8 programs were identified that have been implemented with refugees or immigrants. Only two of these 8 programs were specific to populations currently living in displacement. Overall, study designs and outcomes were weak and included pre-post designs lacking control/comparison groups, or focused on knowledge and attitudes rather than suicide related outcomes. These limitations make it challenging to understand whether the programs are actually effective at reducing suicide or associated behaviors in these populations.

Of the 8 programs reviewed, the majority focused on training of health care workers and awareness raising. One program was identified as particularly promising since it was the only study to use a rigorous design and strong outcomes in a refugee population. Vijayakumar and colleagues (2017) implemented and evaluated a community based intervention combining Brief Intervention and Contact (BIC) and Safety Planning delivered by volunteers. Rates of combined suicide deaths and attempts were lower in the refugee camp that received the intervention compared to the control camp.

It is recommended that UNHCR build off this work and take a public health approach to suicide prevention and response that incorporates a multi-tiered approach aimed at incorporating strategies at each level of prevention (e.g. universal, selective, indicative). This multi-tiered approach could select strategies based on best-practice elements from programs implemented and studied in other populations that are likely to be feasible to implement and evaluate with refugees going forward. A suggestion of this multi-tiered, best-practice elements approach is included in the report.

Key findings and recommendations of this review

FINDING 1: There are a limited number of suicide prevention or response programs implemented with refugee or displaced populations
Only 8 programs were identified overall and only 2 specifically targeted refugee populations.

Recommendations:

1. Effective prevention and response programs in other settings or with other populations should be adapted, implemented and evaluated with refugees.
2. UNHCR and other large international organizations that help care for refugees and displaced groups should advocate for further suicide prevention research and work to destigmatize suicide among local government representatives.

FINDING 2: There were few suicide prevention programs in refugee or related groups with strong study designs

Only two programs were identified as promising.

Recommendations:

1. More rigorous designs are needed to better understand the effectiveness of suicide prevention and response programs
2. Use of best-practice elements of multi-level suicide prevention strategies and evaluation of their effects are needed.[1]

FINDING 3: Outcomes for suicide prevention studies among refugee or related groups tend to be weak.

Most studies focus on knowledge and attitudes related outcomes rather than suicidal behaviors

Recommendations:

1. Research and programming should focus on people at risk of suicide (selective and indicative prevention) and measure the impact of programs on suicide related behaviors and risk factors. r
2. Data on mortality and suicide related medical care should be made available to better understand the scope of the problem and inform appropriate interventions.
3. Surveillance of suicide and related behaviors should be established in refugee camps and medical care settings, as well as, if possible, in community settings.

FINDING 4: Most prevention or response programs included multiple components, but few were multi-tiered

Multi-tiered programs focus on multiple types of prevention (Universal, Selective, Indicative) and aim to address suicide using this comprehensive approach.

Recommendations:

1. A public health model of suicide prevention including surveillance, identifying risk and protective factors, developing appropriate programs, and implementing and evaluating these programs should be used.[2]
2. Programs and strategies should focus on multiple levels of prevention.

1. Introduction

Suicide and associated behaviors (attempts; self-injurious behaviors)[3] have a profound impact on individuals, families and communities.[2] The World Health Organization estimates that approximately 800,000 individuals die by suicide each year – the equivalent to one person every 40 seconds.[4] Globally, the death by suicide rate is estimated to be approximately 11.05 deaths per 100,000 people.[5] It is the second leading cause of death worldwide for young people aged 15-29,[4] affecting youth and young adults who are entering the prime of their productivity phase and destined to have wide ranging repercussions for generations. For every suicide, there are an estimated 20-25 additional suicide attempts[4,6] representing a significant burden on health systems, families and communities, and costing billions of dollars in associated healthcare costs and lost productivity.[7,8]

BOX 1. Key definitions of suicidal behaviors[a]	
Attempt	A potentially self-injurious behavior associated with some intent to die
Self-injurious	Self-injurious behavior with no intent to die
Ideation	Passive thoughts about wanting to be dead or active thoughts about killing oneself, not accompanied by preparatory behavior
Death	A self-injurious behavior that resulted in death and was associated with at least some intent to die
[a]Based on the Columbia Classification Algorithm of Suicide Assessment (C-CASA)	

Suicide rates vary significantly by country and region. High Income Countries (HIC) have an average suicide rate of 14.12 per 100,000, while the rate for Low- and Middle-Income Countries (LMIC) have an average suicide rate of 11.09 per 100,000 people. [5] As the vast majority of the world's population lives in LMIC, suicides in these countries represent 75% of suicide deaths worldwide.[2] The number of refugees and other forcibly displaced people worldwide is growing with a record high of 65.3 million people displaced from their homes by conflict and persecution in 2015.[9] Given the rates of suicide in LMIC and the fact that LMIC host the majority of those displaced, [9] there is an urgent need to better understand suicide and how to prevent it among those displaced.

There are a limited number of studies that have examined suicide and related behaviors among displaced populations. A review of suicide in refugee populations found suicide rates to range from 3.4% to 34% of recorded deaths.[10] Studies done with refugee populations resettled in high income countries have shown increased risk of suicidal behaviors [11,12] likely due a combination of socioeconomic disadvantage,[13] exposure to potentially traumatic events,[14] burden of mental disorders,[15] and lack of appropriate and accessible care.[12,16,17]

Less is known about populations still in displacement. A recent study of refugees in Nigeria found increases in suicidal ideation in the refugee population, with 27.3% of the refugee population reporting suicidal ideation, in comparison to 17.3% of the non-refugee population.[18] Suicide was found to be the leading cause of death in Australian immigration detention centers.[19] Among Afghan refugee women in Pakistan, suicidal thoughts were present in almonst all women who had a likely common mental health disorder. [20] A recent examination of healthcare and disease burden among refugees in long-stay camps in Lesbos, Greece, found high treatment rates associated with suicide attempts.[21] Save the Children staff currently working with refugees and migrants on these Greek Islands, have reported witnessing an increased number of suicide attempts and and self-harm among children, with some attempts taking place in public presenting a risk of contagion.[22] In refugee camps in Thailand, a recent report by the

International Organization for Migration (IOM) indicated a significant and concerning rise in suicide rates in Mae La refugee camp. The IOM report found that from 2015 to 2016 the suicide rate in Mae La increased to 36.6 suicide deaths per 100,000 people,[23] a rate that is almost three times the world average and six times the average rate in Thailand.

Our knowledge on suicide in displaced populations is limited for several reasons. Timely, relevant and reliable data is challenging to collect in populations that are highly mobile. Stigma also plays a role since suicide is heavily stigmatized or even illegal in many countries. Suicidal behaviors may go under-reported and people at risk of suicide may be reluctant to seek help.[2] Suicide in refugee settings are often a politically sensitive issue making research and timely interventions challenging. [24]

1.1. Prevention of Suicide

It is important to remember that suicide is preventable. In non-refugee populations, many effective suicide prevention strategies have been shown to contribute to reduce rates of suicide and suicide-related behavior. Means restriction, including increased control of analgesics, gun-control, and barriers on popular locations for suicide by jumping, is one of the most effective strategies for reducing suicide.[25,26] Education of physicians in how to recognize signs of depression and treat has also been found to effectively reduce suicide rates.[26] Effective treatments for depression, including pharmacological and psychological approaches, are import in prevention efforts.[25] A recent meta-analysis of randomized controlled trials of strategies to prevent death by suicide found the World Health Organization (WHO) Brief Intervention and Contact (BIC)[27] program was associated with significantly lower odds of suicide (OR=0.20; 95% CI 0.09-0.42).[28]

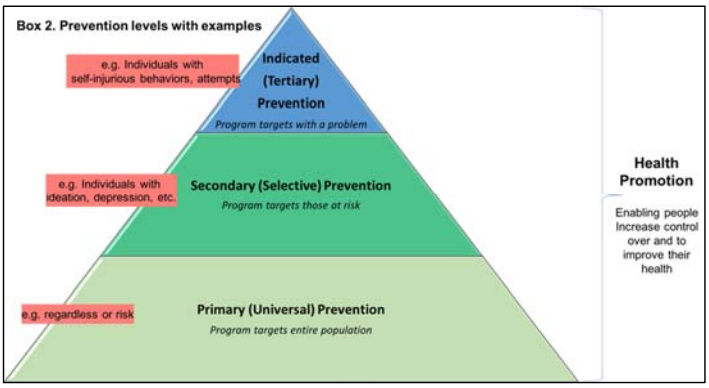
Comprehensive approaches to suicide prevention, including the use of multiple synergistic strategies that address different aspects of suicide, are recommended and have also been highly successful.[25,29] One of the most well-known comprehensive approaches is the U.S. Air Force Suicide Prevention Program.[30] After a rise in the suicide rate among United States Air Force Personnel, the Air Force implemented eleven initiatives aimed at enhancing protective factors, raising awareness, improving identification and treatment, tracking timely data, and increasing help-seeking.[31] After implementation of this strategy, suicide rates declined from 15.8 per 100,000 in 1995 to 8.3 per 100,000 in 2002, representing a 33% reduction in the ratio of the risk of suicide after the intervention compared to before.[30]

Similarly, the European Alliance Against Depression (EAAD) aimed to improve the care of people with depression by using a multi-level approach including: 1) increased cooperation with primary care; 2) increased community awareness through a public relations campaign; 3) special educational packages related to depression and suicide for community facilitators (e.g. priests, teachers, police, etc.); and 4) expanding self-help and emergency assistances to those at high-risk (i.e. following a suicide attempt). Compared to the control regions, a significant reduction in the frequency of suicidal acts was observed during the implementation of these strategies and has now been expanded to over 40 different regions and communities in Germany, as well as, 18 additional European countries.[32,33]

While few comprehensive approaches have been done in resource limited settings, one of the most promising programs is the White Mountain Apache Tribe's (WMAT) Celebrating Life Suicide Prevention (CL) Program. In response to a spike in youth suicide, WMAT instituted the CL program in 2001.[34] The CL

program has three components: 1) tribally mandated active surveillance within a closed reservation system; 2) brief contact and case management; and 3) community outreach and education. Comparing rates from 2001-2006 (prior to CL implementation) to 2007-2012 (during implementation), the suicide rate among youth (ages 15-24) decreased by 23%.[35]

In LMIC, several universal, selective and indicative prevention strategies have been studied with promising results (Box 2). Universal prevention strategies include policy changes[36] and restricting access to lethal means (e.g. pesticides).[37,38] Selective prevention strategies that have been studied include community interventions for self-immolation targeting young women and socioeconomically deprived groups in Iran.[39]
Indicated prevention strategies with research to support their effects have included BIC,[27] follow-up text messaging of individuals with suicide attempts,[40] and a Brazilian program that focused on breaking taboos about death and improving care-pathways for older adults.[41]



Given its burden and profound impact, suicide prevention is one of the main priorities of the WHO Mental Health Action Plan 2013-2020[42] and included as an indicator of Sustainable Development Goal 3: Ensuring healthy lives and promoting well-being for all at all ages.[43] However, in order to address the burden of suicide and associated behaviors in refugee and other displaced populations, a better understanding suicide prevention and response interventions in these settings is needed.

1.2. Objectives of the report

The purpose of this review was to systematically identify promising suicide prevention and response programs in refugee settings that could be further developed and tested. We sought to answer the following questions: 1) What suicide prevention and response programs are currently being provided in refugee settings or humanitarian contexts? 2) to whom are they being provided? and 3) what level of evidence exists for their effectiveness? To answer these questions, we conducted a systematic review of both peer-reviewed and grey literature. Our hope is that his knowledge will help inform practical guidance for the United Nation's High Commissioner on Refugees (UNHCR) on suicide prevention and response programming in refugee settings.

2. Methods

2.1. Peer review literature search strategy

We searched seven databases including PubMed, PsychInfo, Cochrane library, Global Health, Embase, Scopus, and Web of Science for all relevant English language studies with no date limitations. We used a

three-tiered search strategy whereby an initial search was done using outcome related terms, followed by a search of program/intervention related terms, and this was ultimately combined with refugee related terms (Table 1). The full search terms for each database can be found in Appendix A.

2.2. *Grey literature search strategy*

Table 1.
Example peer-reviewed literature search strategy

Outcome related terms		Program/Intervention related terms		Refugee related terms
suicide, "suicide, attempted", "suicidal ideation", psychiatric morbidity; suicide; suicidal; self-harm; suicidality; parasuicide, etc.	AND	health education, promotion, screening, medical education, primary health care, school-based, means restriction, mass media. intervention, strategy, response; methods (+ firearms, overdose, poison*), brief contact, caring postcards, reduction, surveillance, problem solving, "Delivery of Health Care" "attitude to health," "awareness raising", "awareness-raising" recognition, training, etc.	AND	refugee* / displacement / displaced/ Internally Displaced / asylum / forced migrant

For the grey literature, we searched two databases: Published International Literature on Traumatic Stress (PILOTS) and the Intergovernmental Organization Search Engine (GODORT). The GODORT is a database that uses Google search technology to search the webpages of Intergovernmental organizations (IGOs) and Nongovernmental Organizations (NGOs). There are websites for 415 IGOs and 1584 NGOs included in the search engine. Our search was limited to the first 10 pages of results on GODORT. In addition, we used a modified version of a recent strategy developed by Enticott and colleagues,[44] and specifically searched the websites of the following agencies and organizations: UNHCR, WHO, CARE, IASC, IMC, ICRC, IOM, and MSF. Finally, we searched the Department of Health and the National Statistics websites for the top 10 Refugee hosting countries (Jordan, Turkey, Pakistan, Lebanon, Iran, Ethiopia, Kenya, Uganda, DRC, Chad). We limited our time spent on each website to 30 minutes of searching.

2.3. *Inclusion and exclusion criteria*

To be included in the final review, records had to meet the following criteria: 1) Include data on a primary or intermediate outcome related to suicide. Primary outcomes included death by suicide, suicide attempt or suicide ideation. Intermediate outcomes included help-seeking behavior, identification of those at risk, means restriction, mental health outcomes (clearly specified as intermediate outcomes in the context of suicide prevention efforts), awareness and education outcomes, connections with care, points of contact; 2) Evaluate or describe at least one program, intervention, policy or strategy; 3) have a program, intervention, policy or strategy designed for or implemented to address prevention or response to suicidal behaviors in refugee or similar populations; and 4) be published in English. Exclusion criteria involved: 1) Review papers (but references were screened for additional studies); 2) records that represented data on 1 person (e.g. case studies); and 3) conference presentations or posters.

2.4. *Screening and data extraction*

After initial identification of potential records, titles and abstracts were screened (peer-reviewed literature only), followed by screening of full-texts (all grey literature and peer-reviewed literature that passed abstract screening). Following full-text screening, if articles met inclusion/exclusion criteria, data were extracted from each record on the following variables: study context (including region, income level and ethnicity); study design, type of data, and study population demographics;

Intervention/program/strategy/policy description and features; target outcomes and study findings; and any stated limitations of the study. Author EH conducted all screening at each stage.

BOX 3. Level of evidence criteria	
Effective (1)	• Evidence of effectiveness across at least two randomized controlled trials; *and* • Done by more than one investigative team
Promising (2)	• Consistent positive outcomes, but number of RCTs was limited to only one trial or only one investigative team
Potentially promising (3)	• Studies without RCTs but with other less rigorous evaluations (e.g. including a control group; benchmarking, surveillance, etc.) showing consistent positive outcomes; *or* • Based on programs known to be effective in other settings or with other populations
Unclear (4)	• Inconsistency in results; *or* • Description of program but no outcomes measured; *or* • No control or comparison group
Ineffective (5)	• Two or more studies that show no positive outcomes or harmful outcomes

With this information we classified the level of evidence for each program identified through the literature search based on criteria used to consider evidence beyond clinical trials.[45] Each record received a rating of (1) *effective*, (2) *promising*, (3) *potentially promising*, (4) *unclear*, or (5) *ineffective* at addressing suicide and related outcomes. Programs were considered *effective* if there was evidence of effectiveness across at least two randomized control trials that have been done by more than one investigative team. Programs classified as *promising* included programs that showed: a) consistent positive outcomes, but the number of randomized control trials (RCTs) was limited to only one trial; or b) consistent positive outcomes, but only among RCTs done by one investigative team. Programs classified as *potentially promising* included studies without RCTs, but with other less rigorous evaluations (e.g. control group; benchmarking, surveillance) showing consistent positive outcomes and/or programs that were based on known-effective programs in other settings or with other populations. Programs that a) showed inconsistency in results; or b) only included a description of the program, but no outcomes were measured; or c) there was no control/comparison group, were designated as *unclear*. Finally, programs that were considered *ineffective* were those for which more than 2 studies show no positive or harmful outcomes. For each article, we also rated the strength of the outcome variable. We rated outcomes with suicide death or attempts as *strong* (1), suicide ideation or other mental health symptoms as *moderate* (2), and knowledge or attitude outcomes as *weak* (3).

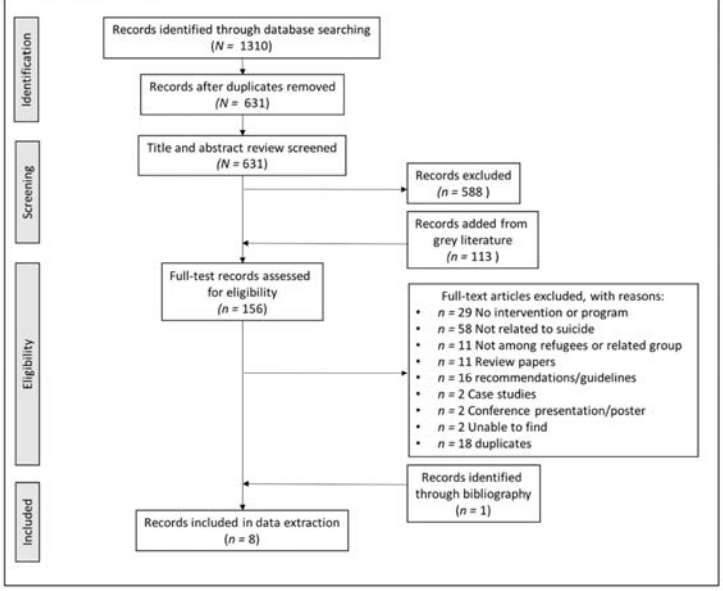
3. Results

Our initial search of the peer-reviewed literature identified *N* = 631 records. Five-hundred eighty-eight of these were excluded based on review of the titles and abstracts as being unrelated to suicide and/or refugees or similar populations. The grey literature search identified *n* = 113 records to be included in the full-text review which resulted in a total of *n* = 156 records for full text review. After full-text review, a total of *n* = 149 records were excluded based on inclusion/exclusion criteria. An additional *n* = 1 record was added based on review of citations in other records. This yielded *n* = 8 records that met full inclusion/exclusion criteria and for which data was extracted (Figure 1).

Articles included in the review are listed in Table 2. Most records were related to either immigrants or resettled refugees, with only two studies specifically focusing on populations still living in displacement. Three records reflected programs implemented in low resource contexts; while the others were implemented in high income settings. Four out of the eight studies were classified as universal or

primary prevention, two as selective/secondary prevention,[46,47] and two as Indicated/tertiary prevention.[48,49]

Figure 1.
PRISMA flow diagram



All except one record[50] were studies that combined two or more prevention strategies, with most focused on training of health workers or other community members/gatekeepers in order to improve identification and assistance to people at risk of suicide.[46-48,50] Another common strategy included awareness raising (*n* = 3 records) to increase help-seeking and identification.[47,50,51] Two articles described interventions specifically targeting individuals following a suicidal act (e.g. self-injurious behaviors, attempts).[48,49] One record included setting up a specific surveillance system to monitor trends and help collect timely and relevant data.[48] Two other records specifically targeted a sub-group of the population that was thought to be more at risk – women of Turkish origin in Europe.[47,48]

Five out of the eight records were classified as having an unclear level of evidence. The lack of clarity was largely attributable to not having a control group, an observational design, or unmeasured outcomes. One record was classified as potentially promising. Aichberger et al. 2015[52] implemented a population based intervention among women of Turkish origin in Berlin, to raise awareness of depression and suicide risk. While no control group was included, the authors used an interrupted time-series design and found that the number of women of Turkish origin with recorded hospital contacts due to suicide attempts dropped significantly following implementation of the campaign.[52] A cognitive behavioral support program delivered by paraprofessionals to refugees from Myanmar resettled in the U.S.,[46] was classified as promising, but outcomes only focused on knowledge and attitudes of providers, rather than on individual level mental health or suicidal behavior outcomes.

The only record to be identified as both *Promising* and with *Strong* outcomes was the Contact and Safety Planning (CASP) intervention designed and evaluated by Vijayakumar et al. 2017. [49] The CASP intervention combined WHO's Brief Intervention and Contact[27] and Safety Planning,[53] and was specifically implemented and evaluated with refugees currently living in displacement. The study used a rigorous design whereby 20 out of 111 refugee camps located in Tamil Nadu were eligible to participate due to having a population of 1,000 or more Sri Lankan refugees. The researchers then randomly

selected one refugee camp to get the intervention and one camp to serve as a control. Prior to intervention delivery, an awareness campaign related to depression and suicide was implemented. This was followed by a household survey in both the intervention and control camps. In each camp, approximately 640 households were randomly surveyed and the intervention was delivered to those at risk of suicide, Major Depressive Disorder (MDD), or Posttraumatic Stress Disorder (PTSD) as identified by standard screeners (i.e. Beck's Scale for Suicidal Ideation; SSI, Center for Epidemiological Studies Depression-Revised; CESD-R, and the Post-Traumatic Stress Checklist; PCL) previously validated in similar populations. The intervention was delivered to those individuals from the household survey who indicated passive/active suicidal ideation or had a history of attempt on the SSI, scored above a 16 on the CESD-R, or scored above 30 on the PCL. Outcomes included deaths by suicide, suicide attempts, combined suicide (deaths and attempts), and symptoms of MDD and PTSD.

Community volunteers (CVs) were recruited and interviewed by staff of an INGO working in the area. CVs were selected based on their interest in the study, empathy skills, and ability to maintain confidentiality. All CVs underwent a 20-hour training program and were provided a monthly honorarium for their serves (~$15 USD). Each CV was allocated eligible individuals who they visited twice a month. During these visits, they worked with the participants to list warning signs, coping strategies, and a list of available support on safety planning cards. After each visit, the CV filled out a short contact form. If the participant was thought to be at imminent risk for suicide, INGO staff ensured necessary care and referrals through a safety protocol that involved referral to the government hospital and consultation by a volunteer professional psychiatrist. In the control camp, posters containing relevant numbers of INGO staff was displayed and those determined to be at risk based on the household survey results were provided a list of local mental health resources. Overall study results indicated significantly lower rates of suicide attempts and combined suicide attempts and deaths in the intervention camp compared to the control camp.[49] While the outcomes from this study are particularly promising, they have yet to be replicated.

Table 2.
Summary of included records, level of evidence, and strength of outcome

Reference	Study population	Description of intervention	Study design	Level of evidence	Strength of outcome
Aichberger et al., 2015	Immigrants	Population based intervention to raise awareness of depression and suicide risk	Quasi-experimental	*Potentially promising*	*Strong*
Buck, 2015	Resettled refugees	Cognitive Behavioral Support delivered by paraprofessionals	Experimental	*Promising*	*Weak*
Burger et al., 2014	Immigrants	Outreach and case-management	Observational	*Unclear*	*Strong*
IMC, 2017	Natural disaster	MhGAP (training and building capacity and reducing stigma of health care workers)	Observational	*Unclear*	*Weak*
Schouler-Ocak, 2014	Immigrants	Public awareness campaign and hotline	Observational	*Unclear*	*Moderate*
Siriwardhana et al. 2013[a]	Refugees	MhGAP (training and building capacity and reducing stigma of health care workers)	Experimental	*Unclear/ Potentially Promising*[a]	*Weak*

Subedi et al. 2015	Resettled refugees	Training health workers and other gatekeepers in Mental Health First Aid	Observational	*Unclear*	*Weak*
Vijayakumar et al. 2017	Refugees	Brief Intervention and Contact and safety planning delivered by community volunteers	Experimental	*Promising*	*Strong*

[a] Protocol paper – full results not published yet.

4. Findings and recommendations

Suicide is a devastating public health problem. Its effects ripple through families and communities, causing suffering, decreases in work productivity and added stress to health systems. We know very little about suicide in refugee populations, particularly for those currently in displacement. The dearth of information is likely due to a lack of relevant and reliable data, limited access to official data, and underreporting of suicidal behaviors due to stigma and political sensitivity.[24] Given the significant burden that suicide and associated behaviors have on refugees and their families, as well as the reduction of suicide as an indicator of the United Nation's Sustainable Development Goals, there is an urgent need for UNHCR to identify promising suicide prevention programs for further development and testing to reduce suicide among refugees, displaced, and other stateless persons. The key findings of this review are outline below, alongside recommendations and implementation strategies to address these findings.

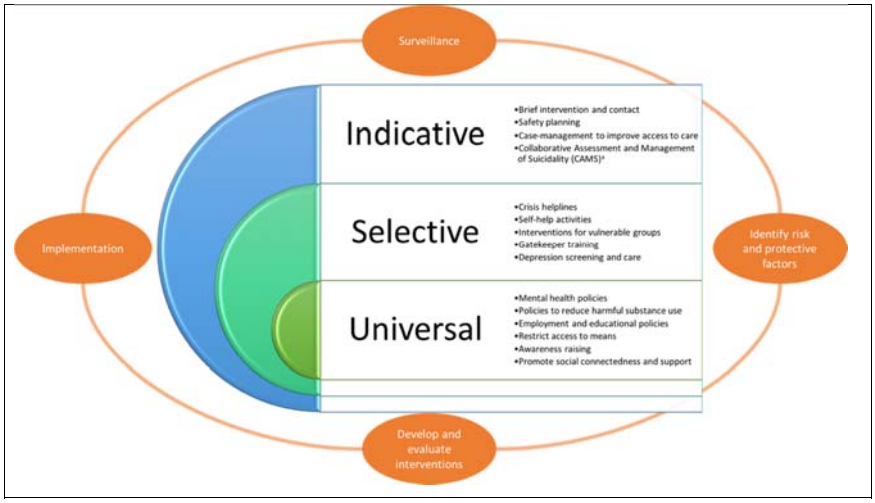
Finding	Key Recommendations	Implementation Strategies
FINDING 1: There are a limited number of suicide prevention or response programs implemented with refugee or displaced populations		
	1. Effective prevention and response programs in other settings or with other populations should be adapted, implemented and evaluated with refugees. 2. UNHCR and other large international organizations that protect and assist refugees and displaced groups should advocate for further suicide prevention research and work to destigmatize suicide among local government representatives.	1. Evaluate the feasibility of evidence-supported brief interventions for use in refugee settings. 2. Train key staff of UNHCR and partners in suicide awareness, prevention and anti-stigma related content in order to advocate to policy makers including local governmental leaders.
FINDING 2: There were few strong study designs for suicide prevention programs in refugee or related groups		
	1. More rigorous designs are needed to better understand the effectiveness of suicide prevention and response programs. 2. Use of best-practice elements of multi-level suicide prevention strategies and evaluation of their effects may be helpful. [1,25]	1. Consider experimental or quasi-experimental designs to evaluate prevention programs. 2. Create a menu of best-practice elements for interventions around suicide that are relevant to refugee settings.
FINDING 3: Outcomes for suicide prevention studies among refugee or related groups tend to be weak		

1. Research and programming should focus on people at risk of suicide (selective and indicative prevention) and measure the impact of programs on suicide related behaviors and risk factors. 2. Data on mortality and suicide related medical care should be routinely collected and made available to better understand the scope of the problem and inform appropriate interventions. 3. Surveillance of suicide and related behaviors should be established in refugee camps and medical care settings, as well as, community settings if possible.	1. Identify methods to identify people at high risk of suicide that can be implemented in refugee settings. 2. Commission a data analysis project on the scope of suicide and related disorders using existing UNHCR data. 3. Generate a plan for how to implement surveillance in refugee settings and pilot it in one or multiple places.
FINDING 4: Most prevention or response programs included multiple components, but few were multi-tiered	
1. A public health model of suicide prevention including surveillance, identifying risk and protective factors, developing appropriate programs, and implementing and evaluating these programs should be used.[2] 2. Programs and strategies should focus on multiple levels of prevention.	1. Identify where suicide prevention responsibility is in field operations, including appointing or creating specific focal points. 2. Focus best-practice elements on multiple levels and emphasize the need to implement multiple strategies and across levels to fully address the issue.

4.1. A Public-health and multi-tiered approach to suicide prevention among refugee populations

Given suicide's complex etiology, it is incumbent upon health agencies to not only think about individual-level risk factors, but also the broader socio-ecological factors that contribute to this problem.[54] This may be particularly true in refugee and displacement contexts, as these populations may have added burden due to circumstances that forced them to flee their homes and living in low-resource settings with limited mental health care.[24] Based on these issues, it is recommended that UNHCR and other agencies take a public health and multi-tiered approached to suicide prevention. A suggested model is displayed in Figure 3. Examples of universal, selective and indicative interventions were taken from systematic reviews and meta-analyses,[25,28] identification of best-practice elements,[1] the United States Substance Abuse and Mental Health Services Administration,[55] and the World Health Organization.[2,4,56] The central idea is that suicide prevention should always take place in the context of a public health approach – meaning that there is ongoing surveillance of suicide through systematic data collection, analysis of this data to identify why suicidal behavior occurs and who is affected, designing and evaluation of interventions based on the best available evidence to see which programs work, and ultimately implementation and scaling up of effective programs and continued monitoring through surveillance. Suicide is a complex problem with many interacting factors that increase risk. Factors change over time and affect people differently, particularly in contexts of ongoing instability and change such as living in displacement. As such, we need ongoing surveillance and the combination of multiple interventions that address individual and contextual factors, to effectively and comprehensively reduce suicide among refugees and other displaced persons worldwide.

Figure 3.
A public health and multi-tiered approach to suicide prevention



4.2. Suggested strategy to evaluate in refugee settings

Based on the evidence gathered from this report and using a public health and multi-tiered approach to suicide prevention, we would recommend evaluating a program that incorporates 1) surveillance at the health system and community level; 2) awareness raising and gatekeeper training; 3) health-system based suicide risk screening; and 4) brief intervention and contact that provides safety planning, connections to care and gathers more information about potential suicide events (i.e. risk and protective factors). In 2018, UNHCR added the ability to collect data on deaths by suicide, and suicide attempt and self-harm into the Refugee Health System. This will serve as a critical first step in surveillance. Gatekeepers at community based organizations would be trained and then could report people at risk, or who attempt or die this central registry system furthering the reach of surveillance outside of a health care system. In terms of screening, despite recent evidence suggesting low positive predictive value for suicide risk screeners,[57,58] given the gravity of the issue, we would still recommend instituting either a depression screener with specific probes for those that report suicide ideation (e.g. do you have a plan, have you attempted suicide before) or an established suicide risk screening tool such as the Columbia-Suicide Severity Rating Scale.[59] Screening could take place during primary care or emergency room visits. All people that screen positive should be reported to the same central registry.
Anybody who is reported to the central registry (via Refugee Health System, Gatekeepers, or after screening positive), would be followed-up with by a community health worker or nurse to gather more information, safety plan, and provide referrals. The data gathered at these follow-up visits could help aid in development of more specific interventions targeting groups at risk. Combined this suggested approach, would allow for a comprehensive understanding of the scope of the problem through surveillance, increased awareness and de-stigmatization, and contact and connection for those most at risk.

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#2 an d 4 (you probably just need to add a comma after Organization in your Endnote library.
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APPENDIX A. FULL PEER-REVIEWED LITERATURE SEARCH STRATEGY

Total Results: 1310
Number of Duplicates: 680
Number of Unique Results: 630

Requestor: Haroz

PubMed 11/28/2017 192 results

(“suicide”[tw] OR “suicidal”[tw] OR “suicidality”[tw] OR “psychiatric morbidity”[tw] OR “self harm”[tw] OR “self-harm”[tw] OR “parasuicide”[tw] OR "Suicide"[Mesh] OR "Suicidal Ideation"[Mesh] OR "Suicide, Assisted"[Mesh] OR "Suicide, Attempted"[Mesh]) AND
(“health education”[tw] OR "Health Education"[Mesh] OR "Health Promotion"[Mesh] OR “promotion”[tw] OR “screen”[tw] OR “screened”[tw] OR “screening”[tw] OR “screenings”[tw] OR "Mass Screening"[Mesh] OR "Education"[Mesh] OR “education”[tw] OR “educate”[tw] OR “teach”[tw] OR “teaching”[tw] OR “train”[tw] OR “training”[tw] OR "Delivery of Health Care"[Mesh] OR “delivery of health care”[tw] OR “health system”[tw] OR “health systems”[tw] OR “healthcare delivery”[tw] OR “health care delivery”[tw] OR “health care systems”[tw] OR “health care system”[tw] OR “healthcare systems”[tw] OR “healthcare system”[tw] OR “school based”[tw] OR “school-based”[tw] OR “means restriction”[tw] OR “school”[tw] OR “schools”[tw] OR “school-based”[tw] OR "Mass Media"[Mesh] OR "media"[tw] OR “intervention”[tw] OR “interventions”[tw] OR “strategy”[tw] OR “strategies”[tw] OR “method”[tw] OR “methods”[tw] OR “response”[tw] OR “responses”[tw] OR “responsive”[tw] OR “firearms”[tw] OR “guns” OR "Firearms"[Mesh] OR "Drug Overdose"[Mesh] OR “overdose”[tw] OR “poison”[tw] OR “brief contact”[tw] OR “caring postcard”[tw] OR “caring postcards”[tw] OR “reduction”[tw] OR "Poisons"[Mesh] OR "Harm Reduction"[Mesh] OR "Risk Reduction Behavior"[Mesh] OR "Population Surveillance"[Mesh] OR "surveillance"[tw] OR "Problem Solving"[Mesh] OR “problem solving”[tw] OR “problem-solving”[tw] OR “solution”[tw] OR “solutions”[tw] OR “resolution”[tw] OR “resolutions”[tw] OR "Attitude to Health"[Mesh] OR “health attitude”[tw] OR “health attitudes”[tw] OR “attitude to health”[tw] OR "Recognition (Psychology)"[Mesh] OR “recognition”[tw] OR "Awareness"[Mesh] OR “awareness”[tw] OR “awareness-raising”[tw]) AND ("Refugees"[Mesh] OR "refugee"[tw] OR "refugees"[tw] OR "asylum"[tw] OR "asylums"[tw] OR "displaced"[tw] OR "displacement"[tw] OR "forced migrant"[tw] OR "forced migrants"[tw] OR "forced migration"[tw])

Embase 12/4/2017 340 results

('suicide'/exp OR 'suicide' OR 'parasuicide' OR 'suicidal' OR 'suicidality' OR 'psychiatric morbidity' OR 'self harm' OR 'self-harm') AND ('health education'/exp OR 'health education' OR 'health promotion'/exp OR 'promotion' OR 'screening'/exp OR 'screen*' OR 'mass screening' OR 'education'/exp OR 'educat*' OR 'teach*' OR 'train*' OR 'delivery of health care' OR 'health care delivery'/exp OR ‘health system*’ OR ‘healthcare delivery’ OR ‘health care delivery’ OR ‘health care system*’ OR ‘healthcare system*’ OR ‘school based’ OR ‘school-based’ OR ‘means restriction’ OR ‘school*’ OR 'school'/exp OR 'mass medium'/exp OR 'media' OR ‘intervention*’ OR ‘strategy’ OR ‘strategies’ OR ‘method*’ OR ‘response*’ OR ‘responsive’ OR 'firearm'/exp OR 'firearm*' OR 'gun*' OR 'drug overdose'/exp OR ‘overdose’ OR 'poison'/exp OR ‘poison*’ OR ‘brief contact’ OR ‘caring postcard*’ OR ‘reduction’ OR 'harm reduction'/exp OR 'risk reduction'/exp OR ‘risk reduction behavior’ OR 'health survey'/exp OR

‘surveillance’ OR ‘problem solving’ OR ‘problem-solving’ OR 'problem solving'/exp OR ‘solutions*’ OR ‘resolution*’ OR 'attitude to health'/exp OR ‘health attitude*’ OR ‘attitude to health’ OR 'recognition'/exp OR ‘recognition’ OR 'awareness'/exp OR ‘awareness’ OR ‘awareness-raising’) AND ('refugee'/exp OR ‘refugee*’ OR ‘asylum’ OR ‘forced migrant*’ OR ‘forced migration’ OR ‘displaced’ OR ‘displacement’)

Cochrane 12/5/2018 43 results

ID Search Hits
#1 MeSH descriptor: [Suicide] explode all trees 804
#2 parasuicide or "self harm" or self-harm or "psychiatric morbidity" or "suicide" or "suicidal" or "suicidality" 4380
#3 MeSH descriptor: [Suicidal Ideation] explode all trees 201
#4 MeSH descriptor: [Suicide, Assisted] explode all trees 1
#5 MeSH descriptor: [Suicide, Attempted] explode all trees 329
#6 #1 or #2 or #3 or #4 or #5 4380
#7 ("health education" or "promotion" or "screen" or "screened" or "screening" or "screenings" or "education" or "educate" or "teach" or "teaching" or "train" or "training" or "delivery of health care" or "health system" or "health systems" or "healthcare delivery" or "health care delivery" or "health care systems" or "health care system" or "healthcare systems" or "healthcare system" or "school based" or "school-based" or "means restriction" or "school" or "schools" or "school-based" or "media" or "intervention" or "interventions" or "strategy" or "strategies" or "method" or "methods" or "response" or "responses" or "responsive" or "firearms" or "guns" or "overdose" or "poison" or "brief contact" or "caring postcard" or "caring postcards" or "reduction" or "surveillance" or "problem solving" or "problem-solving" or "solution" or "solutions" or "resolution" or "resolutions" or "health attitude" or "health attitudes" or "attitude to health" or "recognition" or "awareness" or "awareness-raising") 802147
#8 MeSH descriptor: [Health Education] explode all trees 12597
#9 MeSH descriptor: [Health Promotion] explode all trees 5828
#10 MeSH descriptor: [Mass Screening] explode all trees 5730
#11 MeSH descriptor: [Education] explode all trees 24613
#12 MeSH descriptor: [Delivery of Health Care] explode all trees 47273
#13 MeSH descriptor: [Mass Media] explode all trees 1764
#14 MeSH descriptor: [Firearms] explode all trees 45
#15 MeSH descriptor: [Drug Overdose] explode all trees 94
#16 MeSH descriptor: [Poisons] explode all trees 31
#17 MeSH descriptor: [Harm Reduction] explode all trees 117
#18 MeSH descriptor: [Risk Reduction Behavior] explode all trees 1629
#19 MeSH descriptor: [Population Surveillance] explode all trees 760
#20 MeSH descriptor: [Attitude to Health] explode all trees 32841
#21 MeSH descriptor: [Recognition (Psychology)] explode all trees 733
#22 MeSH descriptor: [Awareness] explode all trees 927
#23 #7 or #8 or #9 or #10 or #11 or #12 or #13 or #14 or #15 or #16 or #17 or #18 or #19 or #20 or #21 or #22 806571
#24 refugee or refugees or displace or displacement or "forced migrant" or "forced migrants" or "forced migration" or asylum or asylums 3646

#25 #6 and #23 and #24 43

Scopus 12/4/2017 319 results

TITLE-ABS-KEY ("suicide" OR "suicidal" OR "suicidality" OR "psychiatric morbidity" OR "self harm" OR "self-harm" OR "parasuicide")

TITLE-ABS-KEY (“health education” OR “promotion” OR “screen*” OR “educat*” OR “teach*” OR “train*” OR "Delivery of Health Care" OR “health system*” OR “healthcare delivery” OR “health care delivery” OR “health care system*” OR “healthcare system*” OR “school based” OR “school-based” OR “means restriction” OR “school*” OR "media" OR “intervention*” OR “strategy” OR “strategies” OR “method*” OR “response*” OR “responsive” OR “firearms” OR “guns” OR “overdose” OR “poison*” OR “brief contact” OR “caring postcard*” OR “reduction” OR "Harm Reduction" OR "Risk Reduction Behavior" OR "surveillance" OR “problem solving” OR “problem-solving” OR “solution*” OR “resolution*” OR "Attitude to Health" OR “health attitude*” OR "Recognition" OR “awareness” OR “awareness-raising”)

TITLE-ABS-KEY ("Refugee*" OR "asylum*" OR "displace*" OR "forced migrant*" OR "forced migration")

Web of Science 12/4/2017 237 results

TS=("suicide" OR "suicidal" OR "suicidality" OR "psychiatric morbidity" OR "self harm" OR "self-harm" OR "parasuicide")

TS=(“health education” OR “promotion” OR “screen*” OR “educat*” OR “teach*” OR “train*” OR "Delivery of Health Care" OR “health system*” OR “healthcare delivery” OR “health care delivery” OR “health care system*” OR “healthcare system*” OR “school based” OR “school-based” OR “means restriction” OR “school*” OR "media" OR “intervention*” OR “strategy” OR “strategies” OR “method*” OR “response*” OR “responsive” OR “firearms” OR “guns” OR “overdose” OR “poison*” OR “brief contact” OR “caring postcard*” OR “reduction” OR "Harm Reduction" OR "Risk Reduction Behavior" OR "surveillance" OR “problem solving” OR “problem-solving” OR “solution*” OR “resolution*” OR "Attitude to Health" OR “health attitude*” OR "Recognition" OR “awareness” OR “awareness-raising”)

TS=("Refugee*" OR "asylum*" OR "displace*" OR "forced migrant*" OR "forced migration")

PsycINFO 12/4/2017 141 results

((DE "Suicide") OR (DE "Attempted Suicide") OR (DE "Suicidal Ideation") OR “suicidal” OR “parasuicide” OR “psychiatric morbidity” OR “self harm” OR “self-harm” OR “suicidality”) AND (DE "Health Education" OR “health education” OR DE "Drug Education" OR DE "Health Knowledge" OR DE "Health Promotion" OR “promotion” OR DE "Psychoeducation" OR DE "Prevention" OR DE "Drug Abuse Prevention" OR DE "Suicide Prevention" OR DE "Education" OR “educat*” OR DE "Health Attitudes" OR “health attitude*” OR “attitude* to health” OR DE "Recognition (Learning)" OR “recognition” OR DE "Awareness" OR “awareness” OR “awareness-raising” OR DE "Problem Solving" OR “problem solving” OR DE "Risk Management" OR “risk reduction behavior” OR “problem-solving” OR “problem solving” OR “surveillance” OR “solution*” OR “resolution*” OR DE "Harm Reduction" OR “harm reduction” OR “reduction” OR “caring postcard*” OR “brief contact” OR “poison*” OR “overdose” OR DE "Firearms" OR “firearms” OR “guns” OR “response*” OR “responsive” OR “strategy” OR “strategies” OR “method*” OR

DE "Crisis Intervention" OR DE "Intervention" OR “intervention*” OR DE "School Based Intervention" OR “school based” OR “school-based” OR DE "Schools" OR “school*” OR DE "Communications Media" OR DE "Mass Media" OR “media” OR “means restriction” OR DE "Screening" OR “screen*” OR DE "Training" OR “train*” OR “teach*” OR DE "Health Care Delivery" OR “delivery of health care” OR DE "Mental Health Programs" OR DE "Crisis Intervention Services" OR DE "Suicide Prevention Centers" OR DE "Suicide Prevention Centers" OR DE "Community Mental Health" OR DE "Community Mental Health Services" OR DE "Community Counseling" OR DE "Community Mental Health Training" OR DE "Mental Health Services" OR DE "Community Mental Health Services" OR “health system*” OR “healthcare delivery” OR “health care delivery” OR “health care system*” OR “healthcare system*”) AND (DE "Refugees" OR DE "Asylum Seeking" OR “refugee*” OR “asylum” OR “forced migrant*” OR “forced migration” OR “displace*”)

Global Health (OVID) 38 results 12/5/2017

(suicide or suicidal or suicidality or psychiatric morbidity or parasuicide or self harm or self-harm).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]

refugee.mp. or refugees/ or forced migrant.mp. or forced migrants.mp. or forced migration.mp. or displace.mp. or displaced.mp. or displacement.mp. or asylum.mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]

(health education or promotion or screened or screen or screening or educate or education or teach or teaching or train or training or Delivery of Health Care or health system or health systems or healthcare delivery or health care delivery or health care system or health care systems or healthcare system or healthcare systems or school based or school-based or means restriction or school or schools or media or intervention or interventions or strategy or strategies or method or methods or response or responses or responsive or firearms or guns or overdose or poison or poisons or poisonous or brief contact or caring postcard or reduction or Harm Reduction or Risk Reduction Behavior or surveillance or problem solving or problem-solving or solution or solutions or resolution or resolutions or Attitude to Health or health attitude or health attitudes or Recognition or awareness or awareness-raising).mp. [mp=abstract, title, original title, broad terms, heading words, identifiers, cabicodes]

APPENDIX B. RESULTS OF GREY LITERATURE SEARCH

Intergovernmental organizations (IGOs) and Nongovernmental Organizations (NGOs)

NGO/IGO	Website	Date	Search Length (Minutes)	Number of Articles/Reports
United Nation's High Commission on Refugees (UNHCR)	http://www.unhcr.org/	12/3/2017	45	20
World Health Organization (WHO)	http://www.who.int/en/	12/3/2017	30	20
Cooperative for Assistance and Relief Everywhere (CARE)	http://www.care.org/	12/9/2017	30	0
Inter-Agency Standing Committee (IASC)	https://interagencystandingcommittee.org/	12/9/2017	30	14
International Committee of the Red Cross (ICRC)	https://www.icrc.org/en	12/10/2017	30	2
International Medical Corps (IMC)	https://internationalmedicalcorps.org/	12/10/2017	30	15
International Organization for Migration (IOM)	https://www.iom.int/	12/11/2017	30	10
Medécins Sans Frontières (MSF)	http://www.doctorswithoutborders.org/	1/4/2018	39	6
Save the Children	http://www.savethechildren.org/site/c.8rKLIXMGIpI4E/b.6115947/k.B143/Official_USA_Site.htm	1/4/2017	30	2
Terre des Hommes	http://www.terredeshommes.org/	1/2/2017	32	3
United Nations Children's Fund (UNICEF)	https://www.unicef.org/	1/4/2018	53	18

Department of Health Websites for the Top 10 Refugee Hosting Countries

Country	Website	Date	Search Length (Minutes)	Number of Articles/Reports
Jordan	http://www.moh.gov.jo/head_page.htm	11/22/2017	30	1
Turkey	http://www.saglik.gov.tr/	1/3/2018	--	--
Pakistan	http://www.nhsrc.gov.pk/	1/3/2018	30	0
Lebanon	https://www.moph.gov.lb/	1/3/2018	30	5
Iran	http://www.behdasht.gov.ir/page/%D8%AF%D8%B1%D8%A8%D8%A7%D8%B1%D9%87+%D9%85%D8%A7	1/3/2018	25	0
Ethiopia	http://www.moh.gov.et	1/3/2018	--	--
Kenya	http://www.health.go.ke/	1/10/2018	30	1
Uganda	http://health.go.ug/	1/3/2018	30	4
Democratic Republic of the Congo (DRC)	http://www.minisanterdc.cd/new/index.php	1/3/2018	15	0
Chad	https://www.sante-tchad.org/	1/3/2018	16	0

National Statistics Websites for Top 10 Refugee Hosting Countries

Country	Website	Date	Search Length (Minutes)	Number of Articles/Reports
Jordan	http://dosweb.dos.gov.jo/	1/3/2018	14	0
Turkey	http://www.turkstat.gov.tr/Start.do	1/3/2018	25	1
Pakistan	http://www.pbs.gov.pk/	1/3/2018	20	1
Lebanon	http://www.cas.gov.lb/	1/3/2018	15	0
Iran	https://www.amar.org.ir/english	1/3/2018	10	0
Ethiopia	http://www.csa.gov.et/	1/3/2018	10	0
Kenya	https://www.knbs.or.ke/	1/3/2018	10	0
Uganda	http://www.ubos.org/	1/3/2018	15	0
Democratic Republic of the Congo (DRC)	http://www.ins-rdc.org/	1/4/2018	10	0
Chad	http://www.inseedtchad.com/	1/4/2018	10	0