



# Food security and nutrition in refugee camps in the European Union: Development of a framework of analysis linking causes and effects

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## Abstract

The literature on food security and nutrition -FSN among refugees found high rates of food insecurity- FI among refugees in both, low- and middle-income - LMIC countries and high-income countries- HIC. Despite high rates of FI among refugees in HIC, little is known about FSN status of refugees and asylum-seekers living in refugee camps in the European Union- EU. This paper addresses this knowledge gap by reviewing issues related to the Food Security and Nutrition-FSN of refugees in the EU and worldwide and provides three main contributions to the existing knowledge. Firstly, it identifies the main drivers of FSN in a refugee context and offer a causal framework describing the main causes and effects of FNI in refugee camps. The immediate causes of FNI are poor Shelter and Settlement, Water, Sanitation and Hygiene and Healthcare. Moreover, secondary causes of FNI are the lack of adaptation to a new environment; Lack of culturally adapted food; Inadequate FSN interventions; Poor livelihood strategies. Secondly, it demonstrates that FNI exists in European refugee camps underscoring that EU member states have been unable to deliver sustainable solutions towards the realization of FSN in the E.U. Finally, the paper calls for a multisectoral and non-discriminatory European common policy targeting refugees' FSN.

**Keywords** Food security and nutrition · Food policy · Refugees · Refugee camp · Asylum seekers

## 1 Background

Global human forced displacement is at record levels. At the end of 2020 there were nearly 26.4 million refugees and 4.1 million asylum-seekers worldwide (UNHCR. Operational Data Portal, 2022).

The 1951 Refugee Convention (United Nations High Commissioner for Refugees - UNHCR, 1951) defines a refugee as someone that cannot be in their country of origin due to a well-founded fear of persecution for race, religion, nationality or political opinion. Harrell-Bond and Voutira (1992) goes beyond legal definitions by affirming

that refugees are individuals that faced a violent break and “*unless or until*” they are integrated into the asylum country they find themselves in a limbo. Refugees are in a “*betwixt and between*” point in the space time of cultural classifications (Turner, 1969). This ‘betwixt and between’ could refer to legal, psychological, social, and economic aspects (Harrell-Bond & Voutira, 1992).

As new global economic, social, political, and environmental settings pose new challenges in the current geopolitical scenario, forced migration is expected to keep increasing. Related to it is the Food Security and Nutrition– FSN crises in refugee camps. Refugees are highly vulnerable to FNI. The World Food Program (2017) found links between forced migration and higher levels of food insecurity- FI as migration itself is seen as a driver of FI.

The experience of FNI among forcibly displaced people is molded by a complex interaction of multiple political, economic, cultural, environmental, and social factors (Pottier, 1999). A common issue related to FNI among refugees in the process of acculturation. Studies found that refugees living in HIC often change their food patterns to a more western diet, leading to increased consumption of processed foods, and a diminished consumption of fresh and nutritious foods. (Bhatta

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et al., 2014) leading to obesity thus raising FNI in this context (Careyva et al., 2015).

The presence of a low food variety diet is also seen as a driver of FNI in emergency scenarios (Hoddinott & Yohannes, 2000) The failure of individuals to access the adequate amount and variety of food for a healthy life does not affect only FNI, it also encompasses various elements of poverty. Moreover, the lack of integration of refugees into food systems and society is another relevant indicator of FNI in the forced displacement context (Voss et al., 2002).

FSN among refugees is also worsened by language barriers, social or cultural food preferences, lack of financial resources, and limited information about existing resources and services and lack of access to ethnic shops (Carney & Krause, 2020).

The location where refugees are settled can also be seen as an important indicator of FNI. Refugees will face different challenges, depending on where they are settled. For instance, Syrian refugees settled in Jordan might face worse economic, hygiene, and security conditions compared to refugees settled in Germany. On the other hand, the process of food acculturation, access to ethnic food, language barriers are more likely to affect Syrian refugees in Germany.

It is a common mistake to assume that FNI is an issue exclusive to refugees settled in LMIC. In fact, studies found similar rates of FNI among refugees in both HIC and LMIC. Vieira Guerra et al. (2019) found that 50% of refugee households in Canada were food insecure. Likewise in Lebanon, where 50% of Syrian refugees were reported to be food insecure. Similar results were found by Mansour et al. (2020) that reported food insecurity rates ranging from 40 to 71% in refugees in the U.S.A. Likewise, in Australia, part of the refugee population was also found to be food insecure (Lawlis et al., 2018).

Despite the high rates of FNI found among refugees in HIC, still very little is known about FSN status of refugees and asylum-seekers in the E.U. This fact is worrying. FNI rates among refugees in certain EU countries could be worse than in other countries as many refugees in the E.U still live in refugee camps. States such as Greece (and others) still have various refugee camps or “reception centres” across the country and the condition of these facilities have been strongly criticized by the literature (Gordon et al., 2021; Kandyliis, 2019; Tsavdaroglou et al., 2020).

Moreover, EU countries, have seen the numbers of asylum applications substantially increase. FRA - European Union Agency for Fundamental Rights (2015) estimates that around 1 million refugees arrived in the E.U in 2015 running from conflicts in Syria, Afghanistan and Iraq, this event having been referred to as the “Europe refugee crisis”. More recently, within the context of the Ukrainian war, over 7 million individuals were estimated to have fled to neighboring countries in Europe (UNHCR, 2022). The current number

of Ukrainian refugees who have fled to the E.U is already five times superior to the aforementioned “Europe refugee crisis” of 2014–2015. Notably, Ukrainian asylum seekers in EU countries receive a different reception, benefitting from a Temporary Protection Directive that grants them the ability to work, study, and live in a country without the need for official asylum approval. (European Commission, 2023).

The media, international organizations, and civil society have highlighted challenging conditions, including incidents of FNI in EU refugee camps. However, such reports lack scientific evidence to back them up. Therefore, this study seeks to examine what has been published in the scientific and grey literature about food security in refugee camps, asylum-centers, and reception centers in the EU while comparing it with the broader understanding of FNI among refugees worldwide. The main objective is to shed light on the food security and nutrition (FSN) status of asylum-seekers and refugees in the EU and identify possible drivers of FI in this context, thereby providing a conceptual framework to summarize the key challenges reported and guide future research in this area.

## 2 Method

The methodology employed a three-step process.

The first step involved a two-stage systematic review to investigate FSN among refugees on a global scale and in EU camps. This approach allowed for the synthesis of information on FSN status in EU camps with the available knowledge on FSN among refugees worldwide. The first stage of the review aimed to identify the major causes of FNI in the refugee context, while the second stage sought to explore existing knowledge on FSN in refugee camps within the EU.

In the second step, the key findings from the two-stage review were clustered. This allowed for a more efficient analysis of the information gathered and facilitated the identification of common themes across the literature.

Lastly, a framework was developed to describe the major literature findings and establish connections between the causes and effects of FSN among refugees. This framework provided a comprehensive understanding of the FSN situation among refugees and helped to identify potential areas for intervention. The subsequent section of the study provides a more detailed discussion of these processes.

### 2.1 Two stages systematic review FSN in refugee camps

#### 2.1.1 Stage 1. Review of refugee’s food security

Herein, a systematic review on reviews of FSN among refugees and asylum seekers worldwide was sufficient to reach

the research objectives. The review followed the PRISMA guidelines (Page et al., 2021). The search was carried out in all databases of Web of Science Core Collection, including Web of Science Core Collection, Current Contents Connect, Data Citation Index, MEDLINE, Russian Science Citation Index, SciELO Citation index in 11/06/2022. Table 1 presents the full search strategy, including terms, filter and limits used.

The terms and filters were selected to include only reviews on refugee's FS, published between 1st of January of 2008 and 01 of June of 2022. The eligibility criteria have been selected in accordance with the SPIDER. The Scope (S) of the review is the FS of asylum seekers and refugees in the world. The Phenomenon of Interest (PI) is refugees living in urban areas or camps. For the study design (D) only reviews were included and for Evaluation (E) no criteria was selected. Finally, for the Research(R) types only systematic and scoping reviews were included.

The results were downloaded to an Excel sheet and reviewed by the first author to exclude duplicate studies. Both authors then screened the remaining results and collaborated to determine the exclusion criteria and whether each paper met the inclusion criteria. Papers were excluded based on the following criteria: a) publication date prior to 2008, b) lack of relevance to food security and nutrition among refugees, and c) not being review papers.

### 2.1.2 Review on FSN in refugee camps in the E.U.

The review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (Page et al., 2021). The search was carried out in all databases of Web of Science Core Collection in 11/06/2022. Table 2 presents the full search strategy, including terms, filter and limits used. The terms were selected to include only studies placed in E.U camps and to encompass all aspects related to food. Only studies published between 1st of January of 2008 and 01 of June of 2022 were included. The year of 2008 was selected as a starting point to encompass papers published just before and after the Arab Spring.

The eligibility criteria have been selected in accordance with the SPIDER tool (Cooke et al., 2012). The scope (S) of this review encompasses studies investigating issues related to food and refugees/ asylum-seekers in the E.U camps. The Phenomenon of Interest (PI) is refugees and asylum seekers living in the E.U camps. To broaden the search findings no specific study design (D) and Evaluation (E) was selected.

Mix methods, Qualitative and quantitative research types (R) were included.

Similarly, to the first stage, results were download to an excel sheet. The first author screened each record, excluding the duplicates and studies placed outside of EU camps. The results retrieved were screened by both authors that worked together to decide the exclusion criteria and whether each paper matched the inclusion criteria. The method to decide whether a result met the inclusion criteria of the review was selected to portrait only dimensions related to FSN in refugee camps, but not necessarily mentioning the term FSN. Results were excluded according to the following criteria: a) study setting outside of E.U countries, b) Migrants not living in refugee camps (or reception centers of any kind), c) no mention of food, eating habits or nutrition.

Regarding gray literature, the searched for documents was carried out in Key websites for refugee reports and documents, namely: ECRE – European Council on Refugees and Exiles, Refugee Studies Centre (RSC), Human Rights Watch (HRW), Internal Displacement Monitoring Centre (IDMC), Migration Oxford, UNHCR collection of refugee databases and International Migrant Institute, Relief Web and Ref-world platforms, within the timeframe of 2015–2022 (To match the beginning of refugee crisis).

### 2.1.3 Clustering

To organize the findings and make better sense of the data, the main discoveries of each paper and documents were clustered according to the four technical chapters of the Sphere Handbook (Sphere Association, 2018) and an additional cluster named public policy and law.

Sphere Association (2018) is pragmatic guidance to support humanitarian staff wherever they work. It is the result of a diverse and far-reaching consultation of 190 organizations from national, local and international NGOs, national authorities and ministries, Red Cross and Red Crescent societies, universities, UN organizations and individual practitioners. The choice for the Sphere Handbook (Sphere Association, 2018) is explained by the following reasons: 1) The Sphere project is the oldest initiative in the field of humanitarian standards. 2) Its guidelines have been field tested over 20 years and the book is constantly updated 3) It has a right based foundation 4) It is designed based on large and diverse sector-wide consultations such as individuals, non-governmental organizations (NGOs), governments and United Nations agencies.

**Table 1** Searching criteria on Web of Science (Clarivate Analytics. It displays the search strategy, including keywords, limits and terms)

Keywords		Keywords		Keywords	Filter
Food-Security OR Nutrition	AND	Review	AND	Refugees	Timeline 1st of January of 2008 and 01 of June of 2022. Only reviews included.

**Table 2** Searching criteria on Web of Science (Clarivate Analytics). It displays the search strategy, including keywords, limits and terms)

Keywords	Keywords	Filter
Austria OR Belgium OR Bulgaria OR Croatia OR Cyprus OR Czech-Republic OR Denmark OR Estonia OR Finland OR France OR Germany OR Greece OR Hungary OR Ireland OR Italy OR Latvia OR Lithuania OR Luxembourg OR Malta OR Netherlands OR Poland OR Portugal OR Romania OR Slovakia OR Slovenia OR Spain OR Sweden OR Europe	AND Refugee-camp OR Asylum-centre OR Refugee-centre Or Reception-centre Or Camp-like OR refugee	Timeline 1st of January of 2008 and 01 of June of 2022
	AND Food-security OR food-assistance OR nutrition OR Food-program OR food-ways OR food	

The results will be discussed in the following categories: Water Supply, Sanitation and Hygiene Promotion; Food security and Nutrition (The FSN category are divided into six subcategories, namely: Assessments, management of malnutrition, Micro-nutrient deficiencies, Infant and young child feeding, food security, food assistance and livelihoods); Shelter and Settlement (Shelter and Settlement is divided into the following categories: Planning, location and living space; household items; and security of tenure; environmental sustainability), Essential Healthcare and Public Policies and Law.

As FSN is a multidimensional and multifactorial phenomenon and successful FSN interventions should work with WASH, shelter and settlement, and healthcare responses in a coordinated approach, it makes sense analyze findings not only related specifically to FSN but also to issues that contribute to it. Furthermore, when analyzing the results, it was evident that many of the documents and papers focused on how policies and law affects food. Hence, the need a fifth category.

## 2.2 Development of a framework

Finally, based on the analysis of the content of both reviews, a conceptual framework describing linkages and causes of food and nutrition insecurity among refugees in the E.U was designed. The framework is displayed in the form of a problem tree which is an adequate tool for identifying, prioritizing, and visualizing problems in an initial step in policy analysis (Vesely, 2008).

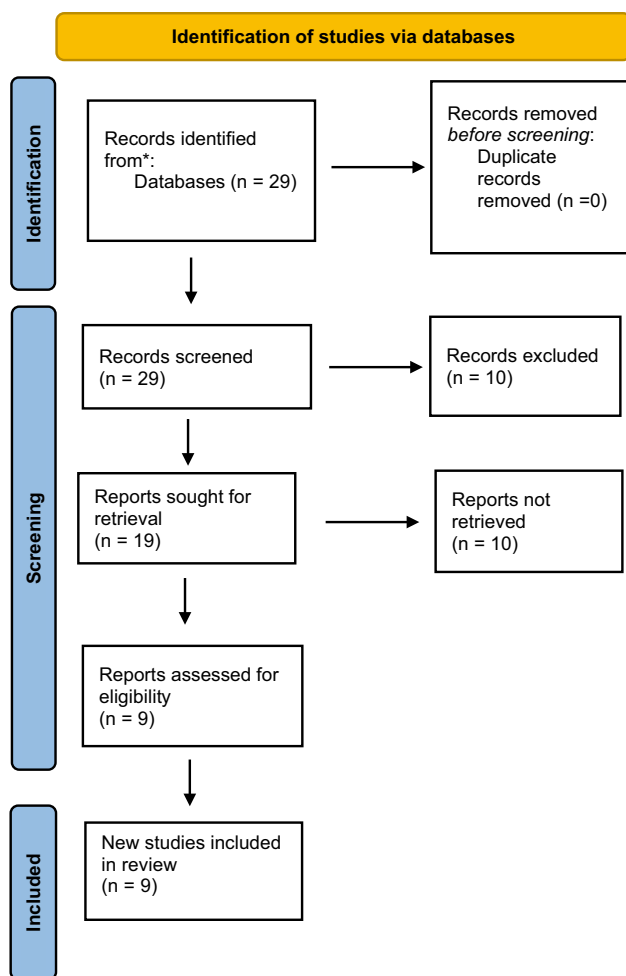
## 3 Results

### 3.1 Placing FSN in the refugee's literature

#### 3.1.1 Results from the review on refugee's FSN globally

Out of the 29 papers initially screened, 10 were excluded due to not meeting the inclusion criteria for reviewing food security and nutrition among refugees. Additionally, 10 studies were excluded after full-text assessment, resulting in a total of 9 papers included in the review. Figure 1 provides a summary of the findings and exclusion criteria.

All the included studies were published from 2017 onwards. Most of the papers were systematic reviews that followed the PRISMA guidelines (6), while some used scoping reviews (2) and snowball methods (1). The studies were published in various fields, including health (3), nutrition (4), and energy and fuel (2) related journals. The most popular keywords were related to food security, food insecurity, refugees, asylum seekers, reviews, cooking technologies, and nutritional status.



**Fig. 1** Flow chart depicting the inclusion and exclusion of papers following the PRISMA guideline. A total of 9 search results were identified using the search combination

Regarding the country of study, most of the reviews targeted refugees worldwide (5). However, 3 papers analyzed refugees in high-income countries (HICs) such as the USA, Canada, Norway, and Australia, while 1 paper targeted refugees in low- and middle-income countries (LMICs) in sub-Saharan Africa and the Middle East.

Regarding research topics, three papers reviewed food security interventions and implications among diverse refugee populations, two papers reviewed cooking technologies in camps, and three papers assessed drivers of food insecurity among the refugee population.

### 3.1.2 Findings from the peer-review literature on refugee camps in the E.U.

A total of 2,733 search results were identified, but after removing duplicate papers, 2,223 results remained. Out of these, 431 papers that referred to refugee camps in Europe

were screened, and 17 papers were found to be linked to food security and refugees and selected for full assessment. Finally, 11 studies fully matched the inclusion criteria and were included in the review. Additionally, 7 papers were included based on the references of the papers found with the search criteria. In terms of gray literature, 19 documents matched the inclusion criteria. In total, 18 papers and 19 documents were included in the review. Figure 2 provides a summary of the findings and exclusion criteria.

Among the 18 papers found, the field of study that appears most often is Public, Environmental and Occupational Health, followed by Demography and migration (as shown in Fig. 3). Greece is the E.U country that was most studied, followed by France, as displayed in Fig. 4. Regarding the year of publication, five papers were published in 2018 and four in 2021.

Regarding research topics, 6 papers were found that relate to refugees' health, 6 papers referring to refugees' nutritional status, 5 about reception conditions and accommodation, targeting refugee women and 1 about eating practices.

In terms of methods, six of the papers employed interviews as their primary assessment tool. Field observation, using techniques such as direct observation, ethnography, and autoethnography, was utilized in three of the papers. Three papers also utilized questionnaires and surveys as assessment tools. Additionally, anthropometric parameters as recommended by the World Health Organization (WHO) were used to evaluate nutritional status in three of the papers.

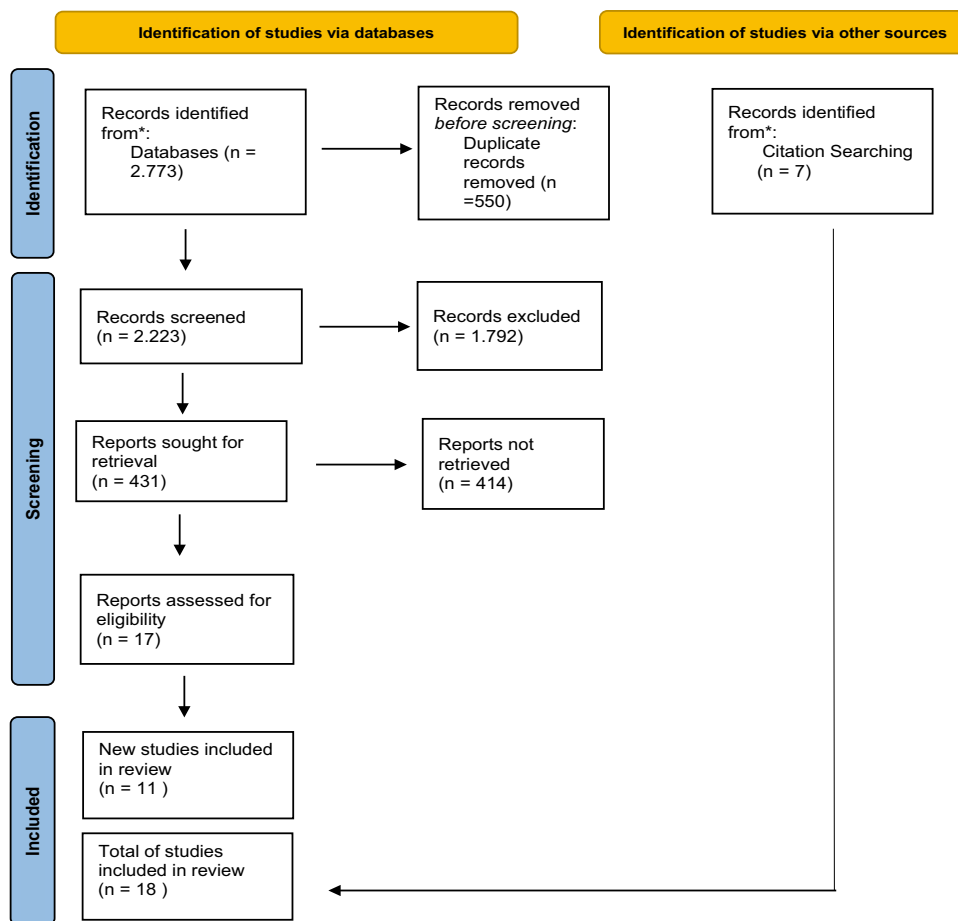
Various limitations were identified in the included research, such as the lack or presence of interpreters and the need for validity measures. Other limitations included the absence of identification cards for participants, the lack of etiological factors, the lack of knowledge about the duration of refugee stay, non-random sampling and the lack of laboratory tests, risks associated with self-reported questionnaires, and the lack of control groups.

The keywords used in the papers reflected their research topics, with a focus on health conditions and nutritional status. There were also common keywords related to social exclusion, such as displacement, abandonment, exclusion, violence, and isolation. Additionally, words such as refugee, asylum seekers, and migrants were prevalent in most of the papers, along with terms referring to accommodation, such as refugee camps and reception centers.

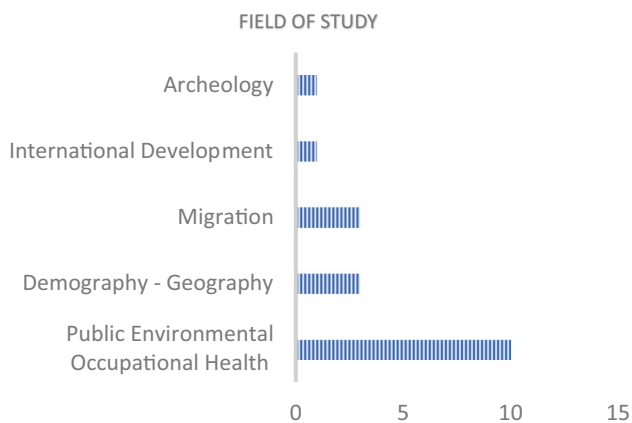
### 3.1.3 Findings from the grey literature on FSN in E.U. refugee camps

From the documents analyzed, 9 are press releases, 6 assessments, 2 reports and 4 official statements. The press release documents are mostly from NGO's working in the field. The assessments and reports were released by NGOs such as, European Council on Refugees and

**Fig. 2** Flow chart depicting the inclusion and exclusion of papers in accordance with The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement



Exiles - ECRE, Human Rights Watch - URW, Save the Children and UN agencies. Moreover, official statements and legal decisions were released by the European Commission on Social Rights - ECRE, and the European Commission (Fig. 5).



**Fig. 3** Chart displaying the most popular field study, namely: Public, Environmental and Occupational Health (10), Demography (3), Migration (3), International Development (1), Archeology (1)

Regarding the year of publication, there was an increase in numbers from the year of 2019, when 4 documents were released. The COVID-19 pandemic did not seem to interfere negatively on these numbers, as a total 7 documents were published during the years 2020 and 2021, likewise the period between 2015–2019, when 7 documents were released in total.

Referring to countries, most of the documents target Greece however less attention is paid to France. Herein, other E.U countries appear, namely Hungary, Italy, Romania, Malta, and Spain (Fig. 6).

Referring to the content of the documents, 8 documents refer to public policy and Law. These mainly denounce the cut in material assistance, including food and cash assistance, by local governments in France, Hungary, and Greece. Moreover, 4 documents denounce poor reception conditions of refugee camps and reception centers. In this, the main issues found included lack of food, low hygiene, lack of potable water, lack of cooking facilities. In addition, 2 documents refer to food assistance in camps and 1 document analyses infant and young child feeding in emergencies. Finally, 2 documents refer to sexual and gender-based violence in refugee camps (Fig. 7).

**Fig. 4** Map displaying the most popular country of study. Most of studies were placed in Greece (10), followed by the France (4) Germany (1) and Belgium (1)

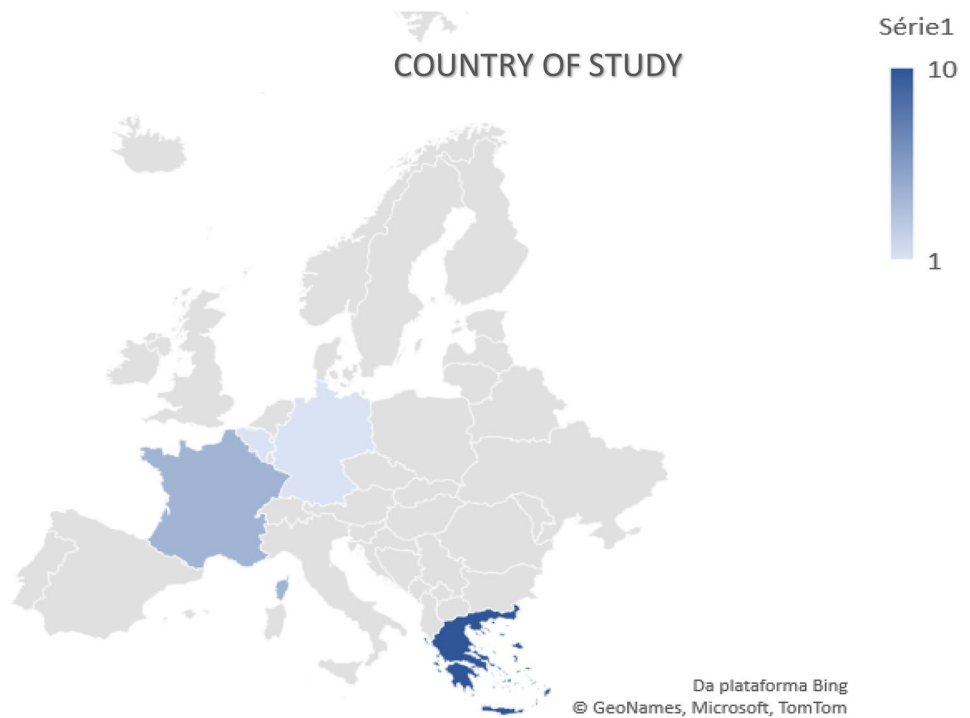


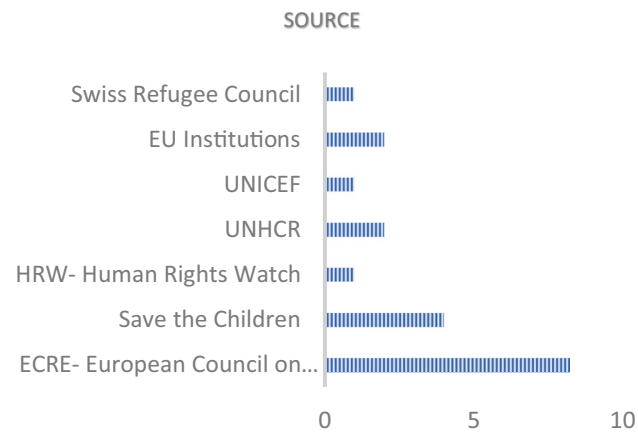
Table 3 compares the publishing year, country of study, field of study, keywords, discussion topic, method, and type of document among the two stages of the review and gray literature. The main findings of each selected paper and document from the grey literature, including objectives, methods, results, key findings and limitation

are presented in Annexes 1 and 2 (see Electronic Supplementary Material), respectively.

### 3.2 Clustering the emerging topics

#### 3.2.1 Water supply, sanitation and hygiene promotion - WASH

The studies examined in this analysis have identified that the living conditions within camps located in the European Union fail to meet basic humanitarian standards, and this is associated with poor health outcomes. Specifically, Dhési et al. (2018) notes that the sanitation in the Calais makeshift camp is inadequate and does not meet internationally recognized standards. The poor access to water within this environment was significantly linked with various health conditions, including respiratory disease, diarrhea and vomiting, skin disease, and psychological distress. Asylum-seekers within this setting experienced a high prevalence of health issues, with 83% suffering from psychological distress, 71% presenting with skin disease, 66% experiencing diarrhea and vomiting, and 64% having respiratory disease. Similarly, Davies and Isakjee (2015) has observed that the lack of proper sanitation within the Calais camp poses a significant threat to public health, with residents forced to defecate near their sleeping and food preparation areas.



**Fig. 5** Most popular sources, European Council on Refugees and Exiles (7), Save the Children (7), European Institutions (2), UNHCR (2), Human Rights Watch (1), UNICEF (1), Swiss Refugee Council (1)

**Fig. 6** Map displaying the most popular countries of Study. 10 documents reported the situation in Greece, 2 in Hungary, 1 in Italy, France, Romania, Spain and Malta



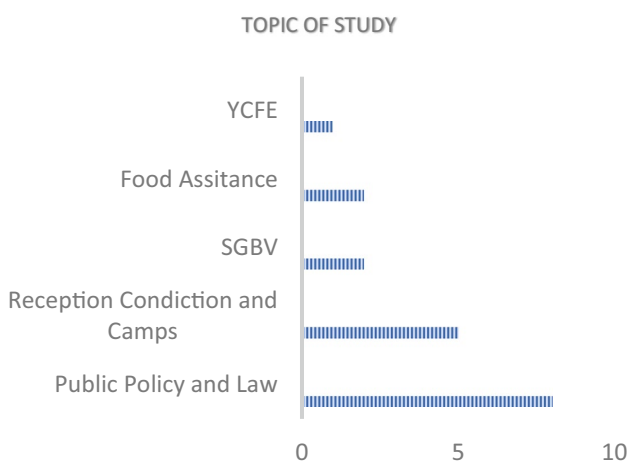
Further analysis of the sanitation within European Union camps reveals similar concerns. Gordon et al. (2021) has found that the Samos camp in Greece also fails to meet internationally recognized standards in terms of sanitation. Additionally, grey literature sources, such as ECRE - European Council on Refugees and Exiles (2019), have reported that in Malta, the conditions within the Hal

Far and other open centers are "extremely challenging." This includes low levels of hygiene and occasional infestations of rats and cockroaches.

### 3.2.2 Food security and nutrition

**Food security assessments** To the best of the author's knowledge, no assessment has been conducted on the Food Security and Nutrition (FSN) status of asylum seekers and refugees within the European Union. However, the review of FSN status globally has revealed high rates of food insecurity (FI) among refugees and asylum seekers. Food insecurity rates largely varied depending on measurement tools used, participant ethnicity and host country, ranging from 35%-90% (Vieira Guerra et al., 2019; Lawlis et al., 2018; Nisbet et al., 2022, Mansour et al., 2020). While few studies have assessed the FSN status of refugees in high-income countries (HIC), those that have, reported high rates of FI, ranging from 40%-71% (Mansour et al., 2020).

Various methods have been applied to assess FSN status, with the United Nations Food Consumption Score being the most commonly used tool alone or in combination with the accompanying Diet Diversity Score, Coping Strategies Index, or self-developed food security questionnaire. Other tools employed include those based on the Food and Agriculture Organization (FAO), the World



**Fig. 7** Most popular topics of Study. Public policy and Law (8), poor reception conditions in refugee camps and reception centres (5), sexual and gender-based violence in refugee camps (2), food assistance (2) infant and young child feeding in emergencies (1)

**Table 3** Compare the main findings of the reviews regarding publishing year, country of study, field of study, keywords, discussion topic, method, and type of document. The numbers in parenthesis refer to the amount of papers published related to that topic

	FSN in camps in the EU	Gray Literature camps EU	Review of FSN in the World
<b>Year</b>	2018(5), 2021(4), 2017(3), 2019(3), 2015(1), 2020(1), 2022(1)	2021(5), 2019(4), 2016(4), 2020(3), 2022, 2020, 2018, 2017, 2015(1)	2022(2), 2021(2), 2017(2), 2018(1), 2019(1), 2020(1)
<b>Country of Study</b>	Greece (10), France(4), Germany(1), Belgium(1)	Greece(10), EU(2), Italy, France, Romania, Hungary, Spain, Malta(1)	World(5), HIC(3), LMIC(1)
<b>Field of Study</b>	Public, Environmental and Occupational Health(10), Demography (3), Migration(3), International Development(1), Archeology(1)	N. A	Nutrition(5), Health(3), Energy and Fuel(2)
<b>Keywords</b>	Health, Nutrition, Displacement, Abandonment, Exclusion, Violence, Isolation, Refugee, Asylum seekers, Migrants, Refugee camps, Reception centres	N.A	Food Security, Food Insecurity, Refugees, Asylum-seekers, Review, Cooking technologies, Nutritional Status
<b>Discussion Topic</b>	Nutrition(7), Health(6), Accommodation(6), Gender(1), Eating practices(1)	Public policy and Law(8), Reception conditions(5), Food Assistance(2), SGBV (2), IYEFI(2)	Food Security Interventions(3), Cooking technologies(2), Food Security in HIC(3)
<b>Method</b>	Interview(6), Field observation(3), anthropometric parameters(4), Surveys(3) Articles(17), Editorial(1)	N.A	Systematic Review(6), Scoping Review(2)
<b>Type of Document</b>	Article	Press release(7), Assessments(6), Official statements(4), Report(2)	Review article

Food Programme (WFP), the United States Department of Agriculture Food Security Module (USDA-HFSM), the Canadian Community Health Survey, and the Radimer-Cornell Hunger Scale.

**Nutrition assessment and micro deficiencies** Most of the findings from the review on FSN in European refugee camps pertain to the Health and Nutrition categories. As a result, several studies have identified the occurrence of anemia among asylum-seekers in Greece, with notably high prevalence rates among older individuals, females, and children. Specifically, Gouela et al. (2018) discovered insufficient intake of both energy and macro/micronutrients among refugees in Lagadikia camp, Greece. Moreover, Grammatikopoulou et al. (2019) found a greater prevalence of malnutrition among refugee girls in Greece compared to boys, while Jablonka et al. (2018) confirmed high anemia rates, particularly among older and female refugees. Similarly, Walpole et al. (2018) reported a high incidence of stunting in refugee children in Greece, indicating the existence of micronutrient deficiencies among both children and mothers. Furthermore, Pavlopoulou et al. (2017) noted that anemia rates varied from 12 to 55% based on the native country of migrants. Age was inversely associated with the presence of anemia and iron deficiency, which supports the idea that reduced iron intake during critical periods of human growth and development may have contributed to these findings.

Likewise, the review on refugees worldwide found that refugee's main nutritional issues were deficiencies of vitamins D and B12, overweight, dyslipidemia, delayed growth, and low weight. Vieira Guerra et al. (2019) discovered that the refugee population in the USA had a high incidence of overweight and obesity, with 44.9% of refugee children being affected by malnutrition. Similarly, in Australia, Vieira Guerra's study found that the refugee population had deficiencies in vitamins D and B12, high cholesterol levels, and obesity. These conditions were attributed to the nutritional status of refugees in their country of origin, inadequate feeding during the asylum application process, and the transition to new foods after resettlement. Likewise, Khuri et al. (2022) found that refugees' dietary intake worldwide was influenced by pre- and post-resettlement factors. Herein stunting, underweight, and anemia were prevalent among refugee children and various refugee groups had poor dietary intake and insufficient consumption of certain food groups.

**Infant and young children feeding - IYCF** In terms of IYCF practices among refugees worldwide, Shah et al. (2021) found that most nutritional education initiatives for refugees worldwide were focused on this area, but their effectiveness remains uncertain.

In European refugee camps, Hamilakis (2022) found incorrect IYCF practices, including unsolicited donations

and distributions of commercial complementary foods that do not comply with international guidance.

Grey literature, such as a report by Save the Children (2016), found suboptimal breastfeeding patterns among refugee women in Greece, with approximately one-third of caregivers feeding their children with infant formula. Additionally, complementary feeding practices were inadequate in terms of feeding frequency and diet diversity.

**Food security** FSN was not the main objective of none of the papers included in the EU review. However, various drives that affect FSN among refugees in the EU were addressed. These will be presented in the subsequent FSN subcategories. Conversely, the review on refugees worldwide unveiled a diverse array of outlooks on FSN among refugees in HIC as well as low- and middle-income - LMIC.

Wood et al. (2021) identifies four factors that affect food security among refugees resettling in high-income countries: culturally based food practices and priorities, confidence in navigating local foodways and transport, level of community connections and capabilities in local language and food preparation. According to the author, cultural factors, such as food preferences and access to traditional food, strongly influence food choices and directly impact household food security. Confidence in navigating local foodways and transport affects refugees' access to food and their ability to explore unfamiliar foods. Community connections and developing social capital can provide a food security safety net. Low language proficiency, cooking competency, and budgeting skills can negatively affect refugees' food security.

Similar findings were identified by Lawlis et al. (2018) regarding food security challenges for refugees in Australia. Herein, the main difficulties identified included the availability of culturally appropriated food (price of traditional food, low variety and availability of ethnic shops and difficulty in finding halal food), difficulties in navigating the local public transport, low cooking skills and changes in cooking responsibilities after resettlement. In addition, issues related to livelihood assets such as unemployment, low income, and restrictive policies limiting work and welfare, access to adequate cooking, storage and preparation facilities was also shown to affect Australian refugees.

Shah et al. (2021) and Mansour et al. (2020) also links the access to traditional food by refugees to improved rates of FS. According to Shah et al. (2021) the access to traditional food was facilitated by employment, cultivation of vegetables and access to supermarkets. In contrast, distance from ethnic shops is seen as an impeding factor in accessing food preferences. Likewise, Mansour et al. (2020) found that the access to traditional food was perceived as healthy and important in the preservation

of culture. In contrast, the consumption of freshly killed meat, low language skills and being a recent arrival (three years or less) was linked to FI.

**Food assistance** With regard to EU refugee camps, Aris Escarcena's (2019) study highlights that a significant number of refugee children in Calais were experiencing food deprivation. Specifically, only 70.5% had daily access to food, and 73.8% reported insufficient quantities of food. Similarly, Pail's (2021) observations of the situation in Calais revealed that a local charity provided only one meal a day, leaving individuals to survive on donations of tinned food.

In Greece, Episkopou et al., (2019) and Davies and Isakjee (2015) report that inadequate food supplies, long waiting lines, and queues were frequent sources of tension and conflict among residents of Lesbos where residents had to wait in line for food distribution, often for up to eight hours per day. Bydzovsky et al. (2021) research further highlights the precarious situation of unaccompanied minors in Greece who rely entirely on camp-provided food. Of those surveyed, 87% reported experiencing starvation at least once a week, and 24% were underweight. The authors argue that the nutritional value of the food provided was insufficient to meet the actual needs of these individuals. Additionally, there were significant complaints about the quality of the catering services.

In accordance with the index literature, the gray literature results showed numerous reports denouncing inadequate food assistance in EU camps.

An assessment conducted by UNHCR (2016) in Greece highlighted the need to improve the nutritional value of catering menus and replace them with culturally appropriate options, paying particular attention to the dietary requirements of vulnerable groups such as children, lactating women, and diabetics. The report suggests that site infrastructure improvements, including the upgrading of electricity and water supplies and the construction of kitchen spaces, are necessary to limit the dependence on catering and facilitate the transition to cash-based assistance, thus promoting greater self-reliance.

Another assessment by UNHCR (2018a, b, c) argues that the Cash Assistance Program in Greece has led to increased dignity and the ability of households to create meals according to their preferences and needs. However, the amount of cash provided was reported to be insufficient to meet the food needs of the entire month. Save the Children (2016a, b), based on an assessment made in Greek camps, argues that different payment methods of cash assistance were in place in various camps in Greece, and the head of the family responsible for the cash was typically the male partner.

Despite the potential benefits of cash assistance, recent decisions made by Greek authorities to halt cash assistance for asylum seekers and deny food support to recognized refugees and rejected asylum seekers have been heavily criticized by The International Rescue Committee (2021), CRE -European Council on Refugees and Exiles (2022), Save the Children (2021a, b), and Human Rights Watch (2019). Following the cessation of food assistance, ECRE (2022) and Save the Children (2021a, b) found that 40% to 60% of the residents of Greek refugee camps on the mainland did not have access to sufficient food. ECRE estimates that 16,659 people reside in camps on the Greek mainland, yet the catering contracts from the Ministry of Migration and Asylum only cover 10,213 people, of which over 6,000 are children. The organization further denounces the long wait times of up to seven to eight months faced by those applying for assistance, leaving them without financial resources and unable to purchase food or other necessary items not provided through distributions.

Along with this scenario, In Italy, Swiss Refugee Council (2020) denounces the precarious situation in all respects as refugees roam the streets, queuing for food at charities and looking for a bed for the night or a place to wash. The report narrates the existence of irregularities in public procurement and lack of control over the implementation of projects and fraud in declaring the quantity of meals supplied to asylum seekers, refugees, and people in need at the centers, who were arguably left starving or given food that was almost inedible.

**Livelihoods** Regarding the livelihoods of refugees in the European Union, no papers were found to provide a comprehensive overview. However, evidences led to the conclusion that refugees in EU camps heavily depended on unsustainable livelihood assets. Common challenges faced by refugees in the EU included inadequate shelter (Escarcena, 2019; Dhesi et al., 2018; Episkopou et al., 2019), compromised health status and malnutrition (Grammatikopoulou et al., 2019; Jablonka et al., 2018; Walpole, 2018; Gordon et al., 2021; Pavlopoulou, 2017) heavy reliance on food assistance (Bydzovsky, 2021; Episkopou et al., 2019; Davies, 2015; Hamilakis, 2022), difficulties accessing essential public services (Tsavdaroglou and Lanenis 2020; Episkopou et al., 2019), unemployment (Tsavdaroglou and Lanenis 2020), limited community connections (Episkopou et al., 2019), poor water and sanitation conditions (Gordon et al, 2021; Episkopou et al., 2019; Davies et al., 2017), lack of electricity and essential tools (Kandyliis, 2019), and educational barriers (Pail, 2021), all these exacerbating FNI. In the context of global refugee populations, various studies have associated poor livelihood assets with FI among refugees. For instance, Vieira Guerra et al. (2019) reports that higher rates and level of FI among refugees is linked to

poverty, unemployment, and chronic illnesses or disabilities. In this case, low economic status, lack of access to work, and insufficient income were connected to inadequate availability of fresh food, limited food variety, and food shortages.

Similarly, Wood et al. (2021) and Lawlis et al. (2018) have identified unemployment, low income, and restrictive policies that limit work and welfare as drivers of FI in emergency situations. In this case, unemployment rates among refugees ranged from 50 to 100% in, and limited income, high medical expenses, sending money abroad, and inadequate social support have been identified as contributing factors to refugees' food security challenges.

### 3.2.3 Shelter and settlement

**Planning, location and living space** The papers found through the systematic review on refugee camps in the EU have unanimously criticized the poor conditions of camps in Europe. Referring to France, Dhesi et al. (2018) explains that the absence of formal provisions of shelter in Calais lead to the exposure of vulnerable migrants to hazards which have injured migrants and damaged their health.

In Greece, Tsavdaroglou et al. (2020) asserts that the planning policies for state-run camps in Athens and Thessaloniki followed a top-down procedure resulting in tough living conditions. Overcrowded camps were located far from city centers with limited access to public services, health and education facilities, and employment opportunities. Such poor living conditions have led to self-organized protests by refugees demanding better quality food, hygiene, and living conditions. Gordon et al. (2021) notes that the accommodation provided in Samos camp also fell below internationally recognized standards. In Lesbos, Episkopou et al. (2019) reports a lack of community links, isolation, tensions, and conflicts, as well as insufficient amenities and limited orientation to services.

Regarding gray literature, ECRE (2019) reported that the conditions in the Maltese Hal Far and other open centres are “extremely challenging” presenting low hygiene levels, severe overcrowding, lack of physical security, located in a remote area of Malta, poor material structures and occasional infestation of rats and cockroaches.

**Household items** Regarding household items such as cooking items, the review on FSN among refugees worldwide found two contributions to the topic. Caniato et al. (2017) and Barbieri et al. (2017) provide significant contributions to the field of cooking technologies and energy use in humanitarian contexts. Caniato et al. (2017) argues that cooking energy and FS are correlated. The author emphasizes that the absence of safe and sustainable energy not only affects food

access and utilization, but also impacts its availability. The author identifies several barriers, including environmental, economic, technological, socio-cultural, and political factors, that hinder the delivery of energy access, which is critical to reducing food insecurity. The lack of clear guidelines regarding the responsibility for energy in the humanitarian context is also highlighted as problematic.

Barbieri et al. (2017) identifies the use of family budgets to buy fuel and the time spent collecting fuel as key social issues affecting education and livelihood in humanitarian contexts. The author suggests that a reliable and affordable supply of fuel to modern cooking stoves can have a positive impact on the health of refugees and local forest resources. These contributions underline the need for sustainable and safe energy solutions in humanitarian contexts to address food security and social issues.

Referring to refugees in the EU Kandyli (2019) provides insight into the cooking practices of refugees in EU camps, specifically in Greece. The author notes that families in these camps used electric or gas burners, outdoor fireplaces, and self-made ovens to prepare meals, often burning unsuitable materials such as planks, leaves, paper, and plastic. Although cooking activities were officially banned, they were tolerated due to frequent complaints about the distributed food.

Gray literature documents suggest that food preparation in Greek refugee camps was particularly challenging due to inadequate cooking facilities. Save the Children (2016a, b) reports that refugees had set up improvised outdoor cooking facilities near their shelters in some camps, but these were rarely used due to limited funds for food and poor weather conditions.

According to ECRE (2015) report, in Austria and Poland, asylum seekers are permitted to cook for themselves and have access to kitchen facilities in reception centers. In Cyprus and France, meals are often provided by the facilities, but kitchen facilities are also available. In Germany, Ireland, and Italy, residents receive all meals and are not permitted to cook for themselves.

**Security of tenure** Regarding the review on FSN among refugees in the EU, Pail (2021) findings highlights that the conditions in Moria camp in Greece are inadequate, especially for women and all residents, contributing to an increase in cases of SGBV. For the author, the camp faces difficulties in remaining open due to environmental and health risks to the refugees and the surrounding community.

Referring to gray literature, Human Rights Watch (2019) found that women and girls in and around Moria camp lacked safe access to essential resources and services including shelter, food, water and sanitation, and medical care,

revealing a threatening environment, with few protections from sexual harassment and gender-based violence.

In the global review of FSN among refugees, Nisbet et al., (2022) found that gender issues related to security were considered in food intervention planning, but not fully implemented. Furthermore, other vulnerable populations such as children, the elderly, LGBTQIA2S+, and persons with disabilities were not adequately covered by IYCF programs.

**Environmental sustainability** None of the papers analyzed target environmental sustainability in refugee camps.

### 3.2.4 Essential healthcare

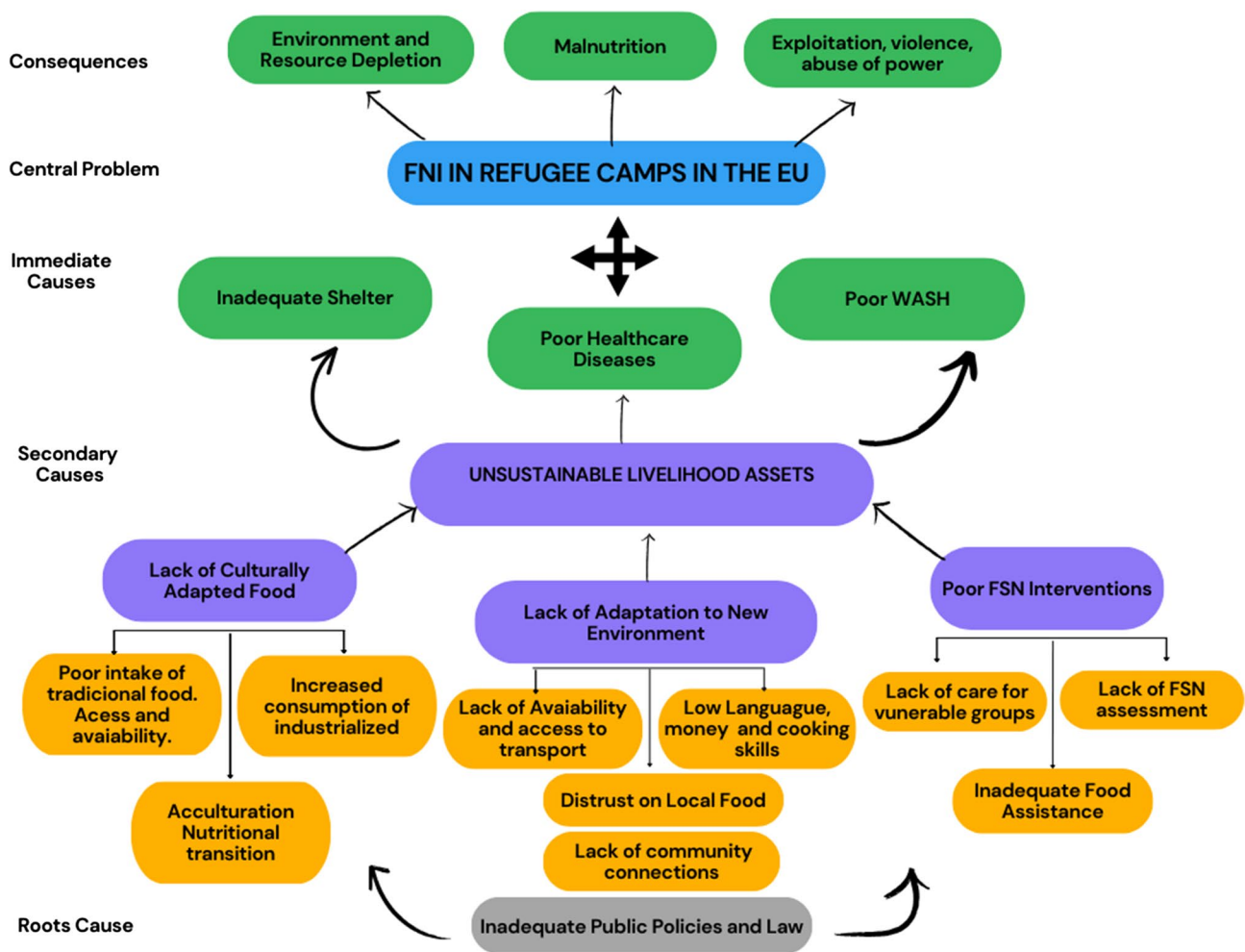
Findings on EU camps revealed that substandard WASH facilities, coupled with inadequate environmental conditions in specific EU camps, played a significant role in exacerbating health issues, consequently contributing to FNI. Gordon et al. (2021) and Dhesi et al. (2018) discovered that there were prevalent health concerns such as gastrointestinal illnesses, respiratory disease, skin disease, and psychological distress among refugees in EU camps. Furthermore, complaints regarding access to healthcare were identified among Greek refugees (Episkopou et al., 2019).

For gray literature, none of the documents focused on health. Likewise, the review on food security among refugees in the world did not present results referring to refugees' health.

### 3.2.5 Public policies and law

Regarding the review on E.U camps, the literature strongly criticizes political decisions made by EU countries in their treatment of refugees. Referring to Calais, France, Aris Escarcena (2019) argues that policies developed by different levels of government have created a "hostile environment" for refugees, leading to physical and symbolic violence. Davies et al. (2017) adds that state authorities have prevented refugees from receiving formal support, resulting in hazardous living conditions. Davies and Isakjee (2015) asserts that makeshift camps intentionally cause indignity, as part of a strategy to force refugees to return to their countries of origin. In Greece, Episkopou et al. (2019) calls for urgent functional support networks to overcome the consequences of restrictive policies.

Gray literature also confirms the impact of austerity measures, such as the Greek government's decision to halt cash assistance, which was strongly condemned by the European Committee on Social Rights (2021) and the European Commission (International Rescue Committee, 2021). In Hungary, NGOs accused the far-right government of purposefully denying food to refugees in transit zones as a tactic to humiliate and intimidate them (ECRE,



**Fig. 8** Presents a comprehensive framework, linking roots causes, Secondary Causes and Immediate causes of Food and Nutrition Insecurity among Refugees and Asylum-seekers to its Immediate and long-term consequences

2020). The European Court of Human Rights (ECHR) has granted interim measures in cases of food deprivation involving refugees in the Hungarian transit zone (European Commission, 2019). The Court of Justice of the European Union (CJEU) ruled in *Haqbin* that Member States cannot order the withdrawal of material reception conditions in case an asylum seeker seriously violates the house rules of a reception center or exhibits violent behavior (The Court of Justice of the European Union, 2019). Nonetheless, several EU countries e.g., Belgium, the Netherlands, Romania, Italy, Spain, Greece, still allow the withdrawal of material reception conditions as a sanction for rule-breaking or violent behavior.

Annex 3 (see Electronic Supplementary Material) shows the main findings of each category, in both reviews, FSN among refugees and asylum seekers in the E.U.(including gray literature) and FSN among refugees in the world.

### 3.2.6 Development of a framework

Based on the main findings of the literature review, it was developed a causal framework linking the immediate, secondary and roots causes of FNI in refugee camps and its consequences. Figure 8 presents the framework that will be discussed in the next section.

## 4 Discussion

The intricate relationship between FSN and forced displacement presents a complex issue that requires careful examination. FSN is a multidimensional phenomenon, and addressing its underlying causes is crucial to achieving FSN. Thus, the discussion of the main findings of this research will follow the causal framework just presented. This framework displays the main findings of the literature related to the drivers of FNI in refugee camps nonetheless it also portrait

the cause-effect relationship found in the Sphere guideline and in the literature on refugee's FSN.

Three aspects were identified as being embedded within FSN, these are: Shelter and Settlement, Water, Sanitation and Hygiene (WASH), and Healthcare. The same groups that were used to aggregate the papers found in the review. The four categories, including Food security, Shelter and Settlement, WASH and Healthcare, were found to be interconnected. This means that achieving success in one category depends on achieving success in the others, making them the immediate causes of FI in refugee camps.

The Secondary causes of FNI in refugee camps are the underlying factors that contribute to the development of this issue. While the Sphere guideline does not specifically highlight these drivers of FNI, they were identified through the analysis of papers and documents in this review. The main driver of FNI is the use of unsustainable livelihood assets and strategies. In addition, other secondary causes of FNI among asylum-seekers include the lack of adaptation to a new environment, the lack of culturally adapted food, and poor FSN interventions.

Although the literature review did not cover the consequences of food insecurity among refugees and asylum-seekers. Further, we will delve deeper into these underlying causes.

#### 4.1 Immediate causes of FNI in refugee camps

In this regard, as portrayed in the forementioned framework, and in accordance with Sphere Association (2018) and UNHCR (2017), there are three key factors that are essential in achieving food security and nutrition (FSN) among refugees. These factors are WASH, shelter, and healthcare. Overall, these three factors are interconnected.

Water is a crucial component in achieving FSN as it plays a critical role in ensuring adequate hydration and proper sanitation. Refugees often face challenges in accessing clean water, which can lead to a variety of health issues such as diarrhea and other waterborne diseases (UNHCR, 2017). Sanitation facilities are also essential in preventing the spread of disease, and proper hygiene practices such as handwashing can significantly reduce the risk of infection (UNHCR, 2020a, b).

In addition to WASH, shelter is also critical in achieving FSN among refugees. Adequate shelter can protect refugees from extreme weather conditions and provide a safe and secure environment for food preparation and storage (UNHCR, 2017). Moreover, inadequate housing conditions, including overcrowding and poor ventilation, can increase the risk of respiratory diseases and infections, which can further exacerbate malnutrition.

Furthermore, healthcare is a critical component in achieving FSN. Access to healthcare services, including preventive

and curative care, can ensure that individuals receive necessary treatments for illnesses and injuries that may impact their ability to maintain adequate nutrition. Malnutrition is a significant health concern among refugees, and healthcare services are necessary to address this issue (UNHCR, 2020a, b).

Regarding the main findings of the literature in these three areas, overall, it indicates that E.U camps are failing to meet internationally recognized standards in terms of WASH and shelter and these bad practices are associated with poor health outcomes.

Main findings related to WASH highlight the urgent need to address the inadequate living conditions and poor sanitation within EU refugee camps, which have a significant impact on the health and well-being of their residents. To address WASH-related diseases, it is recommended to provide soap and hand-washing stations, appropriate materials for menstrual and incontinence hygiene, adequate storage of drinking water, safe disposal of children and adult excreta, and adequate disposal of solid waste in refugee camps (Sphere Association, 2018). By addressing these WASH-related issues, humanitarian organizations can help promote FSN and improve the overall well-being of refugees in these camps.

Related to shelter, main results highlights that the poor shelter conduction of EU camps has been a persistent problem. Makeshift camps, such as Calais in France, have been found to expose vulnerable migrants to hazards that negatively impact their health (Dhesi et al., 2018). Additionally, official reception centers have been found to fall below international standards due to issues such as a top-down approach, overcrowding, and locations far from city centers with limited access to public services, health and education facilities, and employment opportunities (Save the Children, 2016a, b).

To address these issues, the literature recommends that shelter and settlement plans should provide essential needs while taking into account safety and sustainability issues. These plans should be agreed upon by relevant authorities and the population through a top-down/bottom-up approach. It is also important that shelters be located in areas with minimal known natural or man-made threats, risks, or hazards, and have access to essential services such as hospitals, shops, restaurants, and education facilities.

The planning and location of shelters and settlement are critical in promoting a life with dignity for forcibly displaced populations. Denial of the fact that refugee camps can last for decades leads to unsustainable practices, including an unstable food supply chain, food insecurity, and food waste (Rooij et al., 2016). Thus, it is crucial to consider the interrelated factors that contribute to FSN among refugees and implement multi-dimensional approaches to address these issues.

Another immediate cause of FNI in Forced Migration displayed by the framework is predominantly inadequate healthcare. International standards mandate that refugees

should have access to primary healthcare services within an hour's walking distance from their residences, free essential medicines, and regular surveillance reports to responsible bodies (UNHCR, 2018a, b, c). Furthermore, these standards require the management of communicable diseases through vaccination programs, educational campaigns, and the provision of mental healthcare (WHO, 2017). It cannot be affirmed that refugees in Europe do not have adequate access to healthcare as the main findings of this research does not identify the specific strategies adopted by local authorities to address refugees' access to healthcare services.

## 4.2 Secondary causes of FNI in refugee camps

As displayed in the proposed framework, four categories contribute to the secondary causes FNI in refugee camps. These categories include unsustainable livelihoods, inadequate interventions to address FSN, lack of adaptation to new environments, and insufficient access to culturally adapted food. It is essential to comprehend and effectively address these factors, as they are significant drivers of FNI among asylum-seekers. By addressing these underlying issues, sustainable solutions can be promoted to tackle FNI, which would have a positive impact on the affected individuals' lives.

The lack of sustainable livelihood assets and strategies is a significant underlying cause of FNI in refugee camps. These assets can be classified as human, natural, financial, physical, and social, and they include things like equipment, raw materials, land, knowledge, access to functioning markets, education, income, social and political voices, and more (Sphere Association, 2018; WFP - World Food Program, 2009).

The literature on refugee's FSN indicates that poverty, unemployment, food shortages, limited employment opportunities, restricted movement, low education, and other factors are linked to refugee's FNI. Refugees often lack access to secure and sustainable livelihood opportunities due to various reasons such as language barriers, legal restrictions, and discrimination, which results in limited income and food sources. This situation exacerbates FNI, as food aid programs alone cannot guarantee the sustained provision of adequate and nutritious food to refugees (WFP, 2016).

Generally, households with more assets and a broader range of strategies are more resilient to FNI and other challenges. Therefore, examining household assets and livelihood strategies and addressing the underlying factors that prevent refugees from accessing livelihood opportunities and income-generating activities is crucial for promoting sustainable solutions to tackle FNI. However, promoting livelihoods among forced displaced people is challenging,

and it depends on factors like encampment and restrictive legal and policy frameworks (Sablak, 2019).

Another secondary cause of FSN in the refugee's context is the successful adaptation to the host country. According to Lawlis et al. (2018) and Wood et al. (2021), several factors contribute to this successful adaptation, such as the ability of refugees to navigate public transport, trust local food, language skills, cooking, money management skills, and community connections.

The importance of strong community connections and language skills, as well as adequate cooking and money management skills, extends beyond promoting successful adaptation to the host country for refugees. In fact, these findings have significant implications for reducing FNI among refugees.

For instance, refugees who have strong community connections and language skills have better chances of accessing employment opportunities, which, in turn, can improve their financial stability and reduce their reliance on food assistance programs. Additionally, refugees who feel comfortable using local language and public transportation and possess adequate cooking and money management skills can access affordable and nutritious food options more easily.

These findings underscore the need for targeted interventions and policies that support refugees' integration into their host countries. For instance, providing language classes and employment services, as well as facilitating community engagement, could be critical in reducing FNI among refugees. Moreover, such programs should consider the unique cultural and social backgrounds of refugees to ensure their effective adaptation to their new surroundings.

The availability and access to culturally adapted food is also a significant secondary cause contributing to food and nutrition insecurity (FNI) among refugees. The resettlement process often exposes refugees to new cultural and social environments, which can cause changes in their foodways. As refugees adapt to new food crops and feeding practices, they undergo a cultural adaptation process that can lead to less healthy dietary patterns, as Lawlis et al. (2018) have found. Moreover, this shift can lead to a lower intake of traditional fruits and vegetables and increased consumption of soft drinks, oil, and sugar. This change in dietary patterns can lead to acculturation, which, in some cases, can result in higher body mass index (BMI) and lower nutrient intake, ultimately resulting in FNI (Villarroel et al., 2017).

The main challenging in accessing culturally appropriated food, found by Mansour et al. (2020), Vieira Guerra et al. (2019), and Wood et al. (2021) include high costs of traditional food, low variety and availability of ethnic shops, difficulty in finding halal food, and acculturation.

Despite its challenges, ensuring access to culturally adapted and nutritious food is crucial in addressing FNI

among refugees. This could involve providing education and training on traditional foods and cooking methods, supporting local farmers and food providers to offer culturally diverse food options, and promoting food and nutrition programs that are responsive to refugees' cultural backgrounds and dietary preferences. (UNHCR, 2020a, b).

Lastly, the proposed framework also identifies FSN interventions a secondary cause of FNI in refugee camps, highlighting the importance of customizing these interventions to suit the specific context, location, and target group. The main goal of FSN interventions is to improve food availability, utilization, accessibility, and nutritional outcomes while also protecting and promoting the livelihoods of those affected. In the short term, interventions should focus on meeting immediate needs and reducing negative coping mechanisms. In the long term, efforts should encourage sustainable livelihood strategies and create employment opportunities that enable individuals to recover and rebuild their lives (WFP, 2015).

Food assistance is a commonly utilized intervention for addressing FSN among refugees and asylum-seekers. It is worth noting that since the late 2000s, there has been a shift from the concept of food aid to food assistance. While food aid was originally characterized by a largely one-way, top-down approach, food assistance involves a more nuanced understanding of people's persistent nutritional needs and the diverse strategies needed to fulfill them (WFP, webpage). The use of food assistance should aim to ensure FSN, enhance food availability and accessibility, improve nutrition, and safeguard and enhance the livelihoods of those in need of assistance (Sphere Association, 2018). Nevertheless, it appears that food assistance programs in Europe are not consistently upholding these principles, as numerous complaints related to issues such as inadequate food quantity and quality, long wait times to receive food, cuts in cash assistance, and bans on food distribution have been identified in EU camps.

In order to plan FSN interventions that are effective, it is crucial to conduct assessments to determine the severity of FNI, identify vulnerable groups and key responses. To the best of our knowledge, there is no assessment of FSN in refugee camps in the EU. This shortfall implies that current interventions may not be meeting the needs of these individuals adequately.

Another evidence that FSN interventions are failing in EU camps is the presence of high levels of anemia among vulnerable groups such as elder, women and children in camps in Greece. It is important to tailor FSN intervention to vulnerable groups, including refugees, women, the elderly, children, and people with disabilities as they are at greater risk of experiencing various forms of malnutrition. The prevalence of anemia in EU refugee camps suggests that FSN interventions may not

have adequately reached these vulnerable groups. Therefore, conducting comprehensive assessments of FSN in EU refugee camps is urgent.

A popular type of nutritional intervention in women and children is related to educational programs favoring breastfeeding. Breastfeeding is crucial for preventing infants from developing health issues. However, in emergency situations such as refugee camps, it can be challenging or impossible to perform it. The appropriate use of Infant and Young Child Feeding in Emergencies (IYCFE) can safeguard children's nutrition, health, and development. Conversely, the inappropriate use of IYCF can increase their vulnerability to undernutrition, disease, and death, as well as negatively impact breastfeeding rates. (Theurich & Grote, 2017).

It should be noted that the use of infant and young child feeding (IYCF) is only recommended when women are unable to breastfeed. The guidelines for feeding infants and young children during emergencies, known as the Operational Guidance on Infant and Young Child Feeding in Emergencies (IYCFE), as well as international policies, advise exclusive breastfeeding for at least six months. These recommendations have not been adhered to in Greek camps where breastfeeding rates were not optimal, with about one-third of caregivers opting for infant formula. Furthermore, the complementary feeding practices, were found to be insufficient in terms of feeding frequency and lacked diversity in the diet. (Hamilakis, 2022).

### 4.3 Roots cause in FNI in refugee camps

Inadequate public policies and laws were identified as the root cause of FNI. These factors can hinder even the best efforts of households to attain FSN (Sablah, 2019). Austerity measures implemented by local governments in various parts of the E.U. have been shown to contribute to this issue. Examples of such measures include the municipality of Pas-de-Calais banning food distribution for migrants in the city center (ECRE, 2020), the Hungarian far-right government denying food to 28 asylum seekers in a transit zone (EC - European Commission, 2019), and the discontinuation of cash assistance to refugees in Greece.

In recent years, there has been growing concern about the impact of austerity measures on food security in Europe. Austerity measures, which are aimed at reducing public spending and balancing budgets, can often result in cuts to social programs that support vulnerable populations. These measures have been implemented by local governments in various parts of the E.U. and have been shown to contribute to FNI (European Parliament, 2023).

Addressing the root causes of FNI requires a comprehensive approach that involves not only improving public

policies and laws but also addressing underlying social and economic factors. This may include increasing access to education and healthcare, promoting gender equality, supporting small-scale farmers, and strengthening social protection programs. Additionally, building more resilient and sustainable food systems can help to ensure that everyone has access to safe, nutritious, and affordable food.

#### 4.4 Consequences of FNI in refugee camps

Regarding the consequences of food insecurity among refugees and asylum-seekers, three main issues were identified.

The first issue is malnutrition. It is well-known that FI is one of the most important causes of malnutrition. FI contributes to inadequate dietary intake and disease, and these are the immediate causes of malnutrition. In addition, inadequate care for women and children, insufficient health services, and unsanitary environments also contribute to the problem (Sablah, 2019).

The second consequence of FI is environmental and resources degradation. The increase in population caused by a large influx of refugees can add pressure on the environment and speed up local natural-resource depletion. Issues such as deforestation (to collect wood for fires), soil erosion, land degradation, increase in consumption of water or water pollution, can affect food systems hence hurting the FS of the local community and refugees themselves (Mabiso et al., 2014).

Finally, FI can lead to violence, abuse of power and exploitation. A large influx of refugees might lead to a shortage in resource, housing, and employment, leading to favorable conditions for civil conflict (Mabiso et al., 2014). FI among refugees can also lead to protection gaps. The most common issues according to the UNHCR and WFP (2013a, b) are: Engagement in survival sex (exchanging sex for food); labor exploitation; unequal sharing of food within the household - Vulnerable groups such as girls, children, women, older persons or persons with disabilities might receive a smaller portion than others; Increase domestic violence; Child labor.

## 5 Conclusion and implication

In conclusion, FNI within EU refugee camps reflects a global challenge for displaced populations. Immediate factors like WASH, Shelter, and Healthcare are pivotal. Addressing these issues demands comprehensive WASH programs, improved shelter conditions, and robust healthcare infrastructure. Secondary drivers, including unsustainable livelihoods, successful adaptation, and access to culturally adapted food, amplify the complexity. Tailored

interventions, economic empowerment, and support for cultural adaptation are vital. The consequences of FNI on refugees' lives are profound, impacting nutrition, environment, and social dynamics. Resolving these challenges necessitates targeted, integrated efforts, acknowledging the unique needs of displaced populations. Through holistic approaches, we can work towards a more secure and nourished future for refugees in the EU and worldwide. Based on what was stated, this paper brings three important findings to the scientific community.

Firstly, it offers a comprehensive and detailed framework that outlines the causes and consequences of food and nutrition insecurity among refugees and asylum-seekers. Unlike existing tools, this framework puts FSN as a central issue and connects it to critical matters such as WASH, shelter, and healthcare. Additionally, it identifies common drivers of FNI among refugees settled in HIC. Existing FSN frameworks, such as those released by Sphere Handbook (2018), WFP (2009), and UNICEF, puts malnutrition as the central problem and mainly address drivers of FNI in large emergency contexts, rather than issues commonly found among refugees settled in HIC, such as language barriers, access to culturally appropriate food, and transportation, among others. This framework can be an invaluable resource for European policymakers and organizations working in the field, enabling the development of FSN policies, programs, and interventions tailored to the needs of refugees and asylum-seekers.

The second important finding of this paper is that refugees settled in various EU countries are likely to experience FNI, although the extent of the problem remains unknown due to a lack of assessments. The literature revealed various drivers of FNI in refugee contexts, such as inadequate WASH and shelter conditions did not meet international standards in the EU camps and are associated with poor health outcomes. Additionally, high rates of malnutrition were found in vulnerable groups and food assistance was strongly criticized.

Although there are indications that refugees living in EU camps are FNI, there are no assessments to verify these claims. Therefore, there is a need for a comprehensive assessment of the FSN of refugees living in EU camps, using a strong, reliable, and validated tool to assess asylum seekers' food security status, interventions, programs, delivery mechanisms, barriers, and facilitators.

The recent arrival of over 7 million Ukrainian refugees in EU countries has demonstrated that it is possible to provide dignified reception conditions that respect the human rights of refugees. Ukrainian asylum seekers in EU countries are currently benefiting from a Temporary Protection Directive that allows them to work, study and live in a country without official asylum approval, which is not always the case for asylum seekers from other nationalities who often have to wait for years in camps before having their asylum granted.

Some European political leaders have welcomed Ukrainians refugees into their countries, providing them with dignified reception centers, housing, distributing cash assistance, providing free public transport and phone communication, and creating job opportunities for them. While this approach is laudable, it highlights a clear double standard, as all refugees should be entitled to such treatment, this demonstrates that with political commitment and will, European member states can implement public policies that comply with international law and guarantee basic human rights, such as the right to food, housing, health, and work, for all refugees.

The final important finding of this paper highlights the need for a multilateral and multisectoral European common policy that is nondiscriminatory towards refugees and targets their FSN. The existing double standards and variations in approaches to reception conditions emphasize the urgency of such a policy. The suggested framework can be considered an asset in the development of such a policy, as it identifies and describes a comprehensive number of drivers of food and nutrition insecurity in refugee camps.

It is essential to acknowledge that refugee food security and nutrition are complex issues that cannot be solved with a single solution. Only with political commitment and the implementation of a common multisectoral and multilateral policy, will it be possible to achieve adequate food and nutrition security for refugees in the EU. Such a policy would establish fundamental benchmarks and guidelines for FSN interventions across European nations, offering a unified set of obligations and directives aimed at bolstering refugees' FSN and enabling a life of dignity.

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## Declarations

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