MEASURING FINANCIAL PROTECTION OF REFUGEES, ASYLUM SEEKERS AND MIGRANTS WHEN ACCESSING HEALTH SERVICES

(FROM ASYLUM TO RESETTLEMENT)

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Declaration

I certify that the thesis I have presented for examination for the ***PhD Programme in Biomedicine,*** in ***Public Health and Education in Health Sciences*** at Universitat Pompeu Fabra (UPF) -Barcelona-Spain solely my own work other than where I have clearly indicated that it is the work of others (in which case the extent of any work carried out jointly by me and any other person is clearly identified in it).

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Undertaking this PhD and thesis project in the last three years has been a journey of learning, inspiration, and aspiration. It has been a unique challenge, I have changed job locations around 3 countries, I have moved my children around 3 different schools in 3 different houses, and this during a global pandemic.

To my wife, for your everlasting love and support.

I would not have been able to complete the project without the help of Olinta Lopez, my wife; she always understood my desire to learn and to achieve and she constantly encouraged me to follow my dreams even at the cost of hers. She also provided a factual review and helped edit this thesis.

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As pilgrims enter more deeply into the Camino it appears to leave an indelible mark, yet it is hard to discern the nature of this mark."

— Nancy Louise Frey

Abstract

Refugees and asylum-seekers often encounter situations in which their health and well-being are compromised. Despite their health needs, access to healthcare is often restricted in host countries, and this is aggravated by various reasons such as a lack of inclusive policies, language and cultural barriers, financial ability to afford, and legal status. Improving refugees´ and migrants' health, is also to ensure that they are protected from the financial consequences of receiving medical care.

To measure financial protection in the country of asylum, I have looked primarily into the consequences fall on the refugees and asylum seekers living in Egypt when accessing healthcare, that by measuring the incidence and intensity of catastrophic health expenditures and their impact on impoverishment. Then, I looked at the equity in the use of health services and the efficiency of allocation of subsidies by the United agency for refugees (UNHCR). Finally, I explored the accessibility to healthcare and the reasons for the unmet health needs for migrants and refugees living in 4 countries in Europe and drew comparisons between those countries.

All through this research, findings highlight important challenges in the access to healthcare by migrants and refugees. In the first country of asylum, refugees largely live under the poverty line and usually incur out-of-pocket payments that lead to catastrophic health expenditure. Moreover, the analysis demonstrates that without equitable subsidy and efficient allocation by UNHCR, poor refugees cannot afford healthcare services. Whereas all the EU countries have ensured migrant integration policies to address protection and human rights principles, major disparities between member states were noted in the application of those policies, which increase the unmet needs of migrants and refugees in Europe and aggravate the risk conditions.

Resum

Els refugiats i els sol·licitants d'asil sovint es troben amb situacions en què la seva salut i el seu benestar es veuen compromesos. Malgrat les seves necessitats relacionades amb la salut, l'accés a l'atenció sanitària sovint està restringit als països d'acollida, i això es veu agreujat per diversos motius com ara la manca de polítiques inclusives, les barreres lingüístiques i culturals, la capacitat econòmica per pagar i l'estatus legal. Millorar la salut dels refugiats i dels emigrants implica garantir que estiguin protegits de les conseqüències econòmiques de rebre atenció mèdica.

Per mesurar la protecció financera al país d'asil, he analitzat principalment les conseqüències que recauen sobre els refugiats i els sol·licitants d'asil que viuen a Egipte quan accedeixen a l'assistència sanitària, mesurant la incidència i la intensitat de les despeses sanitàries catastròfiques i el seu impacte en l'empobriment. Després, vaig analitzar l'equitat en l'ús dels serveis de salut i l'eficiència de l'assignació de subvencions per part de l'Agència de les Nacions Unides per als Refugiats (ACNUR). Finalment, vaig explorar l'accessibilitat a l'assistència sanitària i els motius que porten a que les necessitats sanitàries no es cobreixin per als emigrants i refugiats que viuen a 4 països d'Europa i vaig fer comparacions entre aquests països.

Durant tota la investigació, els resultats han destacat importants reptes en l'accés a l'atenció sanitària per part de emigrants i refugiats. Al primer país d'asil, els refugiats viuen en gran part sota el llindar de la pobresa i solen incórrer en pagaments en metàl·lic que provoquen una despesa sanitària catastròfica. A més, l'anàlisi demostra que sense una subvenció equitativa i una assignació eficient per part de l'ACNUR els refugiats pobres no poden pagar els serveis sanitaris. Mentre que tots els països de la UE han assegurat polítiques d'integració dels emigrants per abordar els principis de protecció i drets humans, s'han observat grans disparitats entre els estats membres en l'aplicació d'aquestes polítiques, fet que provoca que no es cobreixin les necessitats de salut dels emigrants i refugiats a Europa, agreujant les condicions de risc.

(Translated from English by Olinta Lopez)

Resumen

Los refugiados y los solicitantes de asilo a menudo se encuentran con situaciones en las que su salud y su bienestar se ven comprometidos. A pesar de sus necesidades de salud, el acceso a la atención sanitaria está a menudo restringido a los países de acogida, y esto se ve agravado por diversos motivos como la falta de políticas inclusivas, las barreras lingüísticas y culturales, la capacidad económica por pagar y el estatus legal. Mejorar la salud de los refugiados y emigrantes implica garantizar que estén protegidos de las consecuencias económicas de recibir atención médica.

Para medir la protección financiera en el país de asilo, he analizado principalmente las consecuencias que recaen sobre los refugiados y los solicitantes de asilo que viven en Egipto cuando acceden a la asistencia sanitaria, midiendo la incidencia y la intensidad de los gastos sanitarias catastróficas y su impacto en el empobrecimiento. Después, analicé la equidad en el uso de los servicios de salud y la eficiencia de la asignación de subvenciones por parte de la Agencia de Naciones Unidas para los Refugiados (ACNUR). Finalmente, exploré la accesibilidad a la asistencia sanitaria y los motivos que conducen a que las necesidades sanitarias no se cubran para los emigrantes y refugiados que viven en 4 países de Europa, e hice comparaciones entre estos países.

Durante toda la investigación, los resultados destacaron importantes retos en el acceso a la atención sanitaria por parte de emigrantes y refugiados. En el primer país de asilo, los refugiados viven en gran parte bajo el umbral de la pobreza y suelen incurrir en pagos en metálico que provocan un gasto sanitario catastrófico. Además, el análisis demuestra que sin una subvención equitativa y una asignación eficiente por parte de ACNUR los refugiados pobres no pueden pagar los servicios sanitarios. Mientras todos los países de la UE han asegurado políticas de integración de los emigrantes para abordar los principios de protección y derechos humanos, se han observado grandes disparidades entre los estados miembros en la aplicación de estas políticas, lo que provoca que no se cubran las necesidades de salud de los emigrantes y refugiados en Europa, agravando las condiciones de riesgo.

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Note on the structure of the thesis

This thesis follows the publishable paper format, in which a series of three papers is submitted as a thesis. The papers are thematically linked and tied together with an introduction and a conclusion.

1. Background and introduction

There are many reasons why people around the world seek to rebuild their lives in a different country, some look to get a job or pursue an education. Others are forced to flee persecution for reasons of race, religion, or political opinion and millions flee from armed conflicts or other crises or violence.

According to the United Nations, the estimated number of international migrants worldwide increased in the last years, reaching 281 million in 2020 (3.4% of the global population) [1], of that 80 million were refugees and asylum seekers forcibly displaced from their homes.

Millions of people fled conflict in Syria, Iraq, Afghanistan and Ukraine, as well as persecution in areas of Southeast Asia and sub-Saharan Africa, creating the highest level of displacement since World War II [2]. These were not isolated incidents, but part of a worldwide phenomenon with vast displacements of people globally in the last century [3]. While countries neighbouring those crises of the displaced population typically host the largest number of refugees, further movements towards other destinations—especially high-income countries—also rose substantially.

In mid-2016, Turkey hosted the largest number of refugees (2.8 million) of any country, while regionally, sub-Saharan Africa hosted 4.5 million and European countries (excluding Turkey) 2.1 million refugees in total [4]. Within Europe, Germany, Italy, France and Greece received the greatest numbers of asylum applications in 2016 [5]. Humanitarian assistance rose to a

global total of US$ 27.3 billion in 2016—the highest ever, but only 60% of the estimated amount needed [6].

The distinction between migrants and refugees is important in discussing these two sets of people.

Definitions: According to the 1967 Protocol of the 1951 Refugee Convention, a **Refugee** is a person who, 'owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinions, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country.' The 1984 Cartagena Declaration states that refugees also include persons who flee their country 'because their lives, security or freedom have been threatened by generalised violence, foreign aggression, internal conflicts, massive violations of human rights or other circumstances which have seriously disturbed public order' [14].

While **Migrant**, there is no internationally accepted legal definition of a migrant, the international Organisation of migration (IOM), summarises the term in a number of well-defined legal categories of people, such as migrant workers; persons whose particular types of movements are legally defined, such as smuggled migrants; as well as those whose status or means of movement are not specifically defined under international law, such as international students. Lots of people don't fit the legal definition of a refugee but could nevertheless be in danger if they went home.[7]

Refugees are therefore a sub-set of migrants who are specially defined by their reasons for displacement and fear of consequences if they return and who are afforded special protection and entitlements by international agreements [8, 9].

Who is an **asylum-seeker**? An asylum-seeker is a person who has left their country and is seeking protection from persecution and serious human rights violations in another country, but who hasn't yet been legally recognized as a refugee and is waiting to receive a decision on their asylum claim under relevant international and national instruments. In case of a negative decision, the person must leave the country and may be expelled, as may any non-national in an irregular or unlawful situation, unless permission to stay is provided on humanitarian or other related grounds [10h].

For example, in the EU:

A refugee in the EU: is an asylum seeker who has been granted refugee status or subsidiary protection status in an EU Member State or benefits from a Resettlement programme.

Migrant in the EU: is any third-country national -without an EU/EEA passport-. This can encompass the following types of people/legal situations:

i. Third-country nationals that are residing in the EU or Health Programme participating country in a regular manner (e.g. through a study or work visa);

ii. Third-country nationals arriving through family reunification under the Dublin Regulation or Family Reunification Directive.

iii. Asylum seekers: i.e. third-country nationals that submitted an application for refugee status in the EU or Health Programme participating country and which are awaiting the decision;

v. Detected irregular migrant: Third-country nationals that are apprehended for entering, staying or residing in the EU and are awaiting to be returned (often whilst being detained)

Beyond the technical definitions and country policies, when refugees and migrants first flee the conflict in their home country or area, they settle in places where they hope to find safety and shelter. If that involves crossing a border, the first country that a person arrives at and attempts to find safety in after leaving their home country is called the country of first asylum.

The majority of the world's refugees live in a country that borders their own. People usually seek refuge in either refugee camps or urban areas. When people arrive in a new country after fleeing from conflict, they often don't have passports and other official documentation. It can be difficult to find safety and shelter, particularly if they don't speak the local language.

Often, people live for many years in countries of asylum; some don't even know their home country. Many are forced to move between countries in search of refuge. Some live in

'protracted refugee situations', meaning that refugees live in exile outside their home countries for five years or more without a long-term protection solution (such as resettlement in a developed country) in sight.

The truth is that around 11.6 million refugees and asylum live in a protracted situation, [11] as Syrian refugees in Jordan, Sudanese in Chad or more Burmese in Thailand. That is, these men, women and children have been in exile – in limbo – pending a durable solution for years. According to some accounts, the average time a person spends as a refugee is 16 years.

In the current international context, finding durable solutions for refugees is becoming increasingly complicated. The potential answers are considered within these three types of durable solutions: repatriation, local integration, or resettlement, each one of them with a different set of conditions and processes.

In cases of protracted refugee situations, finding a way forward becomes even more difficult because of donor fatigue (which results in a lack of resources). While Resettlement options to a third state different to the one of arrival – usually a rich state – are limited and accompanied with difficulties in integrating into the host country.

In general, the lives of these people are brought to a situation of stagnation that is difficult to overcome. It is not only donors that become dissatisfied with the situation, local communities who at first may have been welcoming can also develop animosities, and humanitarian workers – including the UN High Commissioner for Refugees – find themselves having to operate with very few resources and lots of constraints.

Those migrants and refugees reach the state of asylum carrying the burden of their diseases from their country of origin, others developed it during their traumatic travel experiences with an impact on their mental health and subsequently on their integration if granted [12;13].

According to WHO, Refugees and migrants are likely to have good general health, but they can be at risk of falling sick in transition or while staying in receiving countries due to poor living conditions or adjustments in their lifestyle [14].

Refugee and migrant populations present a series of specific vulnerabilities that pose further risks to their health status. Prolonged fear, chronic anxiety, low self-esteem, loss of control,

and alienation are common emotional states among R&M—it is known that chronic exposure to these may have a detrimental effect on health [15]. However, the increased vulnerability of R&M is not only caused by adverse emotional states but also by the underlying structural factors influencing the basic social determinants of health. R&M face further health challenges caused by epidemiologic and demographic dynamics, such as the high burden of non-communicable diseases due to ageing populations and unhealthy lifestyles, combined with a prevalence of communicable diseases related to poor hygiene and lack of access to basic health services [16,17] resulting in the need for necessary healthcare use, being likely to increase [18].

A recent publication by WHO [19] reported that refugees and migrants appear to be less affected than their host populations by several non-communicable diseases on arrival; however, if they are in conditions of poverty, the duration of their stay in host countries increases their risk for cardiovascular diseases, stroke or cancer. As migrants and refugees are likely to change their lifestyles to engage in less physical activity and consume less healthy food, they are also more prone to risk factors for chronic diseases.

The displacement processes themselves can make refugees and migrants more vulnerable to infectious diseases. According to WHO, the proportion of refugees and migrants among a host country's tuberculosis (TB) cases varies broadly depending on the TB prevalence in the host population; and a significant proportion of migrants and refugees who are HIV positive acquired the infection after they arrived in Europe. Another study comparing European countries also suggested that migrants are more vulnerable to communicable diseases, occupational diseases, poor mental health, injuries, diabetes mellitus, and maternal and child health problems [20].

Generally, Refugees' and Migrants' health status is influenced by the hardships of the migration process which negatively affects the physical health status of migrants. This was shown in a French study [21] that demonstrated how migrants' health status tended to deteriorate with the duration of stay which may be due to discrimination; poor employment conditions; differences in access and use of healthcare services. Similarly, an Austrian study showed that the population of migrant origins suffers to a greater extent than the resident population from heart disease, allergies, digestive and urogenital and dermatological

problems and emphasizes the link between migrants' health conditions and the stressful situations they face in both the workplace and the community at large [22].

The major impact that social and economic determinants may have on health status is widely recognized, with the WHO proclaiming action on social justice as a top health policy priority [23], and point the role of Legal status as the very important determinant of access of migrants to health services in a country.

2. Problem statement

Access to Health Care and Financial Protection of refugees and Asylum Seekers in the first country of asylum (Protracted situation in Egypt)

The Syrian conflict has created one of the worst humanitarian crises of our time. Since 2011, over half of Syria's pre-war population of 22 million has been forced to flee their homes in search of safety and opportunity, many of them more than once. Families still living in Syria are struggling to survive and meet their basic needs.

The Syrian crisis is increasingly complex and long-lasting, Since the eruption of the conflict in Syria, Egypt has been hosting a significant number of Syrian refugees around 123,000 registered with UNHCR. Even before the Syria conflict, Egypt was already hosting thousands of asylum seekers from countries including Sudan, Somalia, Iraq, Ethiopia, South Sudan and Eritrea.

The protracted Syrian crisis requires humanitarian assistance to be provided in longer-term responses is usually met with donors' fatigue and finally reduced assistance, whereas refugees find themselves in an isolated environment of social and financial desperation.

At the same time, refugees and asylum-seekers often encounter situations in which their health and well-being are compromised, and despite their health needs, access to health care is often constrained in the host countries, and this could be aggravated by various other reasons such as a lack of inclusive policies, language and cultural barriers, financial ability to

afford, out-of-pocket payments, shortage of drugs and investigations, insensitive encounters with national service providers, and inadequate information on types and place of availability of health system and services and legal status [24,25].

The situation of Refugees in Egypt: Syrian refugees in Egypt are largely urbanized and predominantly integrated within the host communities of six major governorates. Like Syrian refugees everywhere, those who go to Egypt find themselves in an increasingly difficult position as the conflict at home drags on. They are running out of the scarce resources they may have brought with them. Finding work that pays a living wage, even in the informal labour market, is also a major challenge in a country like Egypt, which has a huge pool of unemployed young people and where foreigners require work permits that are rarely granted.

Refugees in camps are offered assistance and protection as part of the UNHCR's mandate and as an incentive by the host government to keep them concentrated in one area. In contrast, in urban settings, which is the case for all Syrian refugees in Egypt, assistance can be sparse, unevenly distributed, and insufficient to meet basic needs.

The United Nations High Commissioner for Refugees (UNHCR) is primarily mandated to provide international protection and humanitarian assistance and to seek permanent solutions for persons within its core mandate responsibilities. UNHCR's original core mandate covered only refugees, that is, all persons outside their country of origin for reasons of feared persecution, conflict, generalized violence, or other circumstances that have seriously disturbed public order and who, as a result, require international protection. However, over time UNHCR's mandate has been expanded to cover returnees and stateless persons.

The global UNHCR urban policy advocates for the integration of refugees into the national health system as a sustainable strategy to guarantee access to health care while keeping attention to the most vulnerable. This strategy was comforted following a ministerial decree of September 2012, that granted all Syrian refugees, equal access to public primary health care services at similar costs as the Egyptian population.

UNHCR Health program in Egypt:

UNHCR aims to respond to the needs of the refugee population and the impacted community with a general objective to reduce morbidity and mortality and ensure that all refugees will be able to fulfil their right to access the quality of health care services; primary and essential secondary and tertiary care. Specific gaps in mental health and non-communicable diseases programmes and their follow-up in national public primary care settings are addressed through a partner (service provider), this partner is an NGO, which extends care and treatment to the refugees with a focus on chronic diseases and acute care for mother and children.

The NGO partner has several fixed clinics in the highly concentrated refugees´ areas and extends some mobile clinics or referrals in other fewer refugees´ dense areas.

The medical examination is provided for free, however, when it comes to investigations and the medications, a cost-contribution or co-payment equal to Out-Of-Pocket (OOP) applies, unless there is a vulnerability waiver for unaccompanied minors, victims of torture or violence and other specific conditions. The contribution was fixed up to 15% for investigations and medications for acute cases (eg. antibiotics) and 25% for Chronic diseases medication, these contribution fees are paid directly to the third party, such as the pharmacy or the laboratory, and it is not remitted to UNHCR.

Concerning public primary healthcare, service is provided at the same rate as for nationals, which is a nominal contribution in exchange for examination and treatment when available. if not available, the patient may pay the total amount from his pocket, unless he/she decides to approach UNHCR clinics with the justification, then a fixed contribution applies.

UNHCR subsidies the provision of secondary and tertiary healthcare services as well, including life-threatening emergencies to Syrian refugees. The referral system is managed by a third party and consists of a network of providers, including hospitals, pharmacies and laboratories to ensure the most cost-effective service.

Egypt Health System: The health care system in Egypt is multifaceted with a large number of public entities involved in the management, financing and provision of care. The Ministry of Health and Population is in charge of the overall health and population policy as well as the

provision of public health services. The National Health System in Egypt has different public and private providers and financing agents, and thus it oversees the work of a large network of health facilities that offer comprehensive healthcare to all Egyptians at highly subsidized rates. Despite subsidization, statistics show that the utilization of MOHP outpatient facilities remains very low, with a high inclination to resort to private healthcare providers, even among the poor segments of society (National Health Account, 2015).

In 2018, out-of-pocket expenditure as a share of current health expenditure for Egypt was 62.3 %. Accordingly, many households in Egypt rely on OOP payments to finance healthcare services. Egypt has one of the highest OOP to public health expenditure ratios among lower-middle-income countries.

Health systems are not just about improving health, good ones also ensure that people are protected from the financial consequences of receiving medical care.

For refugees in the country of asylum, the burden of Out-of-Pocket spending could create barriers to healthcare access and use [26] and drag them to further poverty as they are running out of the scarce resources, they may have brought with them.

Financial Protection in health means that everyone can obtain the health care services they need without experiencing financial hardship. The concept of financial protection rests on the theoretical foundations of the economic value of reduced uncertainty or financial risk of being exposed to large healthcare costs.

Inadequate financial protection in health increases the vulnerability of the refugees, undermines well-being, and exacerbates inequities. This inhibits access to medically necessary, and appropriate care which may result in poorer health outcomes, illness-related direct and indirect costs, and even irreversible disability and death.

A natural starting point for measuring the financial protection of the refugees when facing access to healthcare was to examine the distribution of 'catastrophic' health expenditures, by refugees in a country of asylum.

Catastrophic Health Expenditures: refers to the fact that falling ill may induce unpredictable shocks to a household's living standards. The extent to which illness 'shocks' result in catastrophic economic consequences for a refugee household depends on medical

care costs, but not only, the effects of other socio-economic determinants; the reduced labour supply and productivity, and the extent to which households can use their consumption over several periods by borrowing and lending mechanisms [27] are as well important elements.

When people have to pay fees or co-payments for health care, the amount can be so high in relation to income that it results in a “financial catastrophe” for the individual or the household. Such high expenditure can mean that people have to cut down on necessities such as food and clothing or are unable to pay for their children's education.

According to WHO, every year, approximately 44 million households, or more than 150 million individuals, throughout the world face catastrophic expenditure, and about 25 million households or more than 100 million individuals are pushed into poverty by the need to pay for services. Moreover, the impact of these out-of-pocket payments for health care goes beyond catastrophic spending alone. Many people may decide not to use services, simply because they cannot afford either the direct costs, such as consultations, medicines and laboratory tests or the indirect costs, such as transport and special food. Poor households are likely to sink even further into poverty because of the adverse effects of illness on their earnings and general welfare.

Refugees have very volatile access to informal labour and consequently uncertain income, exposing them to a high risk of catastrophic consequences. This is both because they usually have a greater need for health services and because they lack financial resources. In the absence of effective protection mechanisms, these groups face continuing risks of both financial hardship and ill-health.

A complementary perspective to catastrophic health expenditures is that of impoverishment. Impoverishment captures how far people are pushed below the poverty line as the result of health spending, and the possibility that health spending may push households who are already poor even further into poverty. The core idea is that no refugee should be pushed into poverty—or further into poverty—because of health care expenses.

Inequity In Healthcare:

Equal access to appropriate, effective health services is essential for equity in health [23]. Inadequate financial protection in health increases vulnerability undermines well-being and exacerbates inequities. Improving access to healthcare for the refugees is among the priority objectives for promoting social inclusion and equal opportunities, and requires further attention to the principle of equity.

There is a common misconception that equity and equality mean the same thing — and that they can be used interchangeably, especially when talking about Health care.

Health inequality is a generic term used to designate differences, variances, and disparities in the health achievements of individuals and groups (Murray et al., 1999), while health inequity usually refers to "the distribution of resources and other processes that drive a particular kind of health inequalities between more and less advantaged social groups", in other words, a health inequality that is "unjust or unfair" (Braveman and Gruskin, 2003).

Equity means social justice or fairness; it is an ethical concept, grounded in principles of distributive justice [28;29]. The concept of equity is an ethical principle; it also is consonant with and closely related to human rights principles. This has been set forth by the World Health Organisation (WHO) has stated that the progressive realization of the right to health involves a concerted and sustained effort to improve health across all populations and reduce inequities in the enjoyment of health; and has defined Equity as 'the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically' [30].

Murray et al. (1999) considered health inequalities as "any avoidable differences in health among any individuals, who should be grouped a priori according to their socioeconomic status" [31]. Braveman (2006) also stated that: "Equity in health should be operationally defined as narrowing avoidable disparities in health and its social determinants between groups of people who have different levels of underlying social advantage" [32]. However, this definition does not include the financing of healthcare payments which is an integral part of a health system [33, 34].

Consequently, equity in healthcare shall encompass two main principles, fair allocation of resources and equitable access to healthcare services.

Public health equity issues facing the humanitarian action have been previously outlined in issues of resource allocation and decision-making [35,36, 37,38]. Ensuring greater equity in the use of needed health services and financial protection when accessing those services are fundamental policy objectives for countries, and organisations like UNHCR, that seek to protect the people in concern and the most in need among them [39, 40].

The research on equity in healthcare has been mainly concerned with four broad sets of outcomes [41, 42]: (1) healthcare utilization according to health needs irrespective of socio-economic status, ability to pay, social or personal background (horizontal equity); (2) subsidies received using services; (3) payments people make for healthcare (out-of-pocket payments, insurance premiums); and (4) health status.

Assessing inequity across levels of care, after observing service utilization among the Syrian refugees is the steppingstone to ensuring their protection. In the context of increasing healthcare costs from one side, heterogeneity of humanitarian crisis, donors fatigue and the variation of needs of different populations, agencies are committed to becoming more effective, efficient and optimally allocating the limited resources in order to respond to crises in ways more attuned to the needs of those who are suffering [43]. The strategic resource allocation in health care should be driven by at least two main goals: equity and efficiency. This implies that the allocation of UNHCR health spending needs to be focused on the poor and recognise differences in the cost of accessing health care services by different geographic, demographic and socio-economic groups.

In this second part of the thesis research, I take a closer look at the humanitarian dilemma on the distribution of funding and the protection of the most vulnerable when accessing healthcare.

Europe as country of destination and resettlement

Many of the migrants and refugees hoping to reach Europe are seeking refuge from violence and deepening economic insecurity in their home countries of origin, in Africa, Asia and the Middle East. This Journey to and through Europe for refugees and migrants remains fraught with a lot of dangers.

By 2020, 10% of total refugees in the world were found living in the EU, while in 2019, 2.7 million immigrants entered the EU from non-EU countries, and 472.000 asylum applications were lodged in the EU 2020 [44].

Approaches to managing refugees and migrants' health problems have been under pressure with the increasing challenges associated with the size, speed, diversity and disparity of current migration patterns and factors such as barriers to access to health services and the economic burden of the refugees in his final country of resettlement have not sufficiently been addressed [45].

Despite that many refugees and legal migrants may have been granted the right under the national law of the EU Member states to access available healthcare, this does not guarantee that they will be willing or able to [46]. Often administrative procedures such as requirements for documentation or discretionary decisions create barriers to accessibility [47). Besides, Legal entitlement does not guarantee access and social insurance-based systems are particularly problematic for asylum seekers and refugees since registration is more complex than in tax-funded systems [48]. Moreover, the structure and the organisation of health systems, as determined by government policy, have a profound influence on the ability of particular groups to access healthcare [30;41;49]. The responsiveness of the national health system in terms of availability of services, the model of health insurance, the extent of health care coverage and out-of-pocket payments can all impact populations and individuals' ability to access health care [30].

Access to health care is a fundamental determinant of health and its equitable distribution across the population is a critical issue of health services research. The main target of health systems is to ensure equity in access to needed health care irrespective of socioeconomic status and other non-need characteristics.

Unmet needs: are defined as “the difference between services judged necessary to deal appropriately with health problems and services actually received” [50], and are considered as simple tools in monitoring the accessibility and the extent of inequity in access and use of health care [51]. The difference between the services judged necessary and the services actually received implies a failure for people to improve their health status. In the European literature, the study of unmet needs as a determinant of access to healthcare is limited.

Past research has shown that unmet health needs result from barriers that are related to the health system and characteristics or personal attitudes of the individuals [51,52,53]. Accordingly, the barriers were summarised around three categories including accessibility (related to cost and proximity), availability (related to the timely provision of health service), and acceptability (related to personal attitudes and circumstances). The health systems in the EU countries receiving migrants are well equipped and experienced to diagnose and treat common infectious diseases and NCDs; they should also be prepared to provide such health care to refugees and migrants. However, a recent European survey shows that migrants suffer from health inequalities, even though they are often healthier than natives, which is described in the literature as the “healthy migrant effect” [54-13].

Moreover, although migration is increasingly recognized as an independent social determinant of health [55], poorer socio-economic conditions could derive from social exclusion mechanisms that characterize the migrant status and ethnic origin [35]. Other studies report that migrants living in countries with poor integration policies experience poorer socio-economic and health outcomes, but do not estimate the effects of the socio-political context of migrants’ integration on health [56]. Moreover, it seems important to investigate with recent data whether migrant status can be considered an autonomous and significant determinant of health inequalities in Europe. Accordingly, we look to investigate the differential probability of unmet needs among migrants and refugees and to draw comparisons across four countries in the EU (France, Spain, Germany, and Greece). Those four countries have been the main countries of destination in 2020, with 102 500 applicants for international protection in Germany registered and accounting for 24.6 % of all first-time applicants in the EU, followed by Spain (86 400, or 20.7 %), France (81 800, or 19.6 %), ahead of Greece (37 900, or 9.1 %)[25]. Besides, those countries reflect the three different health financing and contribution mechanisms, described by Thomson et al. [57]

3. Scope and objectives of the research

The thesis seeks to assess the socio-economic burden fallen on refugees and asylum seekers from accessing healthcare during their presence in the country of asylum (e.g. Egypt) and even after resettlement in the country of final destination (e.g. Europe), how laws, systems structures and policies vary and govern refugees' and migrants' access to their health needs.

Moreover, this research also aims to support actions to minimize vulnerability to ill-health and to address the social determinants of health by promoting refugees' and migrants' ability to access health services.

During this research, I looked to describe several overarching challenges and priorities for the promotion of the health of refugees and migrants, building on humanitarian principles.

Finally, this research looks to contribute to the literature and enrich the global understanding and consideration of the migrant and refugee's health needs.

This thesis has responded to the following objectives:

In the first country of asylum, as in Egypt:

1. To assess the financial burden fallen on the refugees when facing health problems and how could it expose them to further vulnerability. That, by measuring the incidence and intensity of catastrophic health expenditures (CHE), its determinants, and the impact on impoverishment.
2. To assess the level of inequities in the service utilisation among refugees and asylum seekers living in the first country of asylum (e.g. Egypt) ;
3. To conduct a benefit incidence analysis on the health assistance subsidies provided by the United Nations agency (UNHCR) to the refugees and evaluate the equity in the distribution and its role to ensure financial protection of the most vulnerable.

In the countries of final destination- 4 countries in Europe

4. To assess the level of unmet needs for refugees and migrants living in the 4 European countries and investigate the reasons for inter-country variability in terms of affordability, system efficiency and policies enabling accessibility.

4. HYPOTHESES

Hypothesis

In the thesis, I aim to answer several specific questions by testing the following hypothesis:
First paper hypothesis:

(1) Refugees and Asylum seekers do not have the economic capacity to pay for sudden health problems.
(2) Out-of-pocket Health expenditure exposes refugees and asylum seekers to poverty in the country of asylum.

Second paper:

(1) Poor refugees and asylum seekers use more healthcare services than the richer group.
(2) The available resources are appropriately distributed across refugees' socioeconomic groups to ensure equity and financial protection of the refugees and asylum seekers when seeking healthcare.

Third paper:

(3) Migrants and refugees living in Europe have a higher risk of facing an unmet need
(4) National policies toward migration affect the health status of the migrants and refugees living in any of the EU countries

The overall hypothesis is that Migrants and Refugees are not protected from the financial consequences associated with the use of healthcare.

5. RESEARCH METHODS

Data Sources

Data used in the thesis come from two sources:

1. A cross-sectional survey of Syrian refugees living in Egypt, which was conducted in September 2017**,** based on a detailed questionnaire, has served to answer the research questions addressed in the first and second papers.
2. 2019 cross-sectional survey of the European Union Statistics on Income and Living Conditions (EU-SILC) in a set of 4 countries: Germany, Greece, Spain, and France, and has served to answer the research questions of the third paper.

Data collection and Questionnaire

1. The cross-sectional Health Access and Utilization Survey (HAUS)

The cross-sectional Health Access and Utilization Survey (HAUS) is a monitoring tool used by UNHCR to collect information on access and utilization of healthcare services in many countries.

In September 2017, a customised cross-sectional survey for Syrian refugees living in Egypt was conducted to characterize health-seeking behaviours and barriers related to access and utilization of outpatient and inpatient health services.

A stratified systematic random sampling was used to attain a nationally representative sample of Syrian refugee households, which are registered with UNHCR and have a phone number listed in the UNHCR database. Stratification was based on Syrian refugees' geographical distribution in Egypt's six governorates (Giza, Greater Cairo, Alexandria, Damietta, Sharkia and Qalyubia).

The sample size was estimated at 384 refugee households assuming a precision of 10% and using a level of significance of 0.05 [58]. However, to account for the non-response that was experienced in previous surveys, 914 Syrian households were contacted, and a total of 507 household responses were retained and included in our analysis. The non-response rate was 44.6%, Households that have been contacted with no response after 3 contact attempts, or

with invalid phone numbers and households which didn´t agree to participate in the survey have been excluded from the study.

To protect the anonymity of respondents, no information was recorded that could be used to identify the household or individuals and verbal consent was obtained and recorded from all respondents. No participants under 18 years were included in the study.

The questionnaire has been accustomed and translated into Arabic with partner agencies, to set out Refugees´ health sector priorities in Egypt and focused on health services utilization, access to care, barriers to care-seeking, household expenditures, and non-communicable chronic disease (NCD).

Household heads and primary caretakers of children were prioritized to answer questions on behalf of the household and its members.

Household members were defined as people who share a dwelling space and share meals, regardless of biological relation.

Questionnaire: The first part of the questionnaire included information about demographic characteristics and health status of the household head and each household member. The characteristics of 1872 individuals included age, gender and physical conditions (presence of disability and the presence of one or more chronic diseases); the predefined list of NCDs included hypertension; diabetes; musculoskeletal disorders; respiratory diseases or asthma; cardiovascular diseases; digestives disorders; epilepsy and mental illness. Data was also collected on household income, consumption of goods including food, rent, transportation, spending on education, and out-of-pocket health expenditures during that month [59]. All expenditures were noted in Egyptian Pound (EGP) and converted into USD using the 2017 exchange rate (1 USD = 17.6 EGP).

The second part of the questionnaire collected information on the utilization of health services by each individual based on outpatient use and inpatient admission and defined four variables:(1) The probability of public outpatient visit was calculated from the question “In the past month have you visited a public health centre (Family Medicine centre, Maternal, Child health centre), a UNHCR Supported clinic or NGO clinic, NGO/charity clinic or a public hospital, for outpatient care consultation?”; (2) The probability of private outpatient visits

was calculated from the question “In the past month have you visited a private health centre (Family Medicine centre, Maternal, Child Health centre) or a private hospital, for outpatient care consultation?”; (3) The probability of public inpatient visits was calculated from the question “Have you received been hospitalised during the last 12 months in a public or UNHCR-supported hospital?”; (4) The probability of private inpatient visits was calculated from the question “Have you received been hospitalised during the last 12 months in a private facility?” In our dataset, all four probabilities may only be equal to one (at least one consultation within the month or at least one hospital stay within the year) or zero.

Statistical analysis

Fairness in financial contribution and protection against financial risk is based on the notion that every household should pay a fair share.

Monitoring financial protection typically relies on two indicators – catastrophic health expenditures associated with out-of-pocket (OOP) payments for health reducing people’s ability to spend on other essential items, and impoverishing health expenditures associated with OOP payments for health pushing or further pushing people into poverty. Both indicators are thus concerned with the impact of OOP payments, defined as those payments that patients make directly to health providers at the time of service.

First Paper: Measuring Catastrophic Health Expenditures (CHE) and poverty line

A natural starting point for measuring the financial protection of the refugees when facing access to healthcare was to examine the distribution of ‘catastrophic’ health expenditures, defined as health spending that exceeds some threshold, defined usually in relation to the household’s ‘pre-payment’ income, and, given the poor reliability and volatility of the reported income of refugees, household expenditure is used as a proxy for effective household income.

Generally, catastrophic health expenditure (CHE) represents out-of-pocket (OOP) payments for health care that exceeds a specified threshold of the household’s income or household

capacity to pay (CTP) [60,61,62]. There is no consensus on the threshold above which health expenditures are considered catastrophic. For example, Wagstaff. defined CHE as direct OOP medical costs exceeding 10% of the monthly household income [61]. The advantage of this approach is that it is not dependent on household allocation decisions across discretionary and non-discretionary items. However, it fails to distinguish between populations who just manage to meet subsistence needs with little or nothing left for discretionary expenditures and richer groups who have more latitude in discretionary spending.

The second approach of Xu and WHO considers The 'capacity-to-pay (CTP) and defines a financial catastrophe as the OOP expenditure exceeding 40% of the household income net of subsistence needs [62], addresses the previous limitation and recognising that poorer households spend a higher proportion of available resources on essential items than richer households.

In the research both CHE as a share of expenditure net of spending on necessities expressed as "non-discretionary expenditure" following Wagstaff et al [42] and "capacity to pay" of Xu et al [62], are presented.

Household capacity to pay ($ctpay_h$) is then defined as household non-subsistence spending. To consider the scale economies in household consumption, I used the adult equivalent household size rather than actual household size. The WHO has established the threshold at 40 % for developed countries but affirms that this percentage can change depending on the specific situation of the country [62]. We tested the threshold of 40% and 30%.

Considering that the poorer the household, the higher the share of total income or consumption devoted to food, calculations of subsistence expenditures and poverty line are based on the average food expenditure of households whose food expenditure share of total expenditures is in the 45-55 percentile range [63]. This gives the subsistence expenditure per (equivalent) capita, which is also the poverty line.

Total expenditure was estimated from monetary and in-kind payments on all goods and services plus the monetary value of consumption of homemade products. Food expenditure included items purchased and consumed from own production. Health expenditure consisted of OOP payments made by individuals to health providers at the time of service.

For each household in the dataset, three health expenditure ratios were constructed as the share of OOP payments for health in total expenditure, total expenditure net of all food expenditure, and total expenditure net of subsistence expenditure on food.

Table: Measuring catastrophic health expenditures

Approach	**Budget-share**	**Capacity-to-pay**	
Method	**1.Total expenditure**	**2.Non-food expenditure**	**3.Non-subsistence expenditure**
OOP Share	**OOP/exp** OOP=OOP health payments *exp*=total expenditure	**OOP/exp−food** *food*=food expenditure	**OOP/exp−se** *se*=subsistence expenditure
Threshold range tested	**10%-15%-30%**	**10%-15%-30%**	***30%***

Health care payments and poverty

A difficulty with the "catastrophic" payment approach is that it is blind as to how far 'catastrophic' payments actually cause hardship and cross the poverty line as a result of the expenditure.

Impoverishment captures how far people are pushed below the poverty line as the result of health spending, and the possibility that health spending may push households who are already poor even further into poverty.

A non-poor household is impoverished by health payments when it becomes poor after paying for health services. The Impoverishment effect of OOP payments for health care can

be obtained by the difference between a poverty level with the gross of OOP payments (before health care payments) and a poverty level with the net of OOP payments (after health care payments).

it is defined as 1 when household expenditure is equal to or higher than subsistence spending but is lower than subsistence spending net of out-of-pocket health payments, and 0 when both are equal to or higher than subsistence spending.

Household impoverishment was also estimated by calculating poverty levels using consumption expenditure before making health care payments and after paying for health care (Wagstaff and van Doorslaer methodology). Both the headcount and the poverty gap were calculated.

Determinants of CHE

To explore the Characteristics of households related to catastrophic health expenditure, a logistic regression analysis was used. The threshold of household spending higher than 30% of its capacity to pay (CTP) towards health care, was used as a proxy for CHE in the regression model.

The basic functional form for the logistic regression is:

$\ln(y_i /(1- y_i) = \alpha + \Sigma\beta_i X_i$

The dependent variable (the probability of a household facing CHE in the last month, α is the constant, X_i is each one of the independent or explanatory variables, β_i is the coefficient of the independent variable X_i, and ε_i are the residuals or error terms.

The independent household variables are available socio-economic indicators such as age and gender of the head household, employment status, years of formal education, household size, living area (urban/rural), duration since the arrival to Egypt, Governorates (region), number of children under 5 years, having a pregnant woman, facing hospitalization in the last year, presence of a person with a disability, number of members with chronic illnesses, and income in the last month. The probability of CHE was calculated by Greene's logit equation [64] and the model goodness-of-fit was assessed by a Hosmer–Lemeshow test [65].

Second Paper: Inequity in Healthcare use

Inequality was defined as any significant differences in healthcare use between sub-populations, and inequity as the part of inequality that is considered unjustified, where factors correlated with healthcare are considered unfair due to the inability to access equal care based on need, regardless of socioeconomic status [42].

To measure inequity, inequality in the utilization of healthcare will be standardized for differences in justified need (age, gender, NCD, and disability) and unjustified non-need (socioeconomics determinants).

Concentration index measuring socioeconomic-related inequality in healthcare use

The methodology described by O'Donnell et al. [41] was adopted for the measurement of the concentration indexes and the decomposition of inequalities.

Here again, given the poor reliability and volatility of reported income of refugees in the informal market, per-capita household consumption was used as a proxy measure of income or living standards [66]. Accordingly, data on expenditures were collected for four main classes (i) food, (ii) non-food, non-durable items (such as hygiene, clothes, and transportation) (iii) consumer durables (as for rent and utilities), and (iv) housing in addition to the expenditure on education and health and total expenditures.

To reduce the impact of household economies of scale, it was adjusted to adult equivalence, as follows: Eqconsumption = household consumption / (family size) $^{0.56}$

The value of the adult equivalent consumption has *been* estimated from previous studies based on 59 countries' household survey data, and it equals 0.56 [63].

Adult equivalent consumption (*Eqconsumption*) was also used as the ranking variable for the income status of the individual.

The concentration index (CI) was used [67,68] to assess socioeconomic inequality in utilization by type of health services as we present the analysis of health services utilization by equivalised per capita consumption quintile. The concentration index is defined as twice the area between the concentration curve and the line of equality (the 45-degree line). CI for the actual utilization of healthcare services ranges between -1 and 1. When the CI takes a negative

value, it indicates a disproportionate concentration of healthcare use among the poor. The CI is calculated using the covariance between healthcare use and the fractional rank of the individual sorted by consumption status:

$$CI = \frac{2}{y} + Cov_w(y_i, \mathrm{R}_i)$$

Given that our health utilization variables were binary (1,0), the bounds of the CI are not -1 and 1 but depend on the mean of the variable. A Wagstaff normalisation process that ensures that the CI is quantified in the range -1 to 1, for any given mean of the health utilization variables is applied by multiplying the calculated CI by (1/(1-μ).

Decomposition of inequality

The CI measures the degree of inequality in healthcare use by consumption, however, our interest also lies in measuring the extent of inequity in healthcare use. Horizontal equity here is defined as "equal treatment for equal need, irrespective of other characteristics such as income, race, place of residence, etc.". Then, to explain inequity, we use the decomposition approach, which partitions the factors contributing to inequity in healthcare use.

To decompose total inequality, we constructed two additional healthcare utilization variables: (1) The total healthcare utilization for outpatient services was recorded, if the person reported at least a consultation in either public or private outpatient facility in the last month; and, (2) The total healthcare utilization for inpatient services was recorded if the person reported one hospitalisation in either public or private in the last year. The total healthcare utilization is equal to 1 if the person reported at least one consultation during the last month or a hospital stay during the last year, either in public or private services and zero otherwise.

The independent variables in the regression model were classified into three groups: (1) need variables, (2) consumption, and (3) other non-need variables to assess the extent to which each of these variables contributes to any inequality in healthcare utilization.

Several studies have shown how healthcare utilization could be influenced by factors such as educational level [69,70], socioeconomic status, presence of chronic illness [71,72], and family support. Based on this evidence, we defined healthcare needs in terms of the patient's health and disease status, as measured by the presence of NCDs, and disability. In addition, since

healthcare need is often gender and age-specific, we adopted gender and age as proxy need-measures of healthcare. The selection of other non-need factors, besides consumption, included Urban, size of the household, duration since the arrival to the country, Governorates, employment, level of education of the head of the household, and the knowledge of health services availability.

We used a linear approximation of a probit model with the partial effects evaluated at means (Doorslaer et al. 2004). The positive (negative) partial contribution indicates that the determinant increases (decreases) the total inequality in healthcare utilization, with positive (negative) percentages referring to increases (decreases) in percentages.

Horizontal inequity (HI).-

To measure inequity, inequality in the utilization of healthcare has been standardized for differences in need. After standardization, any residual inequality in utilization is interpreted as horizontal inequity, which could be pro-rich or pro-poor.

Like the CI, the HI index takes the value between -1 and +1 with a zero indicating no inequity in healthcare use. A negative (positive) and significant HI estimate indicates inequity is pro-poor (pro-rich) or healthcare use is more concentrated among the poor (rich) given the same level of health need among the individuals of the consumption distribution. The higher the absolute value of the HI index, the greater the degree of inequity.

Benefit incidence analysis (BIA)

BIA is a method that has been applied in the literature to measure the extent of equity in public subsidy distribution across socio-economic classes [73,74].

We use the BIA method to describe the distribution of UNHCR spending across individuals ranked by their living standards [68] and to identify to which extent the UNHCR subsidy is pro-poor or pro-rich to the health sector.

This method involves four steps (McIntyre and Ataguba 2011) [73]: 1) measuring the living standards or socio-economic status of the population; 2) estimating the unit cost attached to each service utilised (visit for outpatient and at least one-day hospitalisation for inpatient use); 3) estimating the monetary value of the benefits accrued to each socio-economic group

through multiplying the utilization rates by unit costs of relevant services; and, 4) summing total benefits within socio-economic groups resulting in total benefits for each quintile.

We analyzed benefit incidence for both outpatient and inpatient care by level of health care facility. Individuals are categorised by income, proxied by equivalised per capita consumption, to calculate the value of the health sector subsidy received by each individual. The cost of provision of the various health services subsidized by UNHCR for consultations, drugs, diagnostics tests (labs and imaging, etc), and hospitalisation, besides the running cost of the facilities, were collected from the 2017 UNHCR end-of-year financial report to estimate the unit cost and assess the benefits received by different groups. The unit cost is then calculated as the average cost by dividing the total UNHCR expenditure in the specific service by the total units used, taking into account that the net subsidy is weighted by the utilization rate to get the subsidy benefit of the individual.

Given the difference between official and reported user payments for healthcare use, we experiment with two measures of the UNHCR benefit received as in similar papers in the literature [74]. The choice of measure directly affects the computation of the subsidy since it modifies the difference between the unit cost of care and fees paid by the individual. The "Benefits received" were then defined in this paper as either net benefits (NB) or gross benefits (GB).

Net benefits (NB) - are calculated as the cost of each service use, net of user fees and other related out-of-pocket expenditures (OOP), this is the net benefit received by the Population. While Gross benefits (GB) – are calculated as the total cost of each service type for the provider independently of the financing sources, this is the benefit allocated by UNHCR. Providers include non-governmental organisations (NGOs) which are partners of UNHCR and public hospitals and hospitals supported by UNHCR. Then, the GB represents the cost for the UNHCR in the absence of user fees and any other OOP, but with the same level of healthcare use. OOP was collected for each service during the survey, and mostly involved the cost contribution of refugees in the investigation tests and medications fees for outpatient healthcare use, as OOP expenditures for inpatient care were often fully covered by UNHCR. For those individuals who self-reported OOP expenditures higher than the value of the GB of

the services, a zero value replaced the negative value following usual practice in previous papers [75].

CIs were calculated for healthcare utilization of both benefit measures, gross and net benefits. Also, CIs ranging between 0 and 1 indicated pro-rich distributions, while CIs ranging between 0 and − 1 indicated pro-poor distributions.

2. The cross-sectional Survey from the European Union Statistics on Income and Living Conditions (EU-SILC)

Data collection and Variables

In this study, we use the 2019 wave of Eurostat EU-SILC data to explore the variability of UN in four EU member states: Germany, France, Spain and Greece.

The European Union Statistics on Income and Living Conditions (EU-SILC) is an instrument aiming at collecting timely and comparable cross-sectional and longitudinal multidimensional micro-data on income, poverty, social exclusion and living conditions. This instrument is anchored in the European Statistical System (ESS) [76].

Third paper: Unmet needs

Access to healthcare is addressed through a question on subjective unmet needs for health care. The phrasing is as follows: “Was there any time during the last 12 months when, in your opinion, you needed a medical examination or treatment for a health problem, but you did not receive it?”. Individuals who respond positively—“Yes, there was at least one occasion when I really needed examination or treatment but did not receive it”—are then asked to give the main reason why they failed to access health care. Eight possible answers are provided: (1) “Could not afford to (too expensive)”, (2) “Waiting list”; (3) “Could not take time because of work, care for children or for others”; (4) “Too far to travel/no means of transport”; (5) “Fear of doctors/hospitals/examination/treatment”; (6) “Wanted to wait and see if the

problem got better on its own"; (7) "Didn't know any good doctor or specialist"; (8) "Other reasons".

Outcome variable: The outcome of interest is a binary (Yes or No) indicator variable "Unmet needs for medical or oral care". It aims to capture the restricted access to medical care, including dental care, via the person's assessment of whether he or she needed medical or dental care but didn't get it. Only the respondents who, during the last 12 months, reported needing medical or dental examination or treatment were asked this question.

The outcome variable aims to capture the restricted access to medical care via the person's own assessment.

Explanatory variables: Socioeconomic and demographic characteristics were used as explanatory variables. These variables include the age (18 years old and older), gender (coded 1=female, 0=male), log-transformed equivalent household income using OECD scale, self-perceived general health (coded 1=very bad, 2=bad, 3=fair, 4=good and 5=very good), self-reported chronic illness (coded 1=Yes, 0=No), country of survey (coded 1=Germany, 2=Greece, and 3=Spain, and 4=France), and migrant status (coded 1=Yes, 0 =No).

The migrant status variable is obtained from the variable being a recognized-non-born and non-European citizen. In the EU-SILC a recognized-non-European citizen is a person who is not a citizen of the reporting country nor any other EU country, but who has established links to that country which include some but not all rights and obligations of full citizenship.

Statistical analysis

The effect of migrant status is modelled on the likelihood of unmet needs for medical or dental care using a probit model with sample selection. The main probit model assumes that there exists an underlying relationship: $y_{1j}^{*} = \boldsymbol{X}_j\beta + u_{1j}$

such that only the binary outcome was observed:

$$y_1 = \begin{cases} 1 \; if \; y^* \geq 0 \\ 0 \; if \; y^* < 0 \end{cases}$$

where y_1^* is a latent variable measuring the propensity of unmet needs for medical or dental care, $\boldsymbol{X}$ is a set of control variables that incorporates the log-transformed equivalent

household income, the country of survey and migrant status, and u_1 is the error term normally distributed with a mean of 0 and standard deviation 1. In order to allow that the difference in the unmet needs for medical or dental care between migrant and recognized European citizens can be different according to each country of the survey, a new variable is added to the model which is the interaction between these two categorical variables.

However, it must be taken into account that the dependent variable y_1^* is only observed when respondents reported needed medical or dental examination or treatment during the last 12 months $y_2^* > 0$ according to the selection equation $y_{2j}^* = \boldsymbol{Z}_j\gamma + u_{2j}$

where, y_2^* is a latent variable too, $\boldsymbol{Z}$ is a vector of explanatory variables related to the need for medical or dental care, and u_2 is the error term normally distributed with a mean of 0 and standard deviation 1.

To estimate β, γ and ρ jointly use a full maximum-likelihood procedure. For this, the heckprob procedure was used in STATA 17 (StataCorp (2021).

In order to handle the within-countries correlation arising from the nested nature of the data (households within countries), we clustered the standard errors by country employing a robust cluster estimation. Data were weighted to adjust for survey design.

The marginal effect of the probability of unmet need

Finally, the average marginal effects of the regressors of interest were calculated, that is, the conditional (on selection) predicted probability of the unmet need for medical or dental care.

$$\Pr(y_{1j} = 1, y_{2j} = 1) / Pr(y_{2j} = 1)$$

A $p < 0.05$ cut-off was used to determine statistical significance for all analyses.

and a test for differences between countries in average marginal effect of the probability of unmet need for medical or dental care was presented to ascertain the inter-countries variability.

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1st Chapter: Health access and impoverishment

ORIGINAL RESEARCH

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CATASTROPHIC HEALTH EXPENDITURE AND IMPOVERISHMENT OF SYRIAN REFUGEES IN EGYPT

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Summary Study 1: Catastrophic Health Expenditure and Impoverishment of Syrian Refugees in Egypt

Abstract

Background: The present study aims to measure the incidence and the concentration of catastrophic health expenditures, the impoverishment of Syrian refugees living in Egypt due to health expenditures, and the determinants leading to catastrophic expenditures.

Methods:

This study used quantitative data, collected through a household health access and utilization cross-sectional telephone survey on Syrian households registered with UNHCR Egypt. To estimate the incidence and intensity of catastrophic expenditures and impoverishment, the study used two methods and applied various thresholds to demonstrate the sensitivity of catastrophic measures. A logit model was estimated aimed at determining what factors influence the probability of catastrophic healthcare spending.

Results:

15.8% of the households spend > 30% of non-food expenditure on health care. Those spending more than 30% of non-food expenditure on health care spent 50.2% on average. The fourth and richest quintiles experience a higher incidence of catastrophic expenditures. After paying for health care the poverty headcount increased 9.8 points, from 50 to 59.8%. The risk of incurring catastrophic health expenditures increases with unemployment, urban residency, hospitalisation, pregnant woman, disability presence and when the household head is female.

Conclusion:

One out of six refugee households experienced health expenditures in excess of 30% of non-food expenditures. Half of the Syrian Refugees in Egypt leave below the poverty line and an additional ten per cent, around 12,000 individuals, are pushed below the estimated poverty line due to out-of-pocket health care payments.

Introduction

A refugee is someone who has been forced to flee his/her country because of persecution, war, or violence. United Nations High Commission for Refugees (UNHCR) identified 22.5 million refugees and 2.8 million asylum seekers by the end of 2016 [1].

Syria is the biggest humanitarian and refugee crisis of our time. Since the eruption of the Syrian conflict in 2011, Egypt has been hosting a significant number of refugees. In August 2017, there were 123,000 asylum seekers and refugees from Syria registered with UNHCR in Egypt and a further 83,000 from other countries.

The global UNHCR urban policy advocates for the integration of refugees into the national health system as a sustainable strategy to guarantee access to health care. To obtain adequate healthcare, many households in Egypt rely on out-of-pocket payments (OOP) which increases the risk of becoming impoverished [2]. This burden of OOP could create barriers to health care access and use [3] for Egyptians and refugees. One conception of fairness in payments for health care is that households ought not to be required to spend more than a given fraction of their income on health care in any given period and that spending in excess of this threshold can be labelled as “catastrophic”[4].

Catastrophic expenditure refers to the fact that falling ill may induce unpredictable shocks to a household’s living standards [5]. Many studies have measured the incidence and intensity of catastrophic OOP in low-income countries, [6-7] showing that OOP leads to catastrophic spending and is a cause of impoverishment [8-9].

The present study aims to measure the incidence and intensity of catastrophic health expenditures (CHE), impoverishment and the determinants leading to CHE for Syrian refugees in Egypt. To our knowledge, this is the first study providing evidence of CHE for refugees.

Methods

Study Design and Setting

A quantitative design using a telephone survey was used for this study, where a representative random sample of Syrian households registered with UNHCR Egypt was contacted by phone.

Questionnaire

The web-based Health Access and Utilization Survey (HAUS) questionnaire [10] was used for data collection. HAUS is a validated tool that has been developed by UNHCR Headquarter used by UNHCR in many countries to collect information on access and utilization of healthcare services. This study adapted the questionnaire to suit Egypt's context and translated it into Arabic.

The questionnaire included questions about household demographics, and household health expenditures during the month preceding the survey, including spending on medicines, consultation, laboratory tests, diagnostic fees and hospitalization. It also included questions about household income from employment or humanitarian assistance in the preceding four weeks.

Sample and Data Collection

Stratified systematic random sampling was used to select a representative sample of Syrian refugee households who are registered with UNHCR and have a phone number in UNHCR's database.

Stratification was based on Syrian refugees' geographical distribution in Egypt's governorates. The calculated sample size was 384 households. However, to account for the non-response that was experienced in previous surveys, 914 Syrian households were sampled using the aforementioned methodology. A total of 507 household responses were finally obtained.

The survey was conducted by a private call centre between the 6th and 14th of September, 2017 after a training workshop for surveyors where the role-playing technique was used.

Following the training, the questionnaire was pilot-tested on a sample of households and, based on feedback from interviewers, no final modifications were required.

Before data collection, information about the survey and its objectives was made available to the Syrian refugees community on social media to ensure collaborative participation.

Following data collection, data were exported to Excel 2013, checked, cleaned and prepared for analysis by SPSS 24.0 and by ADePT.

Expenditures were collected in Egyptian Pound (EGP) and converted into USD using the 2017 exchange rate. Exchange rate was 1USD = 17.6 EGP.

To ensure reliability, the preliminary expenditure data obtained from telephone interviews were triangulated with expenditure data obtained from Egypt Vulnerability Assessment undertaken by UNHCR through face-to-face interviews with Syrian refugee households.

Measuring CHE

CHE occurs if OOP payments for health care exceed a particular threshold of a household's resources: income, expenditure or consumption [8-9, 11]. Given the poor reliability and volatility of the reported income of refugees, household expenditure is used as a proxy for effective household income [12]. We define CHE as a share of expenditure net of spending on necessities expressed as "non-discretionary expenditure" following Wagstaff et al [11] and "capacity to pay" of Xu et al [9].

Measuring incidence and intensity of CHE

The incidence (H) of CHE can be expressed by head count. It is obtained by the proportion of households that incurred catastrophic payments and is estimated by the formula below [11]:

$H = \frac{1}{\mathrm{N}} \sum_{i=1}^{N} E_i$ where N is the sample size. E is an indicator such that $E_i = 1$ if $\frac{T_i}{X_i} > z$, and zero otherwise. Let T be OOP payments for health care, x be a total household expenditure, and f(x) be non-discretionary expenditure. Then, a household is said to have incurred catastrophic payments if T/x, or T/[x-f(x)], exceeds a specified threshold budget share (z).

The catastrophic payments overshoot (O) denotes the average extent to which OOP exceed the chosen threshold for households that incurred catastrophic expenditures. The household overshoot is estimated as follows:

$$O_i = E_i\left(\left(\frac{T_i}{X_i}\right) - z\right)$$

Then, average overshoot is simply written as:

$$O = \frac{1}{N}\sum_{i=1}^{N} O_i$$

H refers to the incidence of catastrophic payments, whereas O is the intensity of catastrophic payments. A concentration index (C_I) was employed to measure the extent of socioeconomic inequality in CHE. It is defined as twice the area between the concentration curve and the line of equality [13-14]. The concentration index lies in [−1, 1] [15], and its positive value indicates that a variable is more concentrated among the rich, and vice versa. The larger the absolute value of the concentration index, the greater the inequality in CHE [16]. The concentration index (C) can be computed using the "convenient covariance" [17]: $C = 2\,\mathrm{cov}(y_i, R_i) / \mu$, where C is the concentration index, y_i is CHE indicator, μ is the mean of CHE indicator and R_i is the fractional rank of household in the economic status distribution.

The weighted head count and overshoot measures were estimated as follows [8]: $H^w = H \cdot (1-C_e)$; $O^w = O \cdot (1-C_o)$. We used concentration indices, C_e and C_o, for E_i and O_i, respectively, to measure the distribution of CHE in relation to household expenditures.

The weighted head count and overshoot measures show the impact of OOP when different weights are given to households depending on expenditure levels [14]. The households with the lowest expenditures are weighted by 2, and the households with the highest expenditures are weighted by 0, and the weight decreases with higher household expenditures. If the concentration index (C_e) is negative, the weighted head count (H_w) is greater than the head count (H) [15].

Measuring CHE and poverty line

Furthermore, we used the "Capacity to pay" to measure CHE by adopting the World Health Organization (WHO) methodology [9]. We define catastrophic payments as OOP direct medical expenditure on health care in excess of a given share of capacity to pay, with measures of the total household (TE_h) non-subsistence expenditure as a proxy of total income. Household capacity to pay ($ctpay_h$) is then defined as household non-subsistence spending. Food expenditure may be lower than subsistence spending (SE_h) for some households implying that the household's food expenditure (FE_h) is under the estimated poverty line, In that case, non-food expenditure is used as non-subsistence spending.

Thus, $ctpay_h$is computed as: $ctpay_h = \begin{Bmatrix} TE_h - SE_h if SE_h \le FE_h \\ TE_h - FE_h if SE_h > FE_h \end{Bmatrix}$

Considering scale economies in household consumption, the methodology uses adult equivalent household size rather than actual household size. The WHO has established the threshold at 40 % for developed countries but affirms that this percentage can change depending on the specific situation of the country [9]. We tested the threshold of 40% and 30%.

Considering that the poorer the household, the higher the share of total income or consumption devoted to food, calculations of subsistence expenditures and poverty line are based on the average food expenditure of households whose food expenditure share of total expenditures is in the 45-55 percentile range [18]. This gives the subsistence expenditure per (equivalent) capita, which is also the poverty line (pl):

$$pl = \frac{\sum w_h * eqfood_h}{\sum w_h} \quad \text{Where} \quad food\,45 < food\,\exp_h < food\,55$$

The burden of health expenditures leading to CHE is defined as the OOP as a percentage of a household's capacity to pay.

Health care payments and poverty

Impoverishment captures how far people are pushed below the poverty line as the result of health spending, and the possibility that health spending may push households who are already poor even further into poverty. The impoverishment effect of OOP payments for health care can be obtained by the difference between a poverty level with the gross of OOP payments (before health care payments) and a poverty level with the net of OOP payments (after health care payments).

First, we estimated the gross (of health payments) poverty ratio (HP^{gross}). This gives the percentage of the population living below the poverty line before health payments ;

$$HP^{gross} = \frac{\sum_{i=1}^{N} s_i p_i^{gross}}{\sum_{i=1}^{N} s_i}$$

where p_i^{gross} is equal to 1 if the per capita total expenditure of household (y_i) is less than the poverty line and 0 otherwise. s_i denotes the household size and N indicates the number of households in the sample. The gross (of health payments) individual-level poverty gap is estimated as:

$g_i^{gross} = p_i^{gross}(PL - y_i)$, where PL refers to the poverty line and the mean of poverty gap is simply found as:

$$G^{gross} = \frac{\sum_{i=1}^{N} s_i g_i^{gross}}{\sum_{i=1}^{N} s_i}$$

The net (of health payments) head count can be estimated by replacing p_i^{gross} with p_i^{net}.

Where p_i^{net} is equal to 1 if the per capita total expenditure of the household is less than the poverty line and the net of the health payments poverty gap is estimated as the replacement of g_i^{gross} by g_i^{net} : $g_i^{net} = p_i^{net}(PL - y_i)$. A normalized poverty gap, which enables us to make international comparisons across countries with different poverty lines and currency units, is estimated as follows: $NG^{gross} = G^{gross} / PL$.

A Logit Model of determinants of CHE

A logistic regression analysis was used to identify the determinants of CHE. For this study, a threshold of household spending higher than 30% of its capacity to pay (CTP) towards health care, was used as proxy for CHE in the model.

The basic functional form for the logistic regression is:

$\ln(y_i /(1- y_i) = \alpha + \Sigma\beta_i X_i$;

where ln(·) is the natural logarithm, y is the dependent variable (the probability of a household facing CHE in the last month, α is the constant, X_i is each one of the independent or explanatory variables, β_i is the coefficient of independent variable X_i, and ε_i are the residuals or error terms.

The independent household variables are available socio-economic indicators such as age and gender of the head household, employment status, years of formal education, household size, living area (urban/rural), duration since the arrival to Egypt, Governorates (region), number of children under 5 years, having a pregnant woman, facing hospitalization in the last year, presence of a person with a disability, number of members with chronic illnesses, and income in the last month. The probability of CHE was calculated by Greene's logit equation [19] and the model goodness-of-fit was assessed by a Hosmer–Lemeshow test [20].

RESULTS

Descriptive results

Table 1 shows the summary statistics of the main household characteristics. The average household size was 3.7 members. Only 51.6% of the household heads reported being employed in the last month before the survey. Some 23% of the households reported having at least one pregnant woman in the last two years, and 27.5% reported having at least a child less than 5 years. More than half of the households (52.2%) reported having at least one member with a chronic disease, and 10.9% had at least one member with a disability.

The household average total monthly expenditure for the sample was 197.2USD, while the average reported income was lower than expenditure, 138.5USD, with 71 household heads (13.5%) reporting zero income. Household monthly capacity to pay or non-subsistence expenditure was 135USD.

The average OOP health spending per household over the four preceding weeks was 25.3USD, while the average OOP to household expenditure ratio was about 12.8%. Food was the most important component absorbing about 39.4% of total expenditure, followed by rent (26.5%). The bulk of OOP payments go towards purchasing drugs (37%), consultation (23%), laboratory and diagnostic tests (20.8%), and hospitalisation (17.5%).

Table 1 Description of Household Characteristics (n=506)

Variable	Variable Description	Mean(Standard Deviation) or number(%)
Household size	Average size of the Household	3.7 (1,88)
Income	Total Income of the Household in the last month in USD	138.5 (108.2)
Total Expenditure	Total Expenditure in USD	197.2 (134)
Out-Of-Pocket	Out-of-pocket health expenditure in USD	25.3 (67.1)
Non-food Expenditure	Capacity to Pay or non-subsistence expenditure	135 (116.4)
HH. Age	In years	40.2 (0.58)
HH. Gender	Male	81.8%
	Female	18.2%
HH. employed	Yes=1	51.6%
HH. Educational Level	No studies	5.1%
	Preparatory (6 years)	27.9%
	Primary (9 years)	50.6%
	Secondary (12 years)	10.5%
	Institute/technical degree/ University (> 12years)	5.7 %
Urban	Household residing in an urban area	90%
Having Pregnant Women	Household has at least one pregnant women in the last two years = 1 Otherwise = 0	23%
Having Child Under 5 years	Household has at least one child under 5 years	27.5%

Household with Members Chronic disease	Household has at least one member with chronic disease = 1 Otherwise = 0	52.2%
Household with Members with Disability	Household has at least one member with Disability = 1 Otherwise = 0	10.9%

Note: HH = household head

Catastrophic health expenditures

The incidence and intensity results of CHE are shown in Tables 2 and 3. They are defined for health expenditures as a share of total household expenditure, non-food expenditure and capacity to pay using various threshold budget shares z.

Results show that as the threshold rises from 10 % to 15%, 30 % and 40% of total expenditures, the estimate of the incidence of CHE falls from 47.8 % to 29.9%, 7.4 % and 4.1%, respectively. For instance, 7.4% of the households spend in excess of 30% of total expenditures, and 15.8% spend in excess of 30% of non-food expenditures. At the 30 % of non-food expenditures threshold, the incidence is very close to the incidence of capacity to pay (15.6%) at the same threshold. Then, as expected, the incidence falls as the threshold increases.

CHE intensity is measured in Table 2 by the overshoot: OOP health payments in excess of a catastrophic payments budget share threshold of 30% represent 1.5% of total expenditure and 3.2% of non-food expenditure. The mean overshoot for total expenditure falls from 6.6 to 0.9% as the threshold rises from 10 to 40% and from 11.5 to 2.0% for non-food expenditure. Mean positive overshoot (MPO) in Table 2 indicates that those spending more than 15% of non-food expenditure on health care payments spent, on average, 34% (15+19%). And, those spending more than 30% of non-food expenditures on health care payments on average spent 50.2%. The mean positive overshoot (MPO) does not decline as the threshold is raised.

Table 2. Incidence and Intensity of CHE

Catastrophic payment measures	Threshold budget share z			
OOP as share of total expenditure	10%	15%	30%	40%
Headcount-H (%)	47.8	29.9	7.4	4.1
Overshoot-O (%)	6.6	4.7	1.5	0.9
Mean Positive Overshoot-MPO (%)	13.9	15.6	20.4	22.8
OOP as share of non-food expenditure				
Headcount (%)	58.3	47.0	15.8	9.8
Overshoot (%)	11.5	8.9	3.2	2.0
Mean Positive Overshoot (%)	19.7	19.0	20.2	20.1
OOP as share of capacity to pay				
Headcount (%)			15.6	10.4

Table 3, shows the incidence of CHE across quintiles. For all thresholds and measures, the fourth and richest quintiles experience a higher incidence. For instance, for 8.3% of households in the poorest quintile, OOP exceeds 30% of non-food expenditure; but, this proportion rises to 17.6% of households in the fourth quintile and 33.4 for households in the richest quintile.

Table 3. Incidence of CHE by Quintiles

	OOP expenditure as share of total expenditure			OOP expenditure as share of non-food expenditure			OOP as share of capacity to pay
Quintile	10%	15%	30%	10%	15%	30%	30%
Poorest	18,2	13,9	3,8	31,8	22,2	8,3	13.2%
Second	22,3	14,4	2,5	37,5	25,3	10,5	12.1%
Middle	23,3	13,4	1,1	46,8	35,0	9,0	12.1%
Fourth	36,6	20,1	8,9	55,8	45,2	17,6	13.8%
Richest	49,1	38,4	20,4	62,7	52,4	33,4	29.8%

Note: OOP = out of pocket health expenditures.

Distribution-sensitive CHE measures are presented in Table 4. The concentration index for catastrophic payments and the overshoot is positive for both measures, total expenditure and non-food expenditure, and increases as the threshold rises, indicating that the better off are always more likely to exceed the chosen threshold and that they are more likely to exceed higher thresholds. Also, the rank-weighted head counts in Table 4 are smaller than the unweighted head ratio at all levels of thresholds(Table 3). It also indicates that the better-off are more likely to incur CHE. Similarly, the rank-weighted overshoot was found smaller than the overshoot showing that the extent of excess health payments is smaller among the poor.

Table 4: Distribution-sensitive Catastrophic Payments Measures

	Distribution-sensitive Catastrophic Payments Measures					
	OOP expenditure as share of total expenditure			OOP expenditure as share of non-food expenditure		
	10%	15%	30%	10%	15%	30%
Concentration index, C_E	0.212	0.223	0.464	0.136	0.179	0.301
Rank-weighted headcount, H_w(%)	23.6	15.6	4.0	40.6	29.6	11.0
Concentration index, C_O	0.350	0.401	0.548	0.296	0.338	0.446
Rank-weighted overshoot, O_w (%)	3.0	2.1	0.7	6.3	4.5	1.8

Note: OOP = out-of-pocket health expenditures.

Household Impoverishment

The poverty line for a household composed of a single member equals 751EGP (42.6USD) per month, which is equivalent to $1.4 per day estimated. Household impoverishment was also estimated by calculating poverty levels using consumption expenditure before making health care payments and after paying for health care. Both the poverty headcount and the poverty gap were calculated.

The results in Table 5 show that 50% of households were living below the poverty line before paying for health care. After paying for health care, the poverty headcount increased by 9.8 points to 59.8%. This represents an estimated increase of 19.6% of the population falling into poverty as a result of paying for health care.

The average shortfall from the poverty line (the poverty gap) was 6.7 USD before accounting for health care payments and 8.1 USD after accounting for health care payments. This represents an increase in the poverty gap of 21.2 per cent. The mean positive poverty gap does not change significantly before or after health payment. This suggests that the rise in the poverty gap is due to more households being brought into poverty and not because of a deepening of the poverty of the already poor.

Table 5: Poverty Headcount and Gap before and After OOP payments

			DIFFERENCE	
	Gross of health payments (1)	**Net of health payments (2)**	**Difference Absolute (3) = (2) - 1)**	**Relative [(3)/(1)*100]**
Poverty headcount (%)[1]	50.0	59,8	9.8	19.6
Poverty gap (USD) [2]	6.7$	8 .1	1.4	21.2%
Normalized poverty gap (% of poverty line)	15.7	19.0		
Normalized mean positive poverty gap (%) [3]	31.3	31.8		

Notes: [1] Poverty line = 751 EGP =42.6$

[2] Percentage of population living below the poverty line.

[3] Average deficit to reach the poverty line in the population

[4] Average poverty gap of the poor divided by the poverty line

Determinants of CHE

Table 6. presents the results of the multivariate logistic regression model for the determinants of CHE measures based on the capacity to pay. These estimates capture the values that maximise the log-likelihood function of CHE. We found support for the hypothesis that the risk of incurring CHE increases with female-headed households, unemployment, urban residency, hospitalisation, pregnant women and disability presence.

Table 6: Determinants of CHE based on capacity to pay measures (n=507)

	Odds Ratio	95% CI
Constant	0.32***	
HH Age	1	0.97-1.02
HH Gender(Male)	2.03**	1.07-3.87
HH Unemployed	1.88**	1.02-3.46
HH years of formal education	0.99	0.93-1.06
Number of Household members	0,88	0,73-1,06
Urban	4.8**	1.19-19.21
Duration since arrival to Egypt	1.1*	0.99-1.23
Governorates (Cairo)		
Alexandria	0.6	0.21-1.74
6 October and Giza	0.32	0.97-1.1
Damietta	0.71	0.26-1.96
Qalyubia	-0.27**	-0.07-(-1)
Sharkia and others	0.18*	-0.04-(-0.76)
Income	1	
Hospitalisation	1.91**	1.01-.3.64
Num. of child<5 per household	1.1	0.64-1.91
Household with Pregnant woman	2.12**	0.99-4.5
Household with member having chronic illness	1.53	0.81-2.89
Household with member having disability	2.01**	0.98-4.14
Nagelkerke R Square = 0.166		
Hosmer and Lemeshow Test = 0.132		

Notes: HH = household head. CI = confidence interval. The provided coefficients are the adjusted odds ratios. Robust 95% confidence intervals are presented in the third column. *** P <0.01; ** P

The analysis showed that female-headed households are twice more unlikely to incur in CHE compared to the male-headed household (OR=2.03; 95% CI= 1.07-3.87). Employment was a protective factor against CHE. The odds of CHE are 1.88 (95% CI=1.02-3.46) higher among households whose head is not employed. The education level of the household heads was not a significant determinant of CHE in our study, and employment counts more than education in protecting households against CHE.

The results revealed that urban households are less protected against CHE than rural households. In particular, urban households are 4.8 times (95% CI: 1.19-19.21) more likely to

incur CHE compared to rural households. Also, regression results showed that the likelihood to face CHE varies across the Governorates: a rural governorate such as Qalyubia is more protected compared to Greater Cairo.

The cost of secondary health care services is very high in Egypt whether in public or private facilities. The analysis confirmed that households who had a member hospitalised in the last month had twice the likelihood to face CHE (OR = 1.91; 95% CI = 1.01-.3.64).

While households with young children (less than five years), or with a member having a chronic disease were not statistically significantly affected by CHE, households having a member with a disability is an important risk factor for CHE (OR = 2.01; 95% CI = 0.98-4.14). Also, households with a pregnant woman would increase twice the risk of CHE compared to a household with no pregnant woman (OR = 2.12; 95% CI: 0.99-4.50).

Discussion

The incidence of CHE for Syrian refugees in Egypt is lower when OOP expenditures are expressed as a per cent of total expenditure rather than as a per cent of non-food expenditure or capacity to pay. This implies that food expenditure makes up a high proportion of total expenditure, as is typical in low-income countries [21]. Wagstaff et al [11] suggest that if health spending is income elastic, then non-food expenditure may be preferred for the denominator of the budget share to better detect catastrophic payments among the poor.

Our results show that the “richer” households of the sample (or households with a higher capacity to pay) are more likely to incur CHE. Similar results were reported for Mongolia as well as for other developing countries [22, 23]. This may be explained because patients in the richest group were more inclined to visit and/or have easy access to health care services. The low-income groups are substantially less likely to access specialized health care services at the higher referral levels due to both healthcare costs, and non-healthcare costs, such as transport and meals, indicating an unmet need of the poorest quintiles due to financial access barriers.

While financing is one of the most important elements of a health system, knowing the factors associated with CHE would help policy makers to better plan for the future. As expected, none of the households reported having any health insurance so this variable was not included in

the analysis. The results of the logistic regression found support for the hypothesis that the risk of incurring CHE increases with female and unemployed-headed households. The duration of the stay in Egypt for Syrian refugees was only found significant at 10%, which may indicate that the longer they stay in Egypt the higher the chance for them to be exposed to CHE, which may be explained by the fact that refugees may have their savings exhausted or assets already sold. Income was not significant in our analysis, which is understandable considering that Syrian refugees have no legal access to the labour market, and income is associated with temporary informal labour or external humanitarian assistance.

The main limitations of this paper stem from the self-reported nature of the data and the use of a recall period of a month, which may be responsible for potential biases and measurement errors in our sample. The analysis of CHE determinants has been limited due to the absence of more detailed information on the perceived quality of life and previous types of illnesses. Also, we have only focused on the costs of medical care, but not on full income losses associated with illness.

Conclusion

The proportion of households facing CHE varies according to the CHE measure and threshold, but approximately one out of six refugee households experienced health expenditures in excess of 30% of non-food expenditures. we also found that half of the Syrian Refugees in Egypt live below the poverty line and that an additional ten per cent, which is around 12,000 Syrians in Egypt, are pushed below the estimated poverty line due to OOP.

The design of appropriate intervention mechanisms to improve equity in access, insurance and payment for health care may protect vulnerable refugees against financial risk, and, subsequently, reduce the incidence of CHE and impoverishment.

A better knowledge of the determinants of CHE may be a useful tool to identify those refugees at a higher health risk and the need for extraordinary healthcare expenditures that can lead refugees to poverty. Furthermore, UNHCR should continue to invest in the national health system and promote quality of care. This would not only increase access to public healthcare, address financial barriers to access to health systems and subsequently improve refugees'

health and integration into society, but it also would protect households from financial risks arising from health expenditures.

Future research and policies should extend to alternative insurance and financing health care mechanisms, such as cash subsidies and community-based health insurance, to improve household protection against CHE.

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2nd Chapter: Equity of utilisation and Fairness in the distribution of subsidy

ORIGINAL RESEARCH[2]

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INEQUITY AND BENEFIT INCIDENCE ANALYSIS IN HEALTHCARE USE AMONG SYRIAN REFUGEES IN EGYPT

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Summary Study 2: Inequity and Benefit Incidence Analysis in Healthcare use among Syrian refugees in Egypt

Abstract

Background: The Syrian conflict has created the worst humanitarian refugee crisis of our time, with the largest number of people displaced. Many have sought refuge in Egypt, where they are provided with the same access to healthcare services as Egyptian citizens. Nevertheless, in addition to the existing shortcomings of the Egyptian health system, many obstacles specifically limit refugees' access to healthcare. This study looks to assess equity across levels of care after observing services utilization among the Syrian refugees, and look at the humanitarian dilemma when facing resource allocation and the protection of the most vulnerable

Methods*:* A cross-sectional survey was used and collected information related to access and utilization of outpatient and inpatient health services by Syrian refugees living in Egypt. We used concentration index (CI), horizontal inequity (HI) and benefit incidence analysis (BIA) to measure the inequity in the use of healthcare services and distribution of funding. We decomposed inequalities in utilization, using a linear approximation of a probit model to measure the contribution of need, non-need and consumption influential factors.

Results: We found pro-rich inequality and horizontal inequity in the probability of refugees' outpatient and inpatient health services utilization. Overall, poorer population groups have greater healthcare needs, while richer groups use the services more extensively. Decomposition analysis showed that the main contributor to inequality is socioeconomic status, with other elements such as large families, the presence of chronic disease and duration of asylum in Egypt further contributing to inequality. Benefit incidence analysis showed that the net benefit distribution of subsidies of UNHCR for outpatient and inpatient care is also pro-rich, after accounting for out-of-pocket expenditures.

Conclusion: Our results show that without equitable subsidies, poor refugees cannot afford healthcare services. To tackle health inequities, UNHCR and organisations will need to adapt programmes to address the social determinants of health, through interventions within many sectors. Our findings contribute to assessments of different levels of accessibility to

healthcare services and uncover related sources of inequities that require further attention and advocacy by policymakers.

Background

A refugee is someone who 'owing to a well-founded fear of being persecuted for reasons of race, A refugee is someone who 'owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality, and is unable to, or - owing to such fear - is unwilling to avail himself of the protection of that country' [1]. The Syrian conflict has created the worst humanitarian refugee crisis of our time, with the largest number of people displaced, many of whom have found refuge in Egypt. As of August 2017, the country counted 131,504 Syrian refugees registered with the United Nations High Commissioner for Refugees (UNHCR), in addition to 105,885 refugees from other nationalities [2].

The socio-economic situation of refugees and asylum seekers mirrors those of the urban poor in Egypt as they face multiple obstacles including dramatic price rises and inflation related to the ongoing economic reforms in the country, scarce employment opportunities, and a general deterioration of the security environment due to political instability in the era post-revolution. Many refugees are subsequently highly vulnerable, according to the UNHCR 2017 vulnerability assessment, 40 per cent of refugees living in Cairo are considered poor, and 20 per cent extremely poor [3,4].

The healthcare system in Egypt is quite complex with many public entities involved in the management, [5] financing and provision of care and the heavy reliance of the Egyptian citizens on out-of-pocket (OOP) health payments causes financial burdens for households [6,7].

Syrian refugees have access to the same primary healthcare services as Egyptian citizens, via public health clinics. Nevertheless, many obstacles limit refugees' healthcare access – for example, insufficient financial means and out-of-pocket payments, shortage of drugs and investigations, insensitive encounters with national service providers, and inadequate information on types and place of availability of health services [4,8].

Moreover, refugees face further health challenges, caused by epidemiologic and demographic dynamics, such as the high burden of non-communicable diseases due to ageing populations and unhealthy lifestyles, combined with a prevalence of communicable diseases related to poor hygiene and lack of access to basic health services [9,10], resulting in the need for necessary healthcare use being likely to increase [11].

In light of the competing needs of the refugees (health, education, food…), and the continuous reduction in international funding, UNHCR has adopted a mixed public health approach, which prioritizes affordable and essential primary health care through public facilities, while chronic diseases, reproductive health and mental health care services are provided through dedicated UNHCR supported facilities and affiliated hospitals for life-saving secondary and tertiary care. Accordingly, the packages of health assistance offered to the refugees and asylum seekers in Egypt have raised ethical and operational concerns, specifically on how services could reach the most vulnerable refugees.

The World Health Organisation has stated that the progressive realization of the right to health involves a concerted and sustained effort to improve health across all populations and reduce inequities in the enjoyment of health; and has defined Equity as 'the absence of avoidable or remediable differences among groups of people, whether those groups are defined socially, economically, demographically, or geographically' [12]. However, this definition does not include the financing of healthcare payments which is an integral part of a health system [13,14]. Therefore, equity in healthcare shall encompass two main principles, fair allocation of resources and equitable access to healthcare services.

Several studies have shown that, in both developed and developing countries, when individuals' health needs are not equitably addressed [15,16], this results in unmet health needs, inadequate healthcare, inequitable health outcomes, and increased costs[17, 18,19]. Moreover, the lack of health insurance and the weak purchasing power among poor refugees may result in less utilization of healthcare services despite their greater need [20; 21].

Public health equity issues facing the humanitarian community have been previously outlined in issues of resource allocation and decision-making [22,23,24,25]. Ensuring greater equity in the use of needed health services and financial protection when accessing those services are fundamental policy objectives for countries, and organisations like UNHCR, that seek to

protect the people in concern and the most in need among them [15;26]. While the research on equity in healthcare has been mainly concerned with four broad sets of outcomes [27,28]: 1) healthcare utilization according to health needs irrespective of socio-economic status, ability to pay, social or personal background (horizontal equity); 2) subsidies received using services; 3) payments people make for healthcare (out-of-pocket payments, insurance premiums); and 4) health status.

In this study, we look closer at the humanitarian dilemma when facing the distribution of funding and the protection of the most vulnerable when accessing healthcare. We aim then, to assess inequity across levels of care, after observing service utilization among the Syrian refugees and analysing the allocation of UNHCR healthcare subsidies from an adequacy perspective. To achieve these purposes, we develop three specific objectives: (i) To determine inequalities in the distribution of healthcare utilization across socioeconomic groups and demographic characteristics of the individuals and households; (ii) To assess the level of inequities in healthcare use and contributing factors by measuring Horizontal Inequity (HI); and, (iii) To determine whether the contribution of UNHCR subsidies are appropriately distributed across refugees' socioeconomic groups, and assess the extent to which different groups benefit from those subsidies through their use of health services.

This paper provides a better understanding of the overall performance of the refugee health program in Egypt and contributes to the development of appropriate and equitable policies. To our knowledge, no previous studies have analysed the socio-economic inequity in the use of healthcare services within the refugee population.

Methods

Study design

A cross-sectional survey of Syrian refugees in Egypt was conducted in September 2017 to characterize health-seeking behaviours and barriers related to accessing health. A representative random sample of Syrian households registered with UNHCR Egypt was contacted by telephone.

This Health Access and Utilization Survey (HAUS) is a monitoring tool for UNHCR to collect information on access and utilization of healthcare services in many countries [29].

Data collection and Questionnaire

A stratified systematic random sampling was used to attain a nationally representative sample of Syrian refugee households, which are registered with UNHCR and have a phone number listed in the UNHCR database. Stratification was based on Syrian refugees' geographical distribution in Egypt's six governorates (Giza, Greater Cairo, Alexandria, Damietta, Sharkia and Qalyubia).

The sample size was estimated at 384 refugee households assuming a precision of 10% and using a level of significance of 0.05 [30]. However, to account for the non-response that was experienced in previous surveys, 914 Syrian households were contacted, and a total of 507 household responses were retained and included in our analysis. Households that have been contacted with no response after 3 contact attempts, or with invalid phone numbers and households which didn´t agree to participate in the survey have been excluded from the study. To protect the anonymity of respondents, no information was recorded that could be used to identify the household or individuals and verbal consent was obtained and recorded from all respondents.

The questionnaire has been accustomed, with partner agencies, to set out health sector priorities in Egypt and focus on health services utilization, access to care, barriers to care-seeking, household expenditures, and non-communicable chronic disease (NCD). The questionnaire was translated into Arabic.

Household heads and primary caretakers of children were prioritized to answer questions on behalf of the household and its members. Household members were defined as people who share a dwelling space and share meals, regardless of biological relation. To protect the anonymity of respondents, no information was recorded that could be used to identify the household or individuals and verbal consent was obtained from all respondents.

The first part of the questionnaire included information about demographic characteristics and health status of the household head and each household member. The characteristics of 1872 individuals included age, gender and physical conditions (presence of disability and the

presence of one or more chronic diseases); the predefined list of NCDs included hypertension; diabetes; musculoskeletal disorders; respiratory diseases or asthma; cardiovascular diseases; digestives disorders; epilepsy and mental illness. Data was also collected on household income, consumption of goods including food, rent, transportation, spending on education, and out-of-pocket health expenditures during that month [31]. All expenditures were noted in Egyptian Pound (EGP) and converted into USD using the 2017 exchange rate (1 USD = 17.6 EGP). The second part of the questionnaire collected information on the utilization of health services by each individual based on outpatient use and inpatient admission and defined four variables:(1) The probability of public outpatient visit was calculated from the question "In the past month have you visited a public health centre (Family Medicine centre, Maternal, Child health centre), a UNHCR Supported clinic or NGO clinic, NGO/charity clinic or a public hospital, for outpatient care consultation?"; (2) The probability of a private outpatient visit was calculated from the question "In the past month have you visited a private health centre (Family Medicine centre, Maternal, Child Health centre) or a private hospital, for outpatient care consultation?"; (3) The probability of public inpatient visits was calculated from the question "Have you received been hospitalised during the last 12 months in a public or UNHCR-supported hospital?"; (4) The probability of private inpatient visits was calculated from the question "Have you received been hospitalised during the last 12 months in a private facility?" In our dataset, all four probabilities may only be equal to one (at least one consultation within the month or at least one hospital stay within the year) or zero.

Data management and descriptive analysis were conducted using SPSS 24.0, while inequity analysis and the Benefit Incidence Analysis (BIA) were conducted using the ADePT software tool developed by the World Bank [32].

Statistical Analysis

For this study, we define inequality as any significant differences in healthcare use between sub-populations, and inequity as the part of inequality that is considered unjustified, where factors correlated with healthcare are considered unfair due to the inability to access equal care based on need, regardless of socioeconomic status [33]. To measure inequity, inequality in the utilization of healthcare will be standardized for differences in justified need (age, gender, NCD, and disability) and unjustified non-need (socioeconomics determinants).

Concentration index measuring socioeconomic-related inequality in healthcare use

We adopt the methodology described by O'Donnell et al. [27] or the measurement of the concentration indexes and the decomposition of inequalities. This method has previously been used for equity analysis in several developing countries [34,35,36,37,38].

For developing countries, arguments were made preferring consumption, based on both conceptual and practical considerations [39], Income is received only intermittently, whereas consumption can be "smoothed" over time. In this study, given the poor reliability and volatility of reported income of refugees in the informal market, per-capita household consumption was used as a proxy measure of income or living standards [38,40,41]. Accordingly, we have collected data on expenditures for four main classes (i) food, (ii) non-food, non-durable items (such as hygiene, clothes, and transportation) (iii) consumer durables (as for rent and utilities), and (iv) housing [41,42], in addition to the expenditure on education and health and total expenditures.

To reduce the impact of household economies of scale, it was adjusted to adult equivalence, as follows:

Eqconsumption = household consumption / (family size) $^{0.56}$

The value of the adult equivalent consumption has *been* estimated from previous studies based on 59 countries' household survey data, and it equals 0.56 [43]. Adult equivalent consumption (*Eqconsumption*) was also used as the ranking variable for income status of the individual.

The concentration index (CI) was used [27,44,45] to assess socioeconomic inequality in utilization by type of health services as we present the analysis of health services utilization by equivalised per capita consumption quintile. The concentration index is defined as twice the area between the concentration curve and the line of equality (the 45-degree line). CI for the actual utilization of healthcare services ranges between -1 and 1. When the CI takes a negative value, it indicates a disproportionate concentration of healthcare use among the poor. The CI is calculated using the covariance between healthcare use and the fractional rank of the individual sorted by consumption status:

$$CI = \frac{2}{y} + Cov_w(y_i, \mathrm{R}_i) \qquad \textbf{(1)}$$

where y_i, is the binary variable of whether the i^{th} person had used public, or private outpatient service in the previous month, or the previous year for inpatient, y stands for the mean of actual healthcare use, R_i denotes the fractional rank of the i^{th}individual in the consumption status distribution, with i=1 for the poorest and i=N for the richest; and, Cov_w is the covariance between the healthcare use variable and fractional rank of the individual sorted by the consumption distribution, with sampling probability weights [30,46,47,48]. In a cross-sectional survey, we may find differential response rates, then the completed sample may not be fully representative of the refugees from which it is selected. Weights re-adjust the distribution of the sample to reflect the distribution of the refugee population more accurately [31]. The governorate population was used to construct a sample weighting variable that enabled us to generalise the results at the distribution of the refugees at the national level.

Given that our health utilization variables were binary (1,0), the bounds of the CI are not -1 and 1 but depend on the mean of the variable [49,50,51]. A Wagstaff normalisation process that ensures that the CI is quantified in the range -1 to 1, for any given mean of the health utilization variables is applied by multiplying the calculated CI by (1/(1-μ) [49].

Recently, there has been a debate regarding the appropriate normalization process between Wagstaff, stated as CIW=CI*(1−μ) [49,50] and Erreygers's correction of the CI [stated as (4μ/b − a)*CI, where, a and b are upper and lower limits of the health variable, CI is the standard concentration index, and μ is the mean of the health variable) [51,52]. The key difference between these two propositions is that the first one is a relative measure of inequality, while the second one is an absolute measure of inequality, but Kjellsson and Gerdtham proposed that the choice depends on the researchers' perspective about relative or absolute inequity [53].

As we focus in this paper on the extent of inequity in healthcare use, we, therefore, adopt the normalization process proposed by Wagstaff for all the CI analyses, however, we introduce Erreygers's correction beside Wagstaff's normalisation for the total healthcare utilization in table 3.

Decomposition of inequality

The CI measures the degree of inequality in healthcare use by consumption, however, our interest also lies in measuring the extent of inequity in healthcare use. Horizontal equity here is defined as "equal treatment for equal need, irrespective of other characteristics such as income, race, place of residence, etc." [28]. Then, to explain inequity, we use the decomposition approach, which partitions the factors contributing to inequity in healthcare use. Following O'Donnell et al (2008) [27], if a healthcare use is specified as a linear function of determinants, then the CI can be decomposed into the contribution of each determinant, computed as the product of the healthcare use variable's elasticity with respect to the determinant and the latter's CI. The CI for need-standardized use is exactly equal to that which is obtained by subtracting the contributions of all need variables from the unstandardized CI [27,34].

To decompose total inequality, we constructed two additional healthcare utilization variables: (1) The total healthcare utilization for outpatient services was recorded, if the person reported at least a consultation in either public or private outpatient facility in the last month; and, (2) The total healthcare utilization for inpatient services was recorded if the person reported one hospitalisation in either public or private in the last year. The total healthcare utilization is equal to 1 if the person reported at least one consultation during the last month or a hospital stay during the last year, either in public or private services and zero otherwise.

The independent variables in the regression model were classified into three groups: (1) need variables, (2) consumption, and (3) other non-need variables to assess the extent to which each of these variables contributes to any inequality in healthcare utilization.

Several studies have shown how healthcare utilization could be influenced by factors such as educational level [54,55], socioeconomic status [56], presence of chronic illness [57,36,58], and family support [59,60]. Based on this evidence, we defined healthcare need in terms of the patient's health and disease status, as measured by the presence of NCDs, and disability. In addition, since healthcare need is often gender and age-specific, we adopted gender and age as proxy need-measures of healthcare. The selection of other non-need factors, besides consumption, included Urban, size of the household, duration since the arrival to the country,

Governorates, employment, level of education of the head of the household, and the knowledge of health services availability. [61,58].

We used a linear approximation of a probit model with the partial effects evaluated at means (Doorslaer et al. 2004) [45]. Taking healthcare use as the dependent variable, the empirical model is expressed via the following linear model:

$$y_i = \alpha^m + \sum_i \beta_j^m x_{ij} + \sum_k \gamma_k^m z_{ik} + \varepsilon_i \qquad (2)$$

where *i* denotes the individual, x_{ij}refers to the j^{th}need factor of the i^{th}individual, z_{ik} is the k^{th} other non-need and consumption factor, and α^m is the intercept; β_j^m and $\gamma_k^m$are the marginal effects, dy/dx_j and dy/dz_k, of each need (*x*) and non-need/consumption (*z*) factor evaluated at sample means; and ε_i is the implied error term, which includes approximation errors [46].

Given that in ***Equation (2),*** the concentration index (CI) is linearly additive, the decomposition result could be applied, and then the CI for y is written as [27]:

$$CI = \sum_j \left(\beta_i^m \bar{x}_j/\mu\right) C_j + \sum_k (\gamma_k^m \bar{z}_k/\mu) C_k + GC_\varepsilon/\mu \qquad (3)$$

Where μ is the mean of *y*, $C_j$andC_k are the CI of x_j and z_k respectively and calculated similarly to ***Equation (1)*****.** In the last term, GC_ε (residual) is the generalized CI for the error term ε [30]. The residuals reflect the part of the CI that is not due to the factors included in the analysis.

The elasticity term $\left(\beta_i^m \bar{x}_j/\mu\right)$ indicates the impact of each determinant on the desired health outcome, and the products ($\left(\beta_i^m \bar{x}_j/\mu\right)C_j$ and $(\gamma_k^m \bar{z}_k/\mu)C_k$ are the contribution of a need factor *j* and a non-need and consumption factor *k* to the actual concentration index, respectively. The positive (negative) partial contribution indicates that the determinant increases (decreases) the total inequality in healthcare utilization, with positive (negative) percentages referring to increases (decreases) in percentages.

We estimated a regression model of healthcare use as a function of both need and non-need variables to predict the need for healthcare avoiding omitted variable bias [27].

Horizontal inequity (HI).-

To measure inequity, inequality in the utilization of healthcare has been standardized for differences in need. After standardization, any residual inequality in utilization is interpreted as horizontal inequity, which could be pro-rich or pro-poor. The decomposition method

allows horizontal inequity in utilization to be measured and explained in a convenient way (Wagstaff and van Doorslaer 2000) [28]. Equation (3) could be used to estimate need-standardised use. Then, being $\hat{y}_i^X$ the need predicted values of the healthcare use indicator, it could be obtained as [27] :

$$\hat{y}_i^X = \hat{\alpha} \quad + \sum_j \hat{\beta}_j \; x_{ji} + \sum_k \hat{\gamma}_k \; \bar{z}_k \qquad \textbf{(4)}$$

And, then we calculated the need-standardised use as:

$$\check{y}_i^{IS} = y_i - \hat{y}_i^X + \bar{\hat{y}} \qquad \textbf{(5)}$$

where ($\bar{\hat{y}}$) is the mean of the predictions from **equation (2)** with all variables at actual values. The mean of the predicted value ($\bar{\hat{y}}$) was added to indirectly standardise values to ensure that the mean of the actual use equals the mean of the need-standardised use. Finally, consumption-related HI was then measured by estimating the CI of the need-standardised use [27,34].

Like the CI, the HI index takes the value between -1 and +1 with a zero indicating no inequity in healthcare use. A negative (positive) and significant HI estimate indicates inequity is pro-poor (pro-rich) or healthcare use is more concentrated among the poor (rich) given the same level of health need among the individuals of the consumption distribution. The higher the absolute value of the HI index, the greater the degree of inequity. And, since healthcare use variables were binary, we also corrected the HI indices applying the Wagstaff normalisation [44,45].

Benefit incidence analysis (BIA)

BIA is a method that has been applied in the literature to measure the extent of equity in public subsidy distribution across socio-economic classes [62,63,64,65,66,67,68]. We use the BIA method to describe the distribution of UNHCR spending across individuals ranked by their living standards [27,32,66] and to identify to which extent the UNHCR subsidy is pro-poor or pro-rich to the health sector. This method involves four steps (McIntyre and Ataguba 2011) [64]: 1) measuring the living standards or socio-economic status of the population; 2) estimating the unit cost attached to each service utilised (visit for outpatient and at least one-day hospitalisation for inpatient use); 3) estimating the monetary value of the benefits

accrued to each socio-economic group through multiplying the utilization rates by unit costs of relevant services; and, 4) summing total benefits within socio-economic groups resulting in total benefits for each quintile.

Individuals are categorised by income, proxied by equivalised per capita consumption, to calculate the value of the health sector subsidy received by each individual. The cost of provision of the various health services subsidized by UNHCR for consultations, drugs, diagnostics tests (labs and imaging, etc), and hospitalisation, besides the running cost of the facilities, were collected from the 2017 UNHCR end-of-year financial report to estimate the unit cost and assess the benefits received by different groups. The unit cost is then calculated as the average cost by dividing the total UNHCR expenditure in the specific service by the total units used, taking into account that the net subsidy is weighted by the utilization rate to get the subsidy benefit of the individual.

The service-specific UNHCR subsidy received by an individual is,

$S_{ki} = q_{ki}c_k - f_{ki}$,

where q_{ki} indicates the quantity of service k utilized by individual i, c_k represents the unit cost of providing k and f_{ki} represents the amount paid for k by individual i.

The total UNHCR subsidy received by an individual is:

$$S_i = \sum_k \alpha_k (q_{ki}c_k - f_{ki})$$

where α_k are scaling factors that standardize utilization reference periods across services for the greatest share of the subsidy. We standardized on the reference period for inpatient care reported over one year, then α_k=1 for inpatient care and α_k=13 for outpatient services as utilization was reported over only 4 weeks.

Given the difference between official and reported user payments for healthcare use, we experiment with two measures of the UNHCR benefit received as in similar papers in the literature [64]. The choice of measure directly affects the computation of the subsidy since it modifies the difference between the unit cost of care and fees paid by the individual. The "Benefits received" were then defined in this paper as either net benefits (NB) or gross benefits (GB).

Net benefits (NB) - are calculated as the cost of each service use, net of user fees and other related out-of-pocket expenditures (OOP), this is the net benefit received by the Population. While Gross benefits (GB) – are calculated as the total cost of each service type for the provider independently of the financing sources, this is the benefit allocated by UNHCR. Providers include non-governmental organisations (NGOs) which are partners of UNHCR and public hospitals and hospitals supported by UNHCR. Then, the GB represents the cost for the UNHCR in the absence of user fees and any other OOP, but with the same level of healthcare use. OOP was collected for each service during the survey, and mostly involved the cost contribution of refugees in the investigation tests and medications fees for outpatient healthcare use, as OOP expenditures for inpatient care were often fully covered by UNHCR. For those individuals who self-reported OOP expenditures higher than the value of the GB of the services, a zero value replaced the negative value following usual practice in previous papers [65].

CIs were calculated for healthcare utilization of both benefit measures, gross and net benefits. Also, CIs ranging between 0 and 1 indicated pro-rich distributions, while CIs ranging between 0 and − 1 indicated pro-poor distributions. [27].

Results

Descriptive statistics

Table 1 shows the descriptive demographic characteristics for the 1872 individuals and 507 households included in the study.

Table 1. Household demographic characteristics (N=1872 Individuals, 507 Households)

	No of observations / Percentage	Mean ± SD
Age		24.5 ± 17.35
0-5 years	177 (9.5%)	
6 – 17	604 (32.3%)	
18- 34	591 (31.6%)	
35- 64	462 (24.7%)	
above 65	38 (2.0%)	
Gender		
Male	973 (52%)	
Female	899 (48%)	
Persons with Disability	64 (3.4%)	
Persons with Chronic Disease	381 (20.4%)	
Urban		
Rural	210 (11.2%)	
Urban	1662 (88.8%)	

Education of household head		
None, Primary, or Preparatory	1290 (68.9%)	
Secondary, Technical Institute	359 (19.2%)	
University or Higher	223 (11.9%)	
Employment (household heads)		
Employed	262 (52.6%)	
Unemployed	245 (47.4%)	
Duration in the country		3.6 ± 2.2
<2 years	347 (21%)	
between 2 and 4 years	126 (7%)	
between 4 and 5 years	1312 (67%)	
> 5 years	87 (5%)	
Governorates		
6 October and Giza	533 (28.5%)	
CAIRO	385 (20.6%)	
Alexandria	218 (11.6%)	
Qalyubia	217 (11.6%)	
Sharkia	125 (6.7%)	
Damietta	184 (9.8%)	
Others	210 (11.2%)	
Equivalized per capita consumption (quintiles)	$	
Lowest quintile	40.3	96 ± 58.1

2	69.8
3	85.8
4	109.1
Highest quintile	182.4

Table 2 reports the percentages of healthcare use by independent variables (unadjusted). Healthcare use is defined as a binary variable. Results for the Pearson's chi-square test have been reported in this table comparing groups for the same categorical healthcare use.

Regarding the outpatient services use, 31% of the individuals declared to have used the services over the previous month period. On the contrary, only 9% had used inpatient services over the preceding 12-month period. Refugees used private health facilities more than public ones for outpatient care (18% vs. 13%), while public hospitals including UNHCR-supported facilities were more frequently used for inpatients care (public health facilities more for inpatient care (7% vs. 2%). Total (either public or private) outpatient healthcare use was significantly higher ($p<0.001$) for individuals ages between 35 and 64 years also for those above 65 years, female individuals with NCD, those unemployed, and those in the richest quintile ($p<0.05$). In the case of hospital use, total (either public or private) use was significantly higher ($p<0.05$ or lower) for those between 18 and 34 years, those above 65 years, and individuals with NCD.

Table 2. Percentages of healthcare use by independent variables (unadjusted).

	Outpatient visit, % (Mean ± SD)			Inpatient admission, % (Mean ± SD)		
	All	Public	Private	All	Public	Private
Total	0.31 ±0.010	0.13 ±0.008	0.18 ±0.009	0.09± 0 .007	0.07 ±0.006	0.02 ±0.003
Age						
0- 5 years	0.24 ± 0.03	0.09 ± 0.02	0.15 ± 0.03	0.03 ± 0.01	0.01 ± 0.01	0.02 ± 0.01
6 -17 years	0.16 ± 0.02	0.06 ± 0.01	0.10± 0.01	0.03 ± 0.01	0.02 ± 0.01	0.01 ±0.00

18 -34 years	0.25 ± 0.02	0.10 ± 0.01	0.15 ± 0.02	0.16 ± 0.02***	0.13 ± 0.01***	0.03± 0.01**
35-64 years	0.48 ± 0.02***	0.22 ± 0.02***	0.27 ± 0.02***	0.09 ± 0.01	0.08 ± 0.01	0.01 ± 0.00
>65 years	0.84 ± 0.06***	0.46 ± 0.08***	0.38 ± 0.08***	0.18 ± 0.06*	0.13 ± 0.05	0.05 ± 0.04
Gender						
Female	0.34 ± 0.02***	0.13 ± 0.01**	0.21 ± 0.01**	0.13 ± 0.01	0.10 ± 0.01	0.03 ± 0.01
Male	0.25 ± 0.01	0.11 ± 0.01	0.14 ± 0.01	0.06 ± 0.01	0.04 ± 0.01	0.01 ± 0.00
Self/reported diseases						
Disability	0.36 ± 0.06	0.16 ± 0.05	0.20 ± 0.05	0.09 ± 0.04	0.05 ± 0.03	0.05 ± 0.03
NCD	0.75 ± 0.02***	0.33 ± 0.02***	0.42 ± 0.03***	0.14 ± 0.02**	0.11 ± 0.02**	0.03 ± 0.01
Residence						
Rural	0.33 ± 0.03	0.14 ± 0.02	0.19 ± 0.03	0.11 ± 0.02	0.09± 0.02	0.02 ± 0.01
Urban	0.28 ± 0.01	0.12 ± 0.01	0.17 ± 0.01	0.09 ± 0.01	0.07± 0.01	0.02± 0.00
Employment						
Unemployed	0.33 ± 0.02***	0.16 ± 0.01***	0.17 ± 0.01	0.09 ± 0.01	0.08 ± 0.01	0.01 ± 0.00
Employed	0.25 ± 0.01	0.08 ± 0.01	0.17 ± 0.01	0.09 ± 0.01	0.07 ± 0.01	0.03 ± 0.01*
Living standards - Equivalized per capita consumption (quintiles)						
Poorest	0.23 ±0.02	0.15 ±0.02	0.08 ±0.01	0.08 ±0.01	0.06 ±0.01	0.02 ±0.01
2	0.29 ±0.02	0.13 ±0.02	0.16 ±0.02	0.09 ±0.01	0.07 ±0.01	0.02 ±0.01
3	0.31 ±0.02	0.12 ±0.02	0. ±0.02	0.10 ±0.02	0.07 ±0.01	0.03 ±0.01
4	0.28 ±0.02	0.10 ±0.02	0.18 ±0.02	0.09 ±0.01	0.08 ±0.01	0.01 ±0.01
Richest	0.36 ±0.02*	0.11 ±0.02	0.25±0.02***	0.10 ±0.02	0.07 ±0.01	0.02 ±0.01

Pearson's chi-square test. *P < 0.05, **P < 0.01, ***P < 0.001.

The decomposition analysis for total healthcare utilization which includes both public and private use for each outpatient and inpatient service is shown in table 3, as well as the contribution of each covariate to the overall healthcare inequality.

Each contribution is the product of the sensitivity of health with respect to the corresponding determinant and the degree of consumption-related inequality in that determinant. If the contribution of a factor is positive, this means that the utilization inequality would have been lower if that factor was not present (the opposite for negative contribution). From the need factors, NCDs were found more common among individuals from poorer households (negative CI) while the use of outpatient and inpatient services is higher among those with NCDs (positive elasticity), this has negatively contributed with 6.3 % and 5.5% respectively, to the total inequality in outpatient and inpatient utilisation. Moreover, males are slightly more concentrated among richer households (positive CI), but the use of both services is higher among females (negative elasticity), contributing to the pro-poor inequality in the total inequality in each service by 1% and -15.4%. While age positively contributed by 23% to total inequality in the inpatient service use which cancelled out the pro-poor distribution in gender and NCD in the need factors.

In the non-need factors, poor refugees were found concentrated more in rural areas, big families and with longer duration in the country. Refugees who have been longer in the country use significantly both health services. While The household size contributed to the pro-rich utilization in both outpatient and inpatient services, by 6% and 33.7% respectively. The contribution of the living standard proxied by consumption has significantly contributed to the total inequality in outpatient and inpatient services with 54.4% and 18.7 %, respectively.

Table 3. Socio-economic inequality decomposition in the probability of healthcare utilization by need, consumption, and other non-need factors

Variables	Total Healthcare Utilization				
		Outpatient services		Inpatient services	
	Concentration index of covariates ($C_{i,K}$)	Elasticity (b)	Contribution towards inequality ($C_{i,K}$)*b) /CI	Elasticity (b)	Contribution towards inequality ($C_{i,K}$)*b)/CI
Need Factors					
Age	0.0180	0.0645	1%	0.2524	23.1%**
Gender (Male)	0.0067	-0.1492	-1%***	-0.4497	-15.4%***
Disability [b]	0.0735	0.0014	0.2%	0.0037	1%
NCD	-0.0146	0.4059	-6.3%***	0.0735	-5.5%**
Non-Need Factors					
Urban	0.0086	-0.2478	-2.3%*	-0.0092	-0.4%
Governorates (Greater-Cairo)	-0.0248	-0.0295	1%	0.1993	-25%
Household size	-0.0221	-0.2479	6%**	-0.2997	33.7%*
Education (Head of household)	0.0207	0.0488	1.1%	-0.1917	-20%
Duration in the Country	-0.0009	0.2020	-0.2%*	0.6526	-3%***
Knowledge	-0.0385	0.0148	-0.6%	-0.0204	4%
Employment (Head of household)	0.0038	-0.0309	-0.1%	0.1233	2.4%
per-capita consumption	0.2874	0.1799	54.4%***	0.0128	18.7%
Wagstaff's Index (CI_W)		0.095		0.02	
Erreygers' Index (CI_E)		0.079		0.006	

Notes: *P < 0.05, **P < 0.01, ***P < 0.001. a: CI: concentration index; CIs are Wagstaff normalized indices. Erreygers' Index = (4μ/b − a)*CI, where, a and b are upper and lower limits of the health variable, CI is the standard concentration index, and μ is the mean of the health variable. $CI_E=4\mu(1-\mu)CI_W$

Concentration indexes and horizontal inequity

Table 4 shows the probability of healthcare utilization across living standards quintiles, Wagstaff normalized indices (CI), and horizontal inequity (HI) for the probability of public, private and total outpatient visits and inpatient utilization.

The CIs for the probability of utilization of all services were positive, indicating that healthcare use was pro-rich, except for public outpatient use (CI= -0.073), which is pro-poor, indicating that the worse-off living standards group use public outpatient services more than the better-off group. The mean probability of use of the poorest in the utilization of public outpatient care was 15.3% during the previous month, a number that decreases monotonically with consumption to 11.6% for the highest two quintiles. The utilization of private outpatient services was higher for the richest quintile (25.7%) than for the poorest one (8.6%).

Table 4. Quintile Distribution, inequality, and inequity in healthcare utilization

Quintiles						
	Public Outpatient visits	Private Outpatient visits	Public inpatient admission	Private inpatient admission	Total Outpatient visits	Total inpatient admission
Lowest quintile	0.153	0.086	0.061	0.018	0.225	0.079
2	0.137	0.163	0.069	0.022	0.280	0.091
3	0.120	0.200	0.077	0.026	0.310	0.103
4	0.116	0.186	0.068	0.010	0.276	0.078
Highest quintile	0.116	0.257	0.073	0.020	0.336	0.094
CI	-0.073	0.214	0.022	0.014	0.095	0.02
$Cneed\_predicted$	-0.002	-0.011	0.001	0.000	-0.008	0.001
HI (Inequity)	-0.072*	0.224***	0.02	0.014	0.104***	0.02

Notes: CI = Concentration index, CIs are Wagstaff normalized indices.HI = Horizontal inequity index; $Cneed\_predicted$ = concentration index of need-predicted use; *P < 0.05, **P < 0.01, ***P < 0.001

The CIs for the probability of private outpatient visits (CI = 0.214) and both public and private inpatient admission CIs (CI = 0.02; 0.014 respectively) were all positive, which means that the richest had more advantages than the poorest in the probability of access to those healthcare services. Overall, poorer population groups have greater healthcare needs while richer ones use the services more extensively with CI= 0.095 of total outpatient services and CI= 0.02 of total inpatient services, and the pro-rich horizontal inequity is mainly engrained in socioeconomic inequalities.

After controlling for need factors, we have obtained the horizontal inequity index (HI). The need-predicted distribution was pro-poor in the probability of use for all outpatient services. This is because 'need', as proxied by demographics and NCDs, was more concentrated among the lower socioeconomic groups.

HIs for the probability of using public outpatient visits showed pro-poor indices (-0.072) but it was observed a pro-rich inequity for private outpatient use (CI: 0.224), as well as for both types of inpatient services (0.02; 0.014). HI indices for the probability of total healthcare use for outpatient and inpatient services were also both positive (0.104; 0.02).

Healthcare Subsidies

Inpatient services consume 71.4% of the total subsidies of UNHCR versus 28.6 % allocated to outpatient services.

Table 5 shows the average net and gross benefit of each quintile for both outpatient and inpatient subsidised health services and the concentration index of BIA for both subsidies.

Inpatient services consume 71.4% of the total subsidies of UNHCR versus 28.6 % allocated to outpatient services.

Table 5. Utilization Percentages of subsidies by consumption quintiles and concentration index for benefit incidence

	Subsidy for Outpatient Services		Subsidy for Inpatient Services	
Percentage of total subsidies	28.6%		71.4%	
Per capita Consumption	Net benefit	Gross benefit	Net benefit	Gross benefit
Lowest quintile	9.5	23.8	12.5	18.7
2	10.2	21.2	9.4	22.4
3	15.6	18.5	21.5	26.9
4	18.9	18.3	47.6	10.4
Highest quintile	45.9	18.2	9.0	21.5
Concentration Index (CI)	0.3723***	-0.0643*	0.1023	0.0134

Notes: a Net Benefit (proportional cost assumption)

b Gross Benefit (Linear cost assumption relative to utilization)

The share of gross benefits (GB) for outpatient care is higher for the first two quintiles (23.8% and 21.2%, respectively) than for the remaining three quintiles (around 18%). Then, the estimated CI is significant and negative indicating that outpatient GB distribution is pro-poor. The share of GB for inpatient care does not show a specific trend in distribution among consumption quintiles. The highest, second and third quintiles show a higher proportion of the GB than the fourth and lowest quintiles. The CI for GB inpatient benefits is positive, indicating a pro-rich distribution, but it is not statistically significant.

The proportion of net benefits (NB) in Table 5, tends to increase with consumption for outpatient services and is higher for the highest quintiles. The richest 20% of the households received 45.9% of NB from outpatient care, and the richest 40% received nearly two-thirds (64.8%) of the total NB. The proportion of NB from inpatient care is highly concentrated in quintiles 3 and 4 (69.1%), but the proportion of NB accruing to the richest quintile (9%) is

lower than in the case of outpatient services. Both CIs for the net benefit from outpatient and inpatient care are positive indicating a pro-rich distribution, being higher and statistically significant for the CI in the case of outpatient care.

There are some important changes between the distribution of gross and net benefits from UNHCR subsidies both for outpatient and inpatient services use. These differences indicate that OOP expenditures are not distributed proportionally to healthcare use among consumption quintiles. Although results in Table 5 do not show a clear pattern, they indicate that the burden of OOP expenditures for the poor contributed to increasing the share of NB accruing to the highest consumption quintiles, except for the highest quintile for inpatient use. As a result, CIs for net benefits from UNHCR are pro-rich.

As reported in previous literature [63], the bias in self-declared OOP expenditures, especially truncation at zero for net benefits, which mutes differences and modifies aggregate net benefits, and the number of observations with positive net benefits in each quintile may greatly influence the magnitude of changes in the share of NB compared to GB and converting benefit shares for GB and NB not comparable. Further analysis will be needed to test the significance and stability of these differences and to test for explanatory behaviours.

Discussion

To our knowledge, this is the first study to estimate and decompose inequalities in healthcare use among refugees and evaluate the distribution of resources that enable healthcare access. Two previous papers have described healthcare access and utilization among Syrian refugees in Jordan and Canada [69;70], however, inequality decomposition and estimation of concentration indices for use and benefit distribution were not performed.

The main three results obtained in this study, for Syrian refugees in Egypt, may be summarised as follows; First, we found pro-rich inequality and horizontal inequity in the probability of refugee´s outpatient and inpatient total health services utilization; overall, poorer population groups were found to have greater healthcare needs while richer groups use health services more extensively. Whereas some studies in low and middle-income countries have shown that the poorest population groups tend to use primary care more extensively than the rich population [71,71], other studies have similarly found that need factors such as age, gender, and self-reported health status operate in a pro-poor direction of healthcare use [44,73,74,75].

Second, decomposition analysis showed that the main contributor to inequality is socioeconomic status, with other elements such as large families, being a female, the presence of chronic disease and duration of asylum in Egypt further contributing to inequality. These findings call attention to patients with chronic illnesses, who are more concentrated among the poor and presumably have greater healthcare needs, seek outpatient visits more frequently, and are more likely to need hospital admissions. These patients should be considered by UNHCR among the most vulnerable groups in need of social protection. Also, refugees with longer stays in the country have a significant effect toward the pro-poor effect, probably due to the depletion of their savings. Nevertheless, the longer refugees stay in the country, the better they become accustomed to the utilization of the system. While high-income groups are likely to have relatively good access to health services, further analysis may be needed to explore the health-seeking behaviours of the refugees. Although inpatient need is high and should affect the utilization of services, our results point out that fees associated with inpatient care in Egypt may represent a barrier that results in inequities.

Third, the BIA showed that the net benefit distribution of subsidies of UNHCR for outpatient and inpatient care is also pro-rich after accounting for out-of-pocket expenditures. Some studies [38,76] explain how these results might be linked to the fact that the poor cannot afford to be ill, be it because of the opportunity cost of lost work time, the lack of knowledge, or in general poor health service access. Measurement of the net benefits shows that the higher income groups benefit from the highest share of UNHCR subsidies since they have some means to bear the brunt of the direct and indirect cost of the services (user fees and OOP) whatever the service provider, while the lowest income group does not receive a proportionate share of net benefits, which means that the allocation is poorly targeted. This finding is in line with another study focusing on several countries in Africa [75] and with some recent studies focusing on outpatient net benefits in China [62], and India [63,65]. The inpatient NB observations may not be surprising as it is generally believed that spending on hospitals primarily benefits the rich [77,78] while the poor's access is limited for a variety of reasons—for instance, user fees and location of hospitals and the fact that hospitals tend to be more specialized and offer services not aimed at curing the common ills of the poor. Our benefit incidence analysis results may be interpreted in the sense that user fees and out-of-pocket expenditure represent an additional barrier to access to health in both outpatient and inpatient services for the poor population.

To ensure higher benefits for the poor from spending, UNHCR needs to adopt policies that encourage the poor to utilize primary health services more intensively than the non-poor, while other modalities for services delivery as proportional cost reimbursement or cash-based intervention should be looked at, with caution, as they may have implications that endanger the poorest groups fair access to healthcare.

Thus, BIA could inform policymakers on how well spending on a health service is targeted, (e.g., primary healthcare vs. secondary and specialised healthcare), and how it compares with the incidence of other types of needs.

Finally, this study has some limitations and potential methodological issues that should be carefully considered for the generalisation of the results and further research.

First, this analysis stalks from the self-reported nature of the data, the problem of recall period bias as well as the subjective measurement of healthcare use and health status are

limitations of using survey data in empirical studies, this may have led to possible over-estimation of variations in utilization and measurement error in our sample [80,81].

Furthermore, in our model specification and estimation, there is potential bias as a result of omitted variables that were not included in the explanatory variables. While we did our best to specify the model that included all necessary variables based on operational and empirical evidence, no model can ever be truly "complete" because of potential omitted variables not known to the researchers at the time of analysis, or due to data limitations.

Second, several criticisms have been raised in recent literature about the decomposition technique [82,83], and have mainly focused on refining the technique to get more precision on the estimation of HI and to better explain the sources of inequity in healthcare use [84]. Other criticisms concerned the possibility of, only, correctly decompose one form of rank-dependent index, while there are several rank-dependent measures used in the literature [81,82]. Furthermore, the conventional method of measuring socioeconomic inequity based on needs-adjusted utilization may not necessarily imply inequity because these differences may be explained in part by individuals' informed choices and preferences [85]. Second, the distribution of needs-adjusted utilization by socioeconomic status may not be equitable if the services being used are of low quality or are inappropriate [86]. Finally, one of the main limitations of this approach to measuring inequity is that it does not offer a causal interpretation of the findings [83].

Third, a major limitation of BIA methodology [87] is that subsidy per unit of usage may not be the best indicator of benefits as it is unlikely to reveal the real value (similarly to the marginal rates of substitution of private goods) that consumers attach to that good. Also, self-declared OOP expenditures may be biased and the truncation to zero of negative net benefits adopted and justified in the literature when the amount paid OOP exceeds the cost of the services [62,63] may influence net benefit distribution.

In addition, because we used cross-sectional data for our analysis, there could be reverse causality exist between health care utilization and out-of-pocket payment; hence one must be cautious in interpreting this result. Understanding the implications of financial barriers such as the role of co-payments for the observed pro-rich inequity would be useful for policy objectives.

Conclusion

This paper sheds light on the challenges and opportunities of refugees' access to healthcare and uncovers sources of inequities that require further attention and advocacy by policymakers. Our results showed that without equitable subsidy and efficient allocation, poor refugees could not afford healthcare services. We found that the richest had more advantages than the poorest in the probability of access to healthcare services and that the main contributor to total inequality is socioeconomic status, with other elements such as large families, the presence of chronic disease, being female and the duration of asylum in Egypt further contributing to inequality. Besides, the burden of OOP expenditures on the poor contributed to increasing the share of net benefits accruing to the highest income quintiles, and consequently to the surge of inequality in the use of subsidised services.

Our findings can be interpreted in favour of implementing an equity lens on the inpatient and secondary healthcare program of UNHCR, to mitigate the service skew towards the well-off, and to ensure key needs are met without leaving the most vulnerable behind.

In a context in which refugees´ integration in the national system is a key strategic plan for UNHCR, improving the management and quality of primary public services will further encourage the utilization of public facilities among the refugees and offer a cost-efficient solution and relative financial protection for lower-income refugees who manifest higher-need. Although the Government of Egypt endorsed a National Health Insurance law in 2018, this scheme is foreseen to be implemented over several years, refugees have not been given access yet. Until then, the financial protection of refugees depends exclusively on the subsidiary schemes offered by UNHCR.

Ultimately, a health policy alone is not enough to tackle issues of inequality, a comprehensive social policy that encompasses education and employment opportunities for refugees, as well as pro-poor welfare, is needed.

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3rd Chapter: Unmet needs in Europe (From protection to right)

ORIGINAL RESEARCH [3]

DIFFERENTIAL PROBABILITY IN UNMET HEALTHCARE NEEDS AMONG MIGRANTS AND REFUGEES IN FOUR EUROPEAN COUNTRIES

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Summary Study 3: Differential probability in unmet healthcare needs among migrants and refugees in four European countries

ABSTRACT

Background: Migrants and refugees try to reach the EU to seek protection and a better life, many risking their lives on dangerous journeys to escape from political oppression, war, natural disasters, and poverty. This study aims to investigate the differential probability of Unmet Needs among migrants and refugees living in four EU member states -Germany, France, Spain and Greece- and draw comparisons considering the disparities in the health financing and contribution mechanisms between these countries.

Methods: We used the 2019 wave of the European Union Statistics on Income and Living Conditions (EU-SILC) survey for a set of 4 countries: Germany, Greece, Spain and France. We estimate the effect of different variables, including migrant status, on the unmet need for medical or dental care, controlled by the country of residence. We performed a bivariate probit model with sample selection where the probabilities of need for medical or dental care and unmet need for medical or dental care are jointly estimated. We argue that a bivariate probit model with sample selection is an appropriate and essential approach to model the unmet need for health care.

Results: We found that in the four EU countries included in our study, migrants and refugees have a higher risk of facing an unmet need for medical or dental care compared to the local citizens. Low-income households are more likely to report unmet needs, which means that the accessibility to healthcare for migrants and refugees is mainly compromised by the affordability of care. Holding the economic income at the mean value for all migrant population, we noted a significant difference in the likelihood for a migrant to face unmet needs living in one country compared to the others, suggesting that the country of residence determines the amount and the provision of healthcare services.

Conclusion: Migrants and refugees living in Europe have a higher risk of facing unmet needs compared to local citizens and the availability of a service in an EU country does not seem sufficient to guarantee access to that service. Disparities between member states in relation

to health systems, financing mechanisms and migrant integration policies were observed, these could influence access to healthcare, increase the unmet needs and aggravate the risk conditions of migrants and refugees in Europe.

Co-payment or out-of-pocket design is a key factor influencing the financial protection of the refugees, exemption for poor refugees and migrants is the most effective co-payment design feature in terms of their healthcare access and socioeconomic protection.

Introduction

Various reasons bring people to pursue a new life in a different place around the world. Some are looking for a job opportunity or to follow an education, others are forced to flee fear of being persecuted for reasons of race, nationality, religion, or political opinion and millions flee from war or violence.

According to the United Nations, the estimated number of international migrants worldwide has increased in the last years, reaching 281 million in 2020 (3.4% of the global population) [1]. 80 million of these migrants were refugees or asylum seekers forcibly displaced from their homes and 10% of them are currently living in the European Union (EU) [2]. In 2019, 2.7 million immigrants entered the EU from non-EU countries, and 472.000 asylum applications were lodged in the EU in 2020 [3].

Migrants and refugees try to reach the EU to seek protection and a better life. Some use legal ways, others risk their lives at sea, to escape from political oppression, war, natural disasters and poverty. They frequently carry the burden of their diseases from their country of origin, while others developed it during their traumatic travel experiences with an impact on their mental health and subsequently on their integration process [4;5;6]

Despite that many refugees and legal migrants may have been granted the right under the national law of the EU Member states to access available healthcare, this right does not guarantee that they will be willing or able to [7]. Often, legal entitlement does not guarantee access [2;27;48] and administrative procedures such as requirements for documentation or discretionary decisions create barriers to accessibility [8].

Moreover, the structure and the organisation of health systems, as determined by government policy have a profound influence on the ability of particular groups to access healthcare [9;10]. These health policies, which include regulatory, financial, and payment regimes, package of care and entities, affect the structure and performance of the healthcare system, for example, social insurance-based systems are particularly problematic for asylum seekers and refugees since registration is more complex than in tax-funded systems [11].

Moreover, the European healthcare systems differ among EU countries in several aspects, such as the health financing and the range of contribution mechanism, which impacts the

medical care granted to citizens and migrants. There are three principal mechanisms for health financing used in Europe (Thomson *et al.*, 2009) [12]: 1. The National Health System (NHS) where the healthcare sector is financed mainly through taxation (as in Spain); 2. the Social Health Insurance (SHI), which is the main finance system in most of the EU countries (as in Germany and France), and 3. Out-Of-Pocket Payment (OOP) can be in the form of direct payments for services not covered by the statutory benefits package, cost-sharing (user charges) for services covered by the benefits package, or informal payments (as in Greece).

The responsiveness of the national health system in terms of availability of services, the model of health insurance, the extent of healthcare coverage and out-of-pocket payments can all impact populations' and individuals' ability to access healthcare [13].

The EU member states have formally recognised the right of every person to attain the highest standard of physical and mental health, even though provisions to address the migrants' and refugees' health needs remain inadequate and often unmet [14].

The concept of unmet need (UN) is a subjective measure of access to healthcare. Carr and Wolfe [15] define it as 'the differences between services judged necessary to deal appropriately with health problems and services actually received. UN is associated with the treatment and care gap, which refers to the deviation in the proportion of the population in need of services and the proportion that receive them [16].

Several systematic reviews [17;18;19;20] have documented differences in the use of health services by people of migrant origin and local citizens, others reported that individuals in an equal state of health but unequal in other characteristics, such as the income level or immigrant status, may have unequal probabilities in UNs for healthcare [21; 22].

The European Union Statistics on Income and Living Conditions (EU-SILC) is anchored in the European Statistical System [23] and is an instrument aiming at collecting comparable micro-data on income, poverty, social exclusion and living conditions.

In this study, we use the 2019 wave of Eurostat EU-SILC data to explore the variability of UN in four EU member states: Germany, France, Spain and Greece. These four member states demonstrate the three different -health financing and contribution mechanisms, described by Thomson et al. [12]; and including asylum seekers and refugees in the population data

reported to Eurostat. They were also the main countries of destination for migrants in 2020, with 102 500 applications for international protection registered in Germany which accounts for 24.6 % of all first-time applicants in the EU, followed by Spain (86 400, or 20.7 %), France (81 800, or 19.6 %), ahead of Greece (37 900, or 9.1 %)[3].

Many studies have demonstrated that effective integration policies and socioeconomic security should be encouraged as they may reduce health risks for migrants and refugees [24;25; 37; 21]. Accordingly, we provide a secondary descriptive review of the reasons for the disparity between the four countries in terms of the health systems and migrant integration policies that could affect migrants' and refugees' access to healthcare and explain potential variation in UNs.

Most of the literature has focused on the health status of migrants and refugees compared to the local population; few highlighted barriers to access healthcare [ ], while others showed that inequalities still exist in accessing healthcare [27,28, 26,29]. While a recent scoping literature review confirmed that evidence of migrants' access to healthcare in Europe is scant and generally country-specific, making it difficult to draw comparisons and commonalities across countries [30].

This study aims to investigate the differential probability of Unmet Needs among migrants and refugees living in four EU member states -Germany, France, Spain and Greece-, it is also the first study to draw comparisons between EU countries, taking into consideration the disparities in the health financing and contribution mechanisms in the structure of the health system.

Methods

Data

Our data were drawn from the 2019 wave of the European Union Statistics on Income and Living Conditions (EU-SILC) survey for a set of 4 countries: Germany, Greece, Spain, and France. The EU-SILC is anchored in the European Statistical System [23].

Unmet needs

Access to health care is addressed through a question on subjective unmet needs for health care. The phrasing is as follows: “Was there any time during the last 12 months when, in your opinion, you needed a medical examination or treatment for a health problem, but you did not receive it?”. Individuals who respond positively—“Yes, there was at least one occasion when I really needed examination or treatment but did not receive it”—are then asked to give the main reason why they failed to access health care. Eight possible answers are provided: (1) “Could not afford to (too expensive)”, (2) “Waiting list”; (3) “Could not take time because of work, care for children or for others”; (4) “Too far to travel/no means of transport”; (5) “Fear of doctors/hospitals/examination/treatment”; (6) “Wanted to wait and see if the problem got better on its own”; (7) “Didn’t know any good doctor or specialist”; (8) “Other reasons”.

1. Outcome variable

The outcome of interest is a binary (Yes or No) indicator variable “Unmet needs for medical or oral care”. It aims to capture the restricted access to medical care, including dental care, via the person’s own assessment of whether he or she needed medical or dental care, but didn't get it. Only the respondents who, during the last 12 months, reported needed medical or dental examination or treatment were asked this question.

Our outcome variable aims to capture the restricted access to medical care via the person’s own assessment.

2. Explanatory variables

This study uses socioeconomic and demographic characteristics as explanatory variables. These variables include the age (18 years old and older), gender (coded 1=female, 0=male), log-transformed equivalent household income using OECD scale, self-perceived general health (coded 1=very bad, 2=bad, 3=fair, 4=good and 5=very good), self-reported chronic illness (coded 1=Yes, 0=No), country of survey (coded 1=Germany, 2=Greece, and 3=Spain, and 4=France), and migrant status (coded 1=Yes, 0 =No).

The migrant status variable is obtained from the variable being a recognized-non-born and non-European citizen. In the EU-SILC a recognized-non-European citizen is a person who is

not a citizen of the reporting country nor any other EU country, but who has established links to that country which include some but not all rights and obligations of full citizenship.

Statistical analysis

We model the effect of migrant status on the likelihood of unmet needs for medical or dental care using a probit model with sample selection. The main probit model assumes that there exists an underlying relationship

$$y_{1j}^{*} = \boldsymbol{X}_j\beta + u_{1j}$$

such that we observe only the binary outcome

$$y_1 = \begin{cases} 1 \; if \; y^{*} \geq 0 \\ 0 \; if \; y^{*} < 0 \end{cases}$$

where $y_1^{*}$is a latent variable measuring the propensity of unmet needs for medical or dental care, $\boldsymbol{X}$ is a set of control variables that incorporates the log-transformed equivalent household income, the country of survey and migrant status, and u_1 is the error term normally distributed with a mean of 0 and standard deviation 1. In order to allow that the difference in the unmet needs for medical or dental care between migrant and recognized European citizens can be different according to each country of the survey, we add to the model a new variable which is the interaction between these two categorical variables.

However, it must be taken into account that the dependent variable $y_1^{*}$is only observed when respondents reported needed medical or dental examination or treatment during the last 12 months $y_2^{*} > 0$ according to the selection equation

$$y_{2j}^{*} = \boldsymbol{Z}_j\gamma + u_{2j}$$

where y_2^{*} is a latent variable too, $\boldsymbol{Z}$is a vector of explanatory variables related to the need for medical or dental care, and u_2 is the error term normally distributed with a mean of 0 and standard deviation 1. We use the correlation coefficient ρ between u_1 and u_2 to test for sample selection bias.

We estimate β, γ and ρ jointly using a full maximum-likelihood procedure. For this, we usethe heckprob procedure in STATA 17 (StataCorp (2021) Stata Statistical Software: Release 17, Stata Press, College Station, TX, USA. To handle the within-countries correlation arising from the nested nature of the data (households within countries), we clustered the standard errors by country employing a robust cluster estimation. Data were weighted to adjust for survey design.

Finally, we calculate the average marginal effects of the regressors of interest, that is, the conditional (on selection) predicted probability of the unmet need for medical or dental care.

$$\Pr(y_{1j} = 1, y_{2j} = 1) / Pr(y_{2j} = 1)$$

A $p < 0.05$ cut-off was used to determine statistical significance for all analyses.

Results

Descriptive statistics

Summary statistics are reported in Table 1. We analyzed a total of 109,031 observations, among the adult interviewees (age 18 years old and older), 82,467 (75.64%) reported needed medical or dental care during the last 12 months. Out of 82,467 who needed medical or dental care, 9,530 (11.56%) did not receive it.

Most of the observations in the sample were female with very good (24%) or good (45%) self-perceived health status and with an average age of around 53 years old. About 3.43% (3,743 individuals) of the whole sample are recognized-non born, non-European citizen.

Table 1. Summary statistics

	Selection indicator:	Outcome of interest:
Whole sample	Need for medical or dental care (Yes or No)	Unmet need for medical or dental care (Yes or No)

	N	%	N (Yes)	%	N (Yes)	%
Overall	109,031		82,467	75.64	9,530	11.56
Gender						
Female	57,131	52.40	44,786	54.31	5,336	55.99
Male	51,900	47.60	37,681	45.69	4,194	44.01
Self-perceived general health						
Very bad	1,840	1.70	1,775	2.15	404	4.24
Bad	7,442	6.88	7,231	8.77	1,254	13.17
Fair	23,626	21.83	21,432	26.01	2,904	30.50
Good	48,938	45.22	37,244	45.20	3,193	33.54
Very good	26,382	24.38	14,725	17.87	1,765	18.54
Self-reported chronic illness						
Yes	38,794	35.85	35,880	43.55	4,776	50.15
No	69,406	64.15	46,509	56.45	4,748	50.15
Country of survey						
Germany	20,525	18.82	15,577	18.89	292	3.06
Greece	34,495	31.64	20,451	24.80	5,813	61.00
Spain	32,946	30.22	27,576	33.44	1,932	20.27
France	21,065	19.32	18,863	22.87	1,493	15.67
Migrant status						
Yes	3,743	3.43	2,388	2.90	428	4.49
No	105,288	96.57	80,079	97.10	9,102	95.51
Continuous variables	Mean	Std. dev.	Mean (Yes)	Std. dev.	Mean (Yes)	Std. dev.

Age	53.44	18.24	55.31	17.91	56.71	17.15
Log-transformed equivalent income*	9.54	0.95	9.60	0.95	8.92	1.16

Note: All frequencies are unweighted. * Equivalent total household income is derived by calculating an equivalence factor according to the 'modified OECD' equivalence scale.

Estimation results

The selection model for the probability of the need for medical or dental care is shown in the first column in Table 2. Analysis of the selection model reveals that being female, getting older, having declared a bad health condition, suffering from a chronic illness, and having a low household-income, as expected according to the literature [31,32;33,34] are factors that are strongly related with significant positive effects on the likelihood of the need for medical or dental care.

The highly significant correlations test between the error terms (ρ) provides evidence of a selection effect suggesting that we correctly modelled the unmet need for medical or dental care conditioned to a prior need for medical or dental care. When $\rho \neq 0$, i.e. there is a correlation between error terms of the main and selection equation, the standard probit model will produce biased results.

Table 2. Probit model with sample selection

	Probit selection equation Need for medical or dental care (Yes or No)		Probit outcome equation Unmet need for medical or dental care (Yes or No)	
	Coefficient	95% conf. interval	Coefficient	95% conf. interval
Constant term	0.0272	(-0.3160; 0.3703)	0.2152	(-0.6202; 1.0507)
Age	0.0044**	(0.0036; 0.0053)		
Gender				
Male	Reference			
Female	0.2000**	(0.1339; 0.2662)		

Self-perceived health				
Very bad	Reference			
Bad	0.0563	(-0.3089; 0.4215)		
Fair	-0.3949**	(-0.6175; -0.1723)		
Good	-0.6545**	(-0.8819; -0.4272)		
Very good	-0.9001**	(-1.0996; -0.7007)		
Chronic illness				
No	Reference			
Yes	0.7085**	(0.6773; 0.7397)		
Log-transformed equivalent income	0.0615**	(0.0389; 0.0839)	-0.1964**	(-0.2762; -0.1166)
Country of survey				
Germany	Reference			
Greece	-0.1625**	(-0.1963; -0.1287)	1.2883**	(1.2166; 1.3601)
Spain	0.5307**	(0.5203; 0.5410)	0.3930**	(0.3383; 0.4477)
France	0.9101**	(0.9016; 0.9186)	0.4440**	(0.3930; 0.4950)
Migrant status				
No	Reference			
Yes			0.3031**	(0.2890; 0.3172)
Interaction				
(Migrant # Country)				
Yes # Germany	Reference			
Yes # Greece			0.1585**	(0.1095; 0.2074)
Yes # Spain			-0.4428	(-0.1183; 0.0297)
Yes # France			-0.1250**	(-0.1828; -0.0672)

Correlation (ρ)	-0.51156**	(-0.6182; -0.3864)

Note: Robust standard errors at the country of survey level. Equivalent total household income is derived by calculating an equivalence factor according to the 'modified OECD' equivalence scale. * and ** denote significance at 5 and 1% levels, respectively

Table 2 fourth column presents the probit model for unmet need for medical or dental care, with correction for sample selection. Results of this probit model show that having a higher level of disposable household-income is related to significant negative effects on the likelihood of the unmet need for medical or dental care. The variables migrant status and country of residence, as well as their interaction, show significant results too, with significant differences between countries.

The average marginal effect of the probit model for unmet need for medical or dental care, with correction for sample selection, is shown in Table 3. Holding equivalent income variable at mean value, the conditional predicted probability of unmet need for medical or dental care is 4.09% among those migrants who reside in Germany, 39.33% among those migrants who reside in Greece, 10.63% among those migrants who reside in Spain, and 11.38% among those migrants who residing in France. Being a migrant significantly increases the likelihood of an unmet need for medical or dental care in all countries (p-value <0.0001). Finally, the results of the tests in Table 4 show significant differences in the probability of the unmet need for medical or dental care between the countries in the survey when the migrant status = yes (p-value < 0.0001), except between Spain and France (p-value =0.3055).

Table 3. The average marginal effect of the probability of unmet need for medical or dental care related to migrant status

	Total Sample	Germany	Greece	Spain	France
Migrant status					
Yes	0.0990	0.0409	0.3933	0.1063	0.1138
	(0.0935; 0.1044)	(0.0388; 0.0429)	(0.3508; 0.4357)	(0.0906; 0.1221)	(0.1095; 0.1181)
No	0.0617	0.0200	0.2246	0.0651	0.0825

	(0.0612; 0.0622)	(0.0191; 0.0209)	(0.2012; 0.2480)	(0.0622; 0.0680)	(0.0789; 0.0860)
p-value test for differences between samples (Yes, No)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Table 4. P-value Test for differences between countries in average marginal effect of the probability of unmet need for medical or dental care, when migrant status = Yes

	Greece	Spain	France
Germany	<0.0001	<0.0001	<0.0001
Greece		<0.0001	<0.0001
Spain			0.3055

We categorised self-declared reasons into three main categories as described in the literature (Pappa et al. 2013) [35]; 1- Accessibility when the reason was related to cost affordability and proximity of service; 2- Availability when the reason was related to the timely provision of health services and the waiting list; and 3- Acceptability when the reason is related to personal attitudes and other circumstances.

Table 5. Reasons for Unmet need and Country characteristics

	Germany	Greece	Spain	France
Reasons for Migrants and refugees Dental UN				
Accessibility (cost and proximity)	57.14%	93.13%	93.62%	62.75%

Availability (Timely provision of health services)	14.29%	0.76%		9.80%
Acceptability (personal attitudes and other circumstances)	28.57%	6.11%	6.38%	27.45%
Pearson's chi-square test	***p < 0.001			
Reasons for Migrants and refugees Medical UN				
Accessibility (cost and proximity)	33.33%	81.42%	40.00%	43.48%
Availability (Timely provision of health services)	16.67%	5.31%	20.00%	4.35%
Acceptability (personal attitudes and circumstances)	50.00%	13.27%	40.00%	52.17%
Pearson's chi-square test	***p < 0.001			
Country Characteristics				
Global Integration policy MIPEX index*	58	46	56	56
Health MIPEX Index (health system responsive)	63	48	65	65
Out-of-pocket (OOP) as % of Current Health Expenditure	13%	36%	21%	9%
Current health expenditure (% of GDP)	11%	8%	11%	11%

* The Migrant Integration Policy Index (MIPEX) was developed as a tool to monitor policies affecting migrant integration in different countries, it includes policies related to Labour Market Mobility, Family Reunion, Education, Health, Political Participation, Permanent Residence, Access to Nationality, and Anti-discrimination.

In table 5. We performed a descriptive analysis to investigate the reasons for UNs in medical and dental care and treatment accounting for the variation in the four selected countries. we found that the main reason for the UNs in dental care was the cost accessibility in terms of cost and proximity which was strongly conveyed in Greece. While the reasons for UNs in medical care were as well the accessibility, but also acceptability in terms of personal attitudes and circumstances. A significant difference was observed between the four countries.

The Last section of table 5, presents the country's characteristics as highlighted in the literature [21;36;37;38] which may influence the access to health care for refugees and migrants. The global Migrant Integration Policy Index (MIPEX) in the 4 countries [39] revealed Germany receiving the highest score among all countries, scoring 58 points out of 100, compared to 56 for France and Spain and 46 for Greece. The MIPEX health score results locate Greece another time at the end of the list with a score of 48 points compared to a quite similar score in the other three countries: 63 points for Germany and 65 points for both France and Spain.

We also note that the Out-Of-Pocket Payment (OOP) as a health financing mechanism was the highest in Greece while the health expenditure as a percentage of GDP was the lowest.

Discussion

Survey data has been commonly used to ascertain individuals' perceptions of unmet needs arising from various barriers to accessing care [40;41]. Similar to other studies, we investigated unmet needs within and across European countries using data from the European Union Statistics on Income and Living Conditions (EU-SILC) [42;43;44;45;46;47].

We found that in the four EU countries included in our study, migrants and refugees have a higher risk of facing an unmet need for medical or dental care (p-value <0.0001), and that residency in an EU country does not seem sufficient to ease the barriers to healthcare access. We also noted that low-income households are more likely to report unmet needs, in accordance with the literature [21;22;48;49], which means that the accessibility to healthcare for the migrants and refugees is mainly compromised by the affordability of care and that the availability of the service doesn't guarantee access to the service.

While some studies explained the reasons for the limited access to health care of migrants and refugees as residents in an EU country, because of confusion about the system and the failure of healthcare providers to be effective in explaining how health systems are structured and the extent of people's entitlements [50;51], others described UNs for healthcare with two main aspects: the healthcare system, including availability and accessibility of services, and the characteristics of individuals seeking care, which are directly related to the acceptability of health care, include patients' socioeconomic status, social capital and the perception of the benefits and quality of health services [52;53; 54].

Whereas the major variability of UN appears related to individual factors, in our study, we noted a significant difference in the likelihood for a migrant to face unmet needs living in one country compared to the others, suggesting that the country of residence determines the amount and the provision of healthcare services.

Holding the economic income at the mean value for all migrant's population, we found that those living in Germany presented less probability (4.09%) of declaring unmet need for medical or dental care, compared to migrants residing in Spain or France with 10.63% and 11.38% respectively, and comparing to Greece which presents the uppermost probability of Unmet need with 39.33%.

The literature suggests that the specification of the health system and extent of the out-of-pocket payments can impact populations and individuals' ability to access healthcare [4;6;7]. Accordingly, and in order to further investigate this variability, we underwent a scoping review of the health policies in the four countries of our study. We observed the Out-of-pocket (OOP) as % of Current Health Expenditure (CHE) [55], as presented in table 5, and found Greece, where UNs were the highest among the four countries, has as well the highest reliance on OOP with 36% of Current Health Expenditure (CHE) compared to the other three countries.

A different study [43] confirmed our findings that the country variability in the UNs could be partly explained by the differences in financing the healthcare systems.

Examining the four countries in our study, we found that in Germany, healthcare benefits are financed through national insurance contributions made by the worker and/or their employer, while everyone who legally resides in Germany must be covered by health

insurance (public or private). In France, the insurance system is funded primarily by payroll taxes (paid by employers and employees), a national income tax, and tax levies on certain industries and products, and in Spain, healthcare benefits are financed mainly through general taxation (Tax-based health care system). While in Greece, the system is financed by the state budget, social insurance contributions and private payments. The largest share of health expenditure constitutes the private one, mainly in the form of out-of-pocket payment, which is also the element contributing most to the overall increase in health expenditure. The high percentage of private expenditure goes against the principle of fair financing and equity in access to health care services.

Few studies have highlighted a third element that would influence access to healthcare: Policies for integration [24;25;37;21] as measured by the Migrant Integration Policy Index (MIPEX) [56]. Our secondary review of the data from the Migrant Integration Policy Index in the countries [57], was in alignment with the econometric analysis, as the country with the lowest MIPEX scores both globally and in health, Greece, also presented the uppermost probability of Unmet need.

Limitations and Strength

The largest endogeneity concern in our study was selection bias, which we addressed through our two-stage selection model. Another potential source of endogeneity is the strong relationship between income and health. For most age groups, men and women from lower social classes have worse self-perceived general health than those from higher social classes. However, in our data, the fact that the self-perceived general health refers to the last 12 months avoids that a significant percentage of the variance in one measure can be explained by the other.

Moreover, and concerning the data source, the EU-SILC, is a harmonized dataset of country surveys, that can present heterogeneity in methods of sampling, data collection and response rates [58]. Limited participation and representation of immigrants in population surveys have been observed and could present an issue [59].

In the EU-SILC dataset for research purposes, information on birthplace is aggregated into a country of residence, the rest of the EU and outside of the EU. also, data could not identify

the nature of immigrants being refugees, asylum seekers or legal migrants, which limits the depth of understanding of the protection challenges and health needs of each of those groups. Thus, it would have been more appropriate to compare populations with different ethnic and migration backgrounds [60].

However, these surveys have standardized quality procedures and collect health and social exclusion outcomes that allow reasonably consistent comparisons across countries.

To our knowledge, this is the first study to draw comparisons and affirm disparities between four countries in the EU regarding the probability of unmet needs and the access to healthcare for migrants and refugees living in Europe.

Finally, our statistical model provides certain advantages over other models used in papers focused on the study of unmet needs for medical care [61;62]. These papers use logistic regression to estimate the effect of a vector of variables on the unmet need for medical care. With a random sample of individuals, logistic regressions would produce an unbiased and efficient estimate of this effect. However, the unmet need for medical care is only available for individuals that needed medical care during the last 12 months, leading to a non-random sample. When non-random samples are used, the presence of sample selection bias can lead to flawed conclusions. Our two-stage approach deals with the presence of this sample selection bias.

Conclusion

Bringing together data on financial hardship and unmet needs across four countries in Europe reveals that migrants and refugees living in Europe have a higher risk of facing unmet needs compared to local citizens.

Affordability of care remains a substantial barrier for many migrants and refugees who reside in Europe, and the availability of a service does not seem sufficient to guarantee access to that service.

We found significant variation between migrant and refugees' unmet health needs residing in the four EU countries, and this disparity can be attributed to the structure of the health

system and the mechanism of its financing. Greece was found to have the highest probability of unmet needs compared to the other countries, and it was also the country seen with the highest reliance on OOP, as well as low Health expenditure as a percentage of the GDP.

Reviewing the policies of the four EU member states displayed to which extent, health financing can exacerbate or mitigate the threat of financial risk of ill health, or financial protection.

Heavy reliance on out-of-pocket payments, basing population entitlement on factors other than the country of residence, is likely to delay care-seeking, increase financial hardship and unmet needs, and exacerbate inequalities in access to care among already vulnerable groups of migrants and refugees.

Co-payment or out of pocket design is a key factor influencing financial protection. It is the most important factor in countries where financial hardship is driven by outpatient medicines and the scope of the benefits package is adequate. offering exemptions for poor refugees and migrants are the most effective co-payment design feature in terms of access and financial protection.

While all the EU countries have migrant integration policies which attempt to address protection and human rights principles, major disparities remain between member states´ application of those policies, which increases the unmet needs and aggravates the risk conditions of migrants and refugees in Europe.

Refugees and migrants are not a homogeneous group and improving their access to healthcare should consider biological demography, social determinants and individual behaviours. Moreover, countries should ensure that a rights-based approach to public health systems is used, recognising migrants' and refugees' special vulnerability, and focusing to ensure inclusive policies that balance the costs and benefits of 'health for all´ in a sustainable

development perspective. The rights-based approach is grounded in health and protection ethics and should acknowledge, among others, the principles of ‘do-no-harm’, equity and the right to health.

Finally, migrants' and refugees’ health, calls for adapted information systems with the ability to disaggregate populations by refugee, asylum seeker or migrant status. This will enable the monitoring of services with humanitarian standards and indicators, as well as provide public health and policymakers with better, more accurate information.

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7. Thesis Summary of findings and Discussions

This section summarizes the main research findings of the thesis in relation to the study objectives and conceptual framework. Some important results can be used to inform public health planning and policymakers with better and more accurate information concerning refugees´ and migrants´ health.

- The primary research question was concerning the impact of the financial burden fallen on the refugees when facing health problems in the first country of asylum, as in the country of Egypt, and how could it expose them to impoverishment and further vulnerability.

The first key finding in the first paper was that approximately one out of six refugee households living in Egypt experienced catastrophic health expenditures (CHE), in excess of 30% of non-food expenditures, which represented half of their non-food expenditures. While surprisingly the "richer" households of the sample (or households with a higher capacity to pay) were found more likely to incur CHE.

Similar results were reported for Mongolia as well as for other developing countries [22,23]. This may be explained because patients in the richest group were more inclined to visit and/or have easily access to health care services. The low-income groups are substantially less likely to access specialized health care services at the higher referral levels due to both healthcare costs, and non-healthcare costs, such as transport and meals, indicating an unmet need of the poorest quintiles due to financial access barriers.

The Poverty line in the study was calculated and estimated at 751 EGP =42.6$, which was comparable to the national per capita poverty line derived from the latest Egyptian Household Income, Consumption and Expenditure Survey (HIECS) of 2017/18 and was estimated at EGP 735.7 = 41,7$ per-capita per month.[4]

An important highlight in this study was that half (50%) of the Syrian Refugees in Egypt, around 61 000, were living below the poverty line while an additional ten per cent (10%), around 12 000 Syrians in Egypt, are pushed below the estimated poverty line due to OOP.

[4] See: https://www.capmas.gov.eg/Pages/StaticPages.aspx?page_id=7183

Those worrisome results underline another risk, such as food insecurity and the implying a threat of having inadequate food consumption due to poor dietary intake and/or limited economic capacity to access food.

The results of the logistic regression found support for the hypothesis that the risk of incurring in CHE increases with female and unemployed headed households. The duration of the stay in Egypt for Syrian refugees was only found significant at 10%, which may indicate that the longer they stay in Egypt the higher the chance for them to be exposed to CHE, which may be explained by the fact that refugees may have their savings exhausted or assets already sold. This is a worrisome issue since the Syrian crisis is considered a protracted crisis with a long-lasting, stagnating situation.

Income was not significant in our analysis, which is understandable considering that Syrian refugees have no legal access to the labour market, and income is associated with temporary informal labour or external humanitarian assistance, however, employment was a protective factor against CHE. The analysis showed that female-headed households are twice more unlikely to incur in CHE compared to a male-headed household. The cost of secondary health care services is very high in Egypt wherever in public or private facilities. The analysis confirmed that households who had a member hospitalised in the last month had twice the likelihood to face CHE.

- The subsequent question was if the poorest groups of refugees and asylum seekers have equitable access across the levels of healthcare, in the country of asylum (Egypt). and subsequently, if the distribution of the health assistance subsidies provided by the United Nations agency (UNHCR), are appropriately distributed to ensure equity and financial protection of the most vulnerable.

The estimated CIs for the probability of utilization of all services were positive, indicating that healthcare use was pro-rich, except for public outpatient use, which is pro-poor, signifying that the worse-off living standards group use public outpatient services more than the better-off group. Overall, poorer population groups have greater healthcare needs, while richer groups use the services more extensively. The decomposition analysis for total healthcare utilization which includes both public and private use for each outpatient and inpatient

service, was aiming to identify the main contributor to this inequality. From the need factors, non-communicable diseases (NCDs)were found more common among individuals from poorer households (negative CI) while the use of outpatient and inpatient services is higher among those with NCDs Moreover, males are slightly more concentrated among richer households (positive CI), but the use of both services is higher among females (negative elasticity). While age positively contributed by 23% to total inequality in the inpatient service use.

In the non-need factors, poor refugees were found concentrated more in rural areas, big families and with longer duration in the country. Refugees who have been longer in the country use significantly both health services. The contribution of the living standard proxied by the consumption has significantly contributed to the total inequality in outpatient and inpatient services with 54.4% and 18.7 %, respectively.

These findings call attention to patients with chronic illnesses, who are more concentrated among the poor and presumably have greater healthcare needs, seek outpatient visits more frequently, and are more likely to need hospital admissions. These patients should be considered by UNHCR among the most vulnerable groups in need of social protection. Also, refugees with longer stays in the country have a significant effect toward the pro-poor effect, probably due to the depletion of their savings. Nevertheless, the longer refugees stay in the country, the better they become accustomed to the utilization of the system. While high-income groups are likely to have relatively good access to health services, further analysis may be needed to explore the health-seeking behaviours of the refugees.

The Benefit incidence analysis conducted on the subsidies allocated by UNHCR showed that the net benefit distribution of subsidies of UNHCR for outpatient and inpatient care is also pro-rich, after accounting for out-of-pocket expenditures. Measurement of the net benefits shows that the higher income groups benefit from the highest share of UNHCR subsidies since they have some means to bear the brunt of the direct and indirect cost of the services (user fees and OOP) whatever is the service provider, while the lowest income group does not receive a proportionate share of net benefits, which means that the allocation is poorly targeted.

The benefit incidence analysis results may be interpreted in the sense that user-fees and out of pocket expenditure represent an additional barrier to the access of health in both outpatient and inpatient services for the poor population.

- The last question was sought for the migrants and refugees living in the countries of final destination- Europe, if they face barriers to healthcare access, as expressed in unmet needs. Are national policies in Europe toward migration influence this access and health status of the migrants and refugees living in any of EU countries?

Findings in the four EU countries included in the study, showed that migrants and refugees have a higher risk of facing an unmet need for medical or dental care compared to the local citizens and that residency in an EU country does not seem sufficient to ease the barriers to healthcare access.

Migrants and refugees, Low-income households, are more likely to report unmet needs, which means that the accessibility to healthcare for migrants and refugees is mainly compromised by the affordability of care.

Results of the statistical probit model of the probability unmet need showed that having a higher level of disposable household-income is related with significant negative effects on the likelihood of Unmet Need for medical or dental care, while the variables migrant status and country of residence, as well as their interaction, shows significant results too, with significant differences between countries.

The key finding in this study was the significant difference in the likelihood for a migrant to face unmet needs living in one EU country compared to the others suggesting that the country of residence determines the amount and the provision of healthcare services. The conditional predicted probability of unmet need for medical or dental care was: 4.09% among those migrants who reside in Germany, 39.33% among those migrants who reside in Greece, 10.63% among those migrants who residing in Spain, and 11.38% among those migrants who residing in France.

This significant variation and disparity between migrant and refugees' unmet health needs residing in the four EU countries was seen attributed to the structure of the health system and the mechanism of its financing. Greece was found to have the highest probability of

unmet needs compared to the other countries, and it was also the country seen with the highest reliance on OOP, as well as low Health expenditure as a percentage of the GDP.

Reviewing the policies of the four EU members states revealed that health financing can exacerbate or mitigate the threat of financial risk of ill health, or financial protection, and is critical to building health system resilience, while heavy reliance on out-of-pocket payments, basing population entitlement on factors other than the country of residence, is likely to delay care-seeking, increase financial hardship and unmet need, and exacerbate inequalities in access to care among already vulnerable groups of migrants and refugees.

8. Thesis Conclusions

This work highlighted the health challenges faced by the refugees, asylum seekers and migrants all through the searching path for protection, in the first hosting country and when they reach their final hoped destination as in Europe.

The thesis looked at the financial pressure put over the refugees and migrants, in Egypt and in four European countries, that influence their access to health care and may increase the health burden and suffering.

When refugees and migrants cannot afford to pay for health care, two outcomes become possible; they use health services and experience financial hardship, or they are not able to access health services and experience unmet needs.

Financial protection in terms of Catastrophic Health expenditure and impoverishment - in first country of asylum

To measure the financial protection, I relied on two well-established indicators: catastrophic health spending and impoverishing and, based on refugees´ out-of-pocket spending on medical care and I calculated the poverty level using consumption expenditure before making health care payments and after paying for health care.

One out of six refugee households incurred out-of-pocket payments that led to catastrophic health expenditures, while half of the Syrian refugees in Egypt were found living below the poverty line, with an additional ten per cent, which is around 12,000 Syrians in Egypt, are

pushed below the estimated poverty line due to out-of-pocket payments. The impact of these out-of-pocket payments for health care goes beyond catastrophic spending alone, as any refugees may decide not to use services, simply because they cannot afford either the direct costs of the service, the low-income groups in the study were substantially less likely to access specialized health care services due to both healthcare costs, and non-healthcare costs.

Access to health care still represents a challenge among refugees living in asylum situations even, in countries where the legislation is enabling.

The analysis of the determinants of CHE showed that the risk increases with unemployment, urban residency, hospitalisation, pregnant woman, disability presence and when the household head is female, those refugees are at a higher health risk and poverty vulnerability and deserve attention and prioritisation in the humanitarian assistance.

Refugees' crisis should be seen in protracted retort, and with a seek for durable solutions. UNHCR may embrace development vision, invest in the national health system and promote quality of care in exchange of increase access space, in a win-win situation. This would not only increase access to public healthcare and address financial barriers of access to health systems and increase reliance on the private medical sector but also will improve refugees 'integration into society and ease social and cultural barriers.

Equity of utilisation and Fairness in the distribution of subsidy

Because access to national health systems involved out-of-pocket payment, and this financial hardship could lead to CHE, it was important to expand the analysis to the utilisation of health services, and to further look at the fairness of use of the health services and adequacy of allocation of subsidies by the United agency for refugees in Egypt operation.

The second part of the research focussed on assessing equity across levels of care after observing services utilization among the Syrian refugees leaving in Egypt.

The analysis showed that the richest had more advantages than the poorest in the probability of access and use of healthcare services and that the main contributor to the total inequality is the socioeconomic status, with other elements such as large families, the presence of

chronic disease, being female and the duration of asylum in Egypt further contributing to inequality.

Those results call for a stronger strategic and programmatic commitment by UNHCR to scale up actions on social determinants of health and to improve health equity in the utilisation of services with attention toward the most vulnerable.

The analysis on the efficiency of the subsidies allocated by UNHCR showed that the burden of OOP expenditures on the poor is high and contributed to increasing the share of net benefits accruing to the highest income quintiles, and consequently to the surge of inequality of the use of subsidised services.

To ensure higher benefits for the poor from spending, UNHCR needs to adopt policies that encourage the poor to utilize primary health services more intensively than the non-poor, while other modalities for services delivery as proportional cost reimbursement or cash-based intervention should be looked at with caution, as they may have implications that endanger the poorest groups fair access to healthcare, those refugees may prefer to sacrifice their need and not to use the health services to meet other priorities like food and children education, further analysis may be needed to explore the health-seeking behaviours of the different socioeconomic groups.

The lack of health insurance and the weak purchasing power among poor refugees result in less utilization of healthcare services despite their greater need, this means that without equitable subsidy and efficient allocation by the UNHCR, inequity in health service utilisation between the poor and non-poor will continue and poor refugees will continue to face unafforded healthcare.

Ultimately, a health policy alone is not enough to tackle issues of inequality, a comprehensive social policy that encompasses education and employment opportunities for refugees, as well as pro-poor welfare, is needed.

Unmet needs in Europe (El Dorado) – From protection to Right

Migrants and refugees risk their lives throughout their quest to reach Europe seeking protection and life opportunities. Have they reached their El Dorado?

The research pursues evidence on migrants' and refugees' access to healthcare in Europe and how integration policies and Health financing models besides socioeconomic security influence the health risk for migrants and refugees living in four European countries.

Financial protection indicators capture financial hardship arising from the use of health services but do not indicate whether out-of-pocket payments create a barrier to access, resulting in unmet needs. Bringing together data on financial hardship and unmet needs across four countries in Europe reveals that migrants and refugees living in Europe have a higher risk of facing unmet needs compared to the local citizens. Affordability of care remains a substantial barrier for many migrants and refugees who reside in Europe while the availability of the services does not seem enough to guarantee access.

This study confirmed a significant variability in the unmet needs of the migrants and refugees residing in the four EU countries and this disparity can be attributed to the structure of the health system and the mechanism of its financing.

The Reviews in the policies in the four EU member states revealed that health financing policies can exacerbate or mitigate the threat of financial risk of ill health, or financial protection, and is critical to building health system resilience.

Heavy reliance on out-of-pocket payments, basing population entitlement on factors other than a residence, is likely to delay care-seeking, increase financial hardship and unmet need among already vulnerable groups of migrants and refugees and exacerbate inequalities in access to care.

While all the EU countries have ensured migrant integration policies which attempt to address protection and human rights principles, major disparities remain between member states in the application of those policies, which increases the unmet needs of migrants and refugees in Europe and aggravates the risk conditions.

EU Member states and other hosting countries should pay attention to ensuring a rights-based approach to public health systems, recognising migrants' and refugees' special

vulnerability and focusing on the underlying determinants of health such as economic, social and cultural. The rights-based approach is grounded in health and protection ethics and should acknowledge, among others, principles of 'do-no-harm', equity and the right to health.

Co-payment or out of pocket design is a key factor influencing financial protection. It is the most important factor in countries where financial hardship is driven by outpatient medicines and the scope of the benefits package is adequate. Exemptions for poor refugees and migrants are the most effective co-payment design feature in terms of access and financial protection.

Moreover, migrants and refugees' health, call for bespoke information systems built on a system's ability to disaggregate populations by refugee status, asylum seeker or migrant, this will enable the monitoring of services, with humanitarian standards and indicators, provide public health and policymakers with better, more accurate information.