

# BMJ Open Health status and healthcare services utilisation among unaccompanied asylum-seeking minors settled in Switzerland: a protocol for a retrospective cohort study from a hospital-based youth outpatient clinic

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## ABSTRACT

**Introduction** Unaccompanied asylum-seeking minors (UASMs) represent a population group with complex healthcare needs. Initial and ongoing healthcare is challenging for host countries but considered essential. This publication describes the protocol concerning a large cohort of UASMs settled in Switzerland in 2015–2016. Our aim is to assess their health status and examine their trajectories of healthcare services utilisation during the 3-year period after their initial health control.

**Methods and analysis** We will retrospectively analyse data of all newly arrived UASMs aged 12–18 years who benefited from a first health assessment at the Youth Clinic of Geneva University Hospitals between 1 January 2015 and 31 December 2016. Source of data will be electronic medical records. Main outcomes include the determination of their health status (acute and chronic conditions) and the utilisation of different care sectors (ambulatory primary care and subspecialty clinics, emergency room and inpatient wards). A secondary outcome will be the identification of patients at risk for high use of services as well as those with limited access to care. We will extract the following data: demographic characteristics (age, gender and country of origin), social determinants (place of residence, the presence of family in Geneva, school performance and asylum status), clinical information (reason for attending service, anthropometric measurements and medical diagnosis at discharge) and laboratory parameters (complete blood count, ferritin level, 25-hydroxyvitamin D level, hepatitis B antigen and antibodies, tetanus antibodies, QuantiFERON and stool and serology tests for intestinal parasites). We will collect data from first health assessment and during a follow-up period of 3 years for each patient.

**Ethics and dissemination** In accordance with the Swiss clinical research law, this protocol has been approved by the local ethics committee (project ID: 2021–01260). Our findings will provide important information for the development of quality healthcare services focusing to UASMs. We intend to disseminate our results through publication in peer-reviewed journals.

## Strengths and limitations of this study

- The present study will be the first study of a large cohort of all unaccompanied asylum-seeking minors (UASMs) arriving in one region over a period of time.
- Their health status and needs will be studied in terms of both physical and mental health.
- Through its longitudinal design, the present study, in addition to providing robust data on UASMs' health status on arrival to the host country, will uncover dynamic trends over time, thus will identify potential shifts in health-related conditions.
- Our findings will provide insight into our current clinical practices and inform the development of age-appropriate, gender-appropriate and ethnicity-appropriate approaches in order to better respond to the specific needs of this population group.
- Some of our findings may not be generalisable to countries other than Switzerland, which have different health insurance eligibilities for UASMs.

## INTRODUCTION

### Record number of children in crisis: implications for host countries

Over 1.2 million first time asylum seekers applied for international protection in Europe in both 2015 and 2016, a number that surged to record in the European history of migration.<sup>1</sup> Among them, almost one-third accounted for asylum seekers aged less than 18 years.<sup>2</sup> In 2015, almost 90 000 unaccompanied asylum-seeking minors (UASMs) arrived in Europe (nearly 3000 of them arrived in Switzerland), resulting in an approximately sevenfold increase comparing to their annual average number during the past decade, estimated around 12 000 per year.<sup>3</sup>

This recent migrant crisis has considerable implications for all host countries. Basic public

sectors, such as social care and education, face significant challenges in order to provide general support to UASMs and facilitate their integration. Healthcare systems of host governments were not appropriately prepared for the massive influx of these children and were confronted with substantial difficulties in order to meet their health needs. Yet, lack of appropriate medical care is known to compromise UASMs' physical and mental health.<sup>4</sup>

### Healthcare needs of UASM: research gaps

The health of UASMs is related to their health status before their migration journey (pre-flight), the conditions during their journey (flight) and the circumstances they face after settling in their final destination (post-flight). In general, asylum-seeking children who settle in developed countries are generally considered in precarious health and have significant health risks and needs that differ from native children.<sup>5</sup> Critical living conditions and limited access to quality healthcare in their country of origin, multiple stressful life experiences before and throughout displacement and difficulties after settling in their new environments have all been suggested as risk factors for poor health status.<sup>4</sup>

Studies about the health status and needs of the specific group of UASMs are lacking, especially studies conducted in the European region; the existing literature often focuses on younger asylum-seeking children who experienced displacement in Europe while remaining in the care of at least one parent.<sup>6–8</sup> However, there is evidence that UASMs have greater health risks and poorer health compared with their accompanied peers.<sup>9</sup> In addition, most data about UASMs basically emerge from cross-sectional surveys, especially dealing with the screening of specific infectious diseases<sup>10 11</sup> or mental health disorders<sup>12–16</sup> on arrival in the host country; to date, longitudinal studies have been limited on examining UASMs' emotional difficulties<sup>17 18</sup> or considering short follow-up periods (usually 1 year post-arrival),<sup>19 20</sup> thus not enabling linking with changes in socioeconomic status happening over time. However, exploring a large variety of health conditions (communicable as well as non-communicable diseases) throughout long periods of time is considered essential in order to track shifts in UASMs' health status, determine the course of their health problems and make potential associations with modifiable social determinants of health (social protection, housing, education, employment, etc). Finally, another point to consider when interpreting data from different studies on migrant children' health is the fact that direct comparisons are sometimes misleading. Since the phenomenon of migration continually evolves, the characteristics of displaced populations (age, gender, country of origin, reason for leaving country, duration of the journey, etc) tend to change throughout time as well as among different host countries and probably the profile of UASMs settled in European countries during the 2015–2016 peak of the refugee crisis is not consistent with the findings from studies conducted before that period.

### Healthcare services utilisation by UASMs

Healthcare utilisation is structured by healthcare needs, on the one hand, and the availability of accessible, acceptable high-quality healthcare services, on the other hand.<sup>10</sup> There is evidence about certain barriers to healthcare access for asylum-seeking children. These include their lack of understanding of the healthcare system of the host country and lack of awareness of available services, their unfamiliarity with care as well as limited health literacy, language issues, health professionals' inadequate recognition of the health concerns of culturally different populations or even financial restrictions for those who settle in countries where medical care is not free.<sup>5</sup>

As a consequence, asylum-seeking children have been found to be at a five times higher risk to present to the emergency department for an ambulatory care sensitive condition compared with native children.<sup>21</sup> Similar findings were described for inpatient care.<sup>21 22</sup> Other studies have shown higher rates of visiting a general practitioner, receiving a prescription and being referred to a specialist for UASMs compared with local paediatric populations.<sup>11 23 24</sup> Higher utilisation of psychiatric care services has also been described among UASMs compared with both accompanied asylum-seekers and native peers.<sup>25</sup>

### Healthcare provision for UASMs settling in Switzerland

UASMs settled in Switzerland in 2015–2016 represent the 3% of all UASMs' population arriving in Europe in this period (absolute numbers: 4655 in Switzerland over 151 555 in Europe).<sup>3 26</sup> These children benefit from basic health insurance coverage at no cost which, in contrast, is not free of charge for local residents. This ensures full accessibility of basic care for UASMs, which, at least theoretically, is in line with international frameworks about promoting and protecting their health and well-being.

### Aim of the study

We aim to describe the health status among UASMs settled in the canton of Geneva, Switzerland, in 2015–2016 and examine their trajectories of healthcare services utilisation during the 3-year period after their initial health assessment.

## OBJECTIVES

### Principal objectives

1. To analyse health-related data on UASMs' arrival in Switzerland to determine their health status.
  - Hypothesis: UASMs are likely to suffer from urgent or chronic physical and/or mental health conditions on arrival in the host country.
2. To follow-up UASMs 3 years after their initial health assessment to explore their trajectories of healthcare utilisation.
  - Hypothesis: the health needs of the UASMs change over time; a decrease in seeking care, especially regarding non-specific health complaints, is expected

between the first year compared with the second year and third year post-arrival.

### Secondary objectives

1. To examine the role of several interindividual factors to establish distinct health profiles of UASMs.
  - Hypothesis: age, gender and country of origin (indirect association with culture, different reasons for migration and access to healthcare system prior to migration) have an impact on UASMs' health problems.
2. To identify the UASMs that present limited or high utilisation rates of healthcare services, thus are potentially at risk for poor health outcomes.
  - Hypothesis: certain factors, barriers or facilitators (socio-demographic as well as psychosocial), predict healthcare services utilisation by specific UASM subgroups.

### METHODS AND ANALYSIS

This protocol is prepared based on the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement for cohort studies<sup>27</sup> (see online supplemental material for STROBE checklist).

Patient and public involvement: no patient directly involved. Yet, study collaborators include young adults belonging to a similar age group as our target population.

#### Necessary background information about health assessment of UASMs in Geneva

All UASMs aged 12–18 years who arrive in the Swiss canton of Geneva benefit from healthcare provision in the Adolescent and Young Adult (AYA) Outpatient Clinic of the Geneva University Hospitals. The AYA clinic consists of a multidisciplinary team (paediatricians, general practitioners, nurses, gynaecologists, psychiatrists, psychologists and social workers), which provides services to young people aged 12–25 years. All migrant minors aged 12–18 years who settle in the canton of Geneva are referred to the AYA clinic. This approach is based on the idea that migrant adolescents should have access to adolescent-friendly services to fulfil not only their potential migration-related health needs but also their age-specific care needs.

Referrals are made by a public health nurse who is responsible for meeting each asylum seeker on the day of his/her arrival at the canton of Geneva. An initial comprehensive health assessment is performed at the AYA clinic systematically on arrival, that is, usually in the first 3 months post-arrival unless there is an urgent medical condition. This includes (a) clinical examination, (b) evaluation of the developmental, behavioural and mental health risks, based on the HEEADSSS (Home & environment, Education & employment, Eating & exercise, Activities, Drugs/Substances, Sexuality, Suicide/Depression, Safety), a validated assessment tool commonly used in adolescent consultations,<sup>28</sup> and (c) screening of priority infectious diseases (according to the

institutional recommendations on refugees: tuberculosis, hepatitis B antigen and antibodies, tetanus and varicella antibodies, and stool and serology tests for intestinal parasites) as well as anaemia/iron deficiency screening (according to the national and international guidelines on refugee children)<sup>29–31</sup> and vitamin D deficiency screening in patients at risk (according to the international guidelines).<sup>32</sup> Follow-up appointments are offered through semi-structured interviews for both physical and mental health concerns: current primary care problems, growth follow-up, screening of scoliosis, cognitive and behavioural developmental evaluation. A paediatrician or a general practitioner is responsible for delivering primary healthcare to UASMs and further refer them to a subspecialist if clinically indicated. Nursing staff provides catch-up vaccinations according to the national guidelines, carries out laboratory testing and distributes medication if necessary. There are no restrictions on primary care counselling, subspecialty consultations, emergency room visits or admissions to hospital wards. A professional interpreter is commonly preferred in case of foreign-language-speaking patients and is routinely scheduled in advance for a fee-paying service that is covered by the hospital.

#### Study design

The present study is a retrospective cohort study from a hospital-based youth outpatient clinic. In particular, we will identify all UASMs who arrived in the canton of Geneva and were first evaluated in the AYA clinic in 2015 and 2016 and we will follow their healthcare trajectory for 3 years. We decided to focus on 2015–2016 because these 2 years represent the peak period in the number of asylum seekers' arrivals. We also decided to consider a longitudinal design to provide data evolution over time.

#### Identification of patients

In order to identify the study cohort, we will use the following criteria.

#### Inclusion criteria

- ▶ Patients of the AYA clinic, Geneva.
- ▶ Time of the first visit at the AYA clinic: between 1 January 2015 and 31 December 2016.
- ▶ Age at the first visit: 12–18 years.
- ▶ Unaccompanied minors: we will use the United Nations High Commissioner for Refugees (UNHCR) definition<sup>33</sup>: 'those children and young people under the age of 18 years who have been separated from both parents and who are not being cared for by an adult who, by law or by custom, is responsible for doing so'.
- ▶ Asylum applicants: we will use the UNHCR/International Organisation for Migration definition on asylum seekers ('individual who is seeking international protection') and refugees ('individuals who granted international protection, in accordance with national, regional and international law').<sup>34 35</sup> We will focus on those who applied for asylum in Switzerland

for the first time (including applications subjects of a Dublin procedure). We decided to include all categories of residence permit available in Switzerland,<sup>36</sup> namely: (a) determination of refugee status (asylum granted), (b) rejection of refugee status (order for expulsion), (c) temporary admission as a refugee (no asylum granted by the Swiss Asylum Act but recognised as refugee under international law), (d) temporary admission as a foreigner (no asylum granted and no qualification as refugee) and (e) asylum application pending (claim has not yet been finally decided).

- ▶ Follow-up period: 3 years post-first health assessment, calculated from the date of the first visit at the AYA clinic.

### Exclusion criteria

- ▶ Individuals with modification of their age realised post-arrival, that is, people declared ‘adult’ on arrival, but whose status was changed to ‘minor’ several months or years after arrival (different healthcare structure initially taking care of them as adults)
- ▶ Patients declared to authorities as ‘lost’ during the 3-year follow-up period.

### Study sample

UASMs who arrive in the Swiss canton of Geneva represent about 6% of the total number of UASMs who arrive in the entire country each year. As a consequence, for the years 2015–2016, we estimate around 280 patients addressed to the AYA clinic. Some rare cases of UASMs below the age of 12 years have been described (approximate number around 10 patients). Due to their young age, these patients are followed in a paediatric clinic of the same institution, so they do not fulfil the inclusion criteria. We also consider missing certain patients (estimated around 20 UASMs based on our practice experience) due to the wait time between referral and the first visit, namely, UASMs who arrived in the end of 2016 and were, consequently, assessed in the beginning of 2017. Therefore, we estimate that we will be able to identify around 250 patients as potential 2015–2016 UASM cohort participants.

### Data source

We will conduct a retrospective chart review of health data. We will use administrative and health-related data retrieved from the electronic record system used in the Geneva University Hospitals. The definition of a classic electronic health record is rather not applicable in our institution; instead, health data are presented in a form of computerised ‘repertory’ of medical letters, which accompany each episode of care realised within the institution. Each service/department/clinic has a separate format for documenting health information in the system. Entry of data is manually done by health professionals and in some cases, this is done in an unstructured way (free text). Linkage between data is not possible. Staff has direct access to this ‘repertory’, no matter the type of

service, but needs to search throughout the digital platform to identify health data in question.

### Main outcomes

A description of outcomes and respective measures can be found in [table 1](#).

### Data extraction

An experienced data manager will develop a standardised electronic case report form (e-CRF) using the Qualtrics software (Qualtrics, Provo, Utah, USA). Two trained research assistants (medical students) will extract data directly on the e-CRF. The following parameters will be extracted:

1. Demographic characteristics: gender, birth date and country of origin. Countries of origin will be further grouped in five major territories of origin, according to the United Nations’ classification<sup>37</sup>: (a) Northern Africa, (b) Sub-Saharan Africa, (c) Western Asia, (d) Southern Asia and (e) other.
2. Social determinants: place of residence, the presence of family in Geneva, school performance and asylum status.
3. Visit-related clinical information: reason for encounter, anthropometric measurements (weight, height and body mass index), medical diagnosis [International Classification of Diseases, Tenth Revision (ICD-10) codes applicable for emergency room visits and hospital admissions, free text applicable when attending primary care physician or subspecialist].
4. Laboratory testing on initial health assessment: haematocrit/haemoglobin levels, number of leucocytes, ferritin level, 25-hydroxyvitamin D level, hepatitis B antigen and antibodies, tetanus antibodies, varicella antibodies, QuantiFERON and stool and serology tests for intestinal parasites.

### Data management

Data will be entered and saved into the Qualtrics interface using a pseudonymisation procedure to ensure patients’ anonymity. A unique identification code will be used for each patient. Patients’ identifiers will be kept separately in an encrypted and password-protected file on a server of the AYA clinic. Access will be limited and only granted to the principal investigator and one of the co-authors of the project (the head physician).

Regular data quality checks will review missing data and check for outliers and discrepancies. The anonymised Qualtrics database will be then exported to an SPSS (version 27.0) database for further analysis. Both databases will be stored on two sites: the University Institute for Primary Care (University of Geneva) and the AYA clinic (University Hospital of Geneva). Both servers are protected by passwords and provide high-level safety back-ups. We will ensure long-term data persistence. Datasets will be preserved for 10 years after publication.

**Table 1** Main outcomes and measures

Outcomes	Indicators
Health status on arrival	Immunisation rates (hepatitis B, tetanus and measles) Chronic conditions screened systematically: rates %: growth problems, dental carries, scoliosis, anaemia, tuberculosis (active and latent), parasitic infections, nutritional deficiencies (iron and vitamin D deficiencies) and mental disorders Top 5 categories of other chronic conditions (eg, asthma, epilepsy and diabetes)
Utilisation of healthcare services (4 sectors): Primary care clinic Subspecialties (including mental health) Emergency room Inpatient wards	Overall number of visits per year and by care sector Average number of visits per person per year per care sector Proportion of emergency room visits of total visits per year Average number of emergency room visits per person per year Overall number of hospital admissions per year Average number of hospital admissions per person per year
Frequent user and low user <sup>38</sup>	Rates of frequent users (recurrent visits) defined as those at the top 10th percentile of visits per year at the AYA clinic Rates of low users defined as those at the lower 10th percentile of visits per year at the AYA clinic
Reasons for encounter	Frequency and percentage of the 10 most common reasons by care sector
Discharge diagnosis	For emergency room visits and hospitalisations (ICD-10 coding applicable): frequency and percentage of the top 10 diagnoses made by physicians For visits at the primary care service (the AYA clinic): frequency and percentage of 4 major categories (injury/surgery, infectious, mental health and miscellaneous), based on re-classification of the free-text diagnoses reported by the primary care physicians

AYA, Adolescent and Young Adult; ICD-10, International Classification of Diseases, Tenth Revision.

### Data analysis (statistics)

We will proceed with our analysis in four steps: descriptive analysis,  $\chi^2$  analysis, univariate logistic regression analysis and multivariate logistic regression analysis.

In order to describe the characteristics of the sample, we will use means and SD for continuous variables and frequencies and percentages for categorical ones.  $\chi^2$  analysis will be used to explore differences in health profiles on arrival among patients with different country origins. Univariate logistic regression will be used to investigate the associations between high/low care utilisation (dependent variables) and a series of potential predictive factors. These factors will include socio-demographic (age, gender, origin, type of residence, the presence of family, asylum status and school performance) as well as care-related factors (missing appointments, visits to the emergency room, hospitalisations and visits to the subspecialists). Finally, a multivariable logistic regression model will be developed to assess which of these factors will independently be associated with frequent/limited health visits. All analyses will be conducted with the statistical package IBM SPSS.

### Results synthesis

We expect presenting our findings on tables and figures. We will demonstrate the procedure of identifying the study cohort on a flowchart. We will then sum up descriptive findings on separate tables: (a) the sample socio-demographic characteristics at baseline, (b) data concerning the UASMs' health status on arrival (through the systematic screening procedure) and (c)

the utilisation of the healthcare services during the 3-year follow-up. We will present principal UASMs' characteristics corresponding to different health profiles in a figure. We will use a line chart to demonstrate the evolution of services utilisation throughout time (year 1, year 2 and year 3). We will use column charts to show the top 10 reasons for attending different healthcare services as well as the principal medical diagnoses documented. We will, finally, present the results of logistic regression analysis (both univariate and multivariate) about high/low care services utilisation in a sum-up table.

### ETHICS AND DISSEMINATION

Participants' consent is not required and will not be sought since the present study is an observational study involving the analysis of retrospective health-related anonymised data. Formal approval for the study has been obtained by the research ethics committee of the canton of Geneva (project ID: 2021-01260).

We consider submitting two manuscripts (one for measuring patients' care trajectories over time and a second one for examining health problems) to peer-reviewed journals to present the results of this research, as well as brief summaries at national and international meetings.

### DISCUSSION

Our study is expected to provide significant robust data based on a cohort of about 250 UASMs (12–18years old),



which is one of the largest samples found in the literature regarding this specific population group. In addition, the present study has a longitudinal design, thus will be unique in its capacity to show dynamic trends over time. Adequate monitoring of UASMs' health status and needs will give us the opportunity to identify potential shifts in health-related conditions. Overall, the present study will provide valuable information in planning population-appropriate service delivery strategies that will optimise UASMs' receipt of medical care. This has the potential to promote their physical and mental health, thus to facilitate their integration into host communities, have positive long-term benefits later in adult life and also reduce medical costs and resources consumption.

### Limitations

For the purposes of the present study, we will focus on examining the medical records coming from the hospital settings. Potential bias of missing out-of-hospital health information theoretically always exists since there is no linkage between records but is considered rather limited in this study. In Switzerland, UASMs are entitled to a specific type of health insurance, which allows them to seek medical care mainly in the hospital setting. Besides, the payment of professional interpreters is only ensured by the hospital services. Therefore, we believe that the relevant bias will remain limited. Another point to acknowledge is that the entry of data is not standardised in the hospital record system but rather physician dependent. This could lead to some incomplete information, for example, the anthropometric values are not systematically measured in each consultation. Also, we expect that some data (mostly laboratory related) will be missing due to the poor adherence of the study population in following the medical recommendations, for example, we know from our practice experience that obtaining stool samples from adolescents is a great challenge. Finally, the setting of our study needs to be considered when interpreting findings. Switzerland provides free healthcare insurance coverage for all UASMs. This means that, theoretically, access to care is facilitated for this population. Our findings may not generalise to other countries, which have different health insurance eligibilities for UASMs.

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**Contributors** MP conceived and designed the study, drafted the protocol and will analyse and interpret data. CC commented on the protocol and will contribute to the acquisition and interpretation of data. DMH revised the protocol and will contribute to the analysis and interpretation of data.

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### REFERENCES

- 1 EUROSTAT. Record number of over 1.2 million first time asylum seekers registered in 2015, 2016. Available: <https://ec.europa.eu/eurostat/documents/2995521/7203832/3-04032016-AP-EN.pdf/790eba01-381c-4163-bcd2-a54959b99ed6> [Accessed 14 Dec 2020].
- 2 EUROSTAT. 1.2 million first time asylum seekers registered in 2016, 2017. Available: <http://www.europeanmigrationlaw.eu/documents/Eurostat-AsylumApplicationsintheEU-2016.pdf> [Accessed 14 Dec 2020].
- 3 EUROSTAT. Almost 90 000 unaccompanied minors among asylum seekers registered in the EU in 2015, 2016. Available: <https://ec.europa.eu/eurostat/documents/2995521/7244677/3-02052016-AP-EN.pdf> [Accessed 19 Dec 2020].
- 4 ISSOP Migration Working Group. ISSOP position statement on migrant child health. *Child Care Health Dev* 2018;44:161–70.
- 5 Kadir A, Battersby A, Spencer N, *et al*. Children on the move in Europe: a narrative review of the evidence on the health risks, health needs and health policy for asylum seeking, refugee and undocumented children. *BMJ Paediatr Open* 2019;3:bmjpo-2018-000364.
- 6 Hjern A, Kling S. Health care needs in school-age refugee children. *Int J Environ Res Public Health* 2019;16:4255.
- 7 Pohl C, Mack I, Schmitz T, *et al*. The spectrum of care for pediatric refugees and asylum seekers at a tertiary health care facility in Switzerland in 2015. *Eur J Pediatr* 2017;176:1681–7.
- 8 Pavlopoulou ID, Tanaka M, Dikaloti S, *et al*. Clinical and laboratory evaluation of new immigrant and refugee children arriving in Greece. *BMC Pediatr* 2017;17:132.
- 9 Hodes M, Jagdev D, Chandra N, *et al*. Risk and resilience for psychological distress amongst unaccompanied asylum seeking adolescents. *J Child Psychol Psychiatry* 2008;49:723–32.
- 10 Bennet R, Eriksson M. Tuberculosis infection and disease in the 2015 cohort of unaccompanied minors seeking asylum in Northern Stockholm, Sweden. *Infect Dis* 2017;49:501–6.
- 11 Marquardt L, Krämer A, Fischer F, *et al*. Health status and disease burden of unaccompanied asylum-seeking adolescents in Bielefeld, Germany: cross-sectional pilot study. *Trop Med Int Health* 2016;21:210–8.
- 12 Montgomery E, Foldspang A. Discrimination, mental problems and social adaptation in young refugees. *Eur J Public Health* 2008;18:156–61.
- 13 Huemer J, Karnik N, Voelkl-Kernstock S, *et al*. Psychopathology in African unaccompanied refugee minors in Austria. *Child Psychiatry Hum Dev* 2011;42:307–19.
- 14 Derluyn I, Broekaert E. Different perspectives on emotional and behavioural problems in unaccompanied refugee children and adolescents. *Ethn Health* 2007;12:141–62.
- 15 Bronstein I, Montgomery P, Ott E. Emotional and behavioural problems amongst Afghan unaccompanied asylum-seeking children: results from a large-scale cross-sectional study. *Eur Child Adolesc Psychiatry* 2013;22:285–94.
- 16 Seglem KB, Oppedal B, Raeder S. Predictors of depressive symptoms among resettled unaccompanied refugee minors. *Scand J Psychol* 2011;52:457–64.
- 17 Vervliet M, Lammertyn J, Broekaert E, *et al*. Longitudinal follow-up of the mental health of unaccompanied refugee minors. *Eur Child Adolesc Psychiatry* 2014;23:337–46.

- 18 Bean TM, Eurelings-Bontekoe E, Spinhoven P. Course and predictors of mental health of unaccompanied refugee minors in the Netherlands: one year follow-up. *Soc Sci Med* 2007;64:1204–15.
- 19 Hirani K, Payne DN, Mutch R, *et al*. Medical needs of adolescent refugees resettling in Western Australia. *Arch Dis Child* 2019;104:880–3.
- 20 Genton PC, Wang J, Bodenmann P, *et al*. Clinical profile and care pathways among unaccompanied minor asylum seekers in Vaud, Switzerland. *Int J Adolesc Med Health* 2019. doi:10.1515/ijamh-2019-0140. [Epub ahead of print: 12 Sep 2019].
- 21 Lichtl C, Lutz T, Szecsenyi J, *et al*. Differences in the prevalence of hospitalizations and utilization of emergency outpatient services for ambulatory care sensitive conditions between asylum-seeking children and children of the general population: a cross-sectional medical records study (2015). *BMC Health Serv Res* 2017;17:731.
- 22 Ramel B, Täljemark J, Lindgren A, *et al*. Overrepresentation of unaccompanied refugee minors in inpatient psychiatric care. *Springerplus* 2015;4:131.
- 23 Kiss V, Pim C, Hemmelgarn BR, *et al*. Building knowledge about health services utilization by refugees. *J Immigr Minor Health* 2013;15:57–67.
- 24 Happle C, Dopfer C, Ernst D. Pediatric healthcare utilization in a large cohort of refugee children entering Western Europe during the migrant crisis. *Int J Environ Res public health* 2019;16.
- 25 Axelsson L, Bäärnhielm S, Dalman C, *et al*. Differences in psychiatric care utilisation among unaccompanied refugee minors, accompanied migrant minors, and Swedish-born minors. *Soc Psychiatry Psychiatr Epidemiol* 2020;55:1449–56.
- 26 EUROSTAT. 63 300 unaccompanied minors among asylum seekers registered in the EU in 2016, 2017. Available: <https://ec.europa.eu/eurostat/documents/2995521/8016696/3-11052017-AP-EN.pdf/30ca2206-0db9-4076-a681-e069a4bc5290?t=1494425373000> [Accessed 19 Dec 2020].
- 27 von Elm E, Altman DG, Egger M, *et al*. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *PLoS Med* 2007;4:e296.
- 28 Goldenring JM, Rosen DS. Getting into adolescent heads: an essential update. *Contemp Pediatr* 2004;21:64–90.
- 29 Gehri M, Jäger F, Wagner N. Prise en charge clinique de la population migrante. *Paediatrica*. 2016: 27(II special): 3-10. Available: [https://www.inter-pret.ch/admin/data/files/infolib\\_asset/file\\_fr/253/2016\\_paediatrica\\_vol\\_27\\_spezialnummer\\_f\\_cor.pdf?lm=1511256955](https://www.inter-pret.ch/admin/data/files/infolib_asset/file_fr/253/2016_paediatrica_vol_27_spezialnummer_f_cor.pdf?lm=1511256955) [Accessed 20 Dec 2021].
- 30 Centers for Disease Prevention and Control. Guidance for evaluating the nutritional status and growth in refugee children during the domestic medical screening examination. Available: <https://www.cdc.gov/immigrantrefugeehealth/pdf/Nutrition-and-Growth-Guidelines.pdf> [Accessed 20 Dec 2021].
- 31 Chaves NJ, Paxton G, Biggs BA. On behalf of the Australasian Society for infectious diseases and refugee health network of Australia guidelines writing group. recommendations for comprehensive post-arrival health assessment for people from refugee-like backgrounds. Available: <https://www.asid.net.au/documents/item/1225> [Accessed 20 Dec 2021].
- 32 Holick MF, Binkley NC, Bischoff-Ferrari HA, *et al*. Evaluation, treatment, and prevention of vitamin D deficiency: an endocrine Society clinical practice guideline. *J Clin Endocrinol Metab* 2011;96:1911–30.
- 33 UNHCR. Refugee children – guidelines on protection and care, 1994. Available: <https://www.unhcr.org/protection/children/3b84c6c67/refugee-children-guidelines-protection-care.html> [Accessed 14 Mar 2021].
- 34 UNHCR. Master glossary of terms, 2006. Available: <https://www.unhcr.org/449267670.pdf> [Accessed 14 Mar 2021].
- 35 IOM. International migration law: glossary on migration, 2019. Available: [https://publications.iom.int/system/files/pdf/iml\\_34\\_glossary.pdf](https://publications.iom.int/system/files/pdf/iml_34_glossary.pdf) [Accessed 14 Mar 2021].
- 36 Swiss Refugee Council. The asylum procedure. Available: <https://www.refugeecouncil.ch/topics/asylum-in-switzerland/the-asylum-procedure> [Accessed 26 Mar 2021].
- 37 United Nations Statistics Division (UNSD). Standard Country or Area Codes for Statistical Use (M49) - Global Inventory of Statistical Standards, 2011. Available: <https://unstats.un.org/unsd/iiss/Standard-Country-or-Area-Codes-for-Statistical-Use-M49.ashx> [Accessed 16 Jun 2021].
- 38 Shukla DM, Faber EB, Sick B. Defining and characterizing frequent attenders: systematic literature review and recommendations. *J Patient Cent Res Rev* 2020;7:255–64.