

# Health care provided to asylum-seeking and non-asylum-seeking paediatric patients at a Swiss tertiary hospital

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## Research

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# Abstract

**Background & Methods** To compare health care provided to asylum-seeking and non-asylum-seeking children, we performed a cross-sectional study in a paediatric tertiary care hospital in Switzerland. Patients were identified using administrative and medical electronic health records from January 2016 - December 2017.

**Results** A total of 202'316 visits by 55'789 patients were included, of which asylum-seeking patients accounted for 1674 (1%) visits by 439 (1%) patients. The emergency department had the highest number of visits in both groups with a lower proportion in asylum-seeking compared to non-asylum-seeking children: 19% (317/1674) and 32% (64'315/200'642) respectively. Hospital admissions were more common in asylum-seeking patients 11% (184/1674) and 7% (14'692/200'642). Frequent visits accounted for 48% (807/1674) of total visits in asylum-seeking and 25% (49'886/200'642) of total visits in non-asylum-seeking patients.

**Conclusions** Hospital visits by asylum-seeking children represented a small proportion of all visits. The emergency department had the highest number of visits in all patients and was less frequently used in asylum-seeking children. Higher admission rates and a larger proportion of visits from frequently visiting patients suggest that asylum-seeking patients may present with more complex diseases.

## Background

Globally, an estimated 68.5 million individuals and 35.5 million children were forcibly displaced in 2017 (1). This number has reached a historical record high, with child refugees having increased by 21% in the past decade (2). In Europe, 209 756 children have claimed asylum in 2017, of which 6595 lodged their application in Switzerland (3). In the same year, a further 16'350 children were registered as temporarily accepted refugees in Switzerland (4).

The remarkable increase of asylum-seeking children and adults arriving in Europe may challenge the health care systems. Thus, concerns about the quality of medical care provided to asylum-seekers have led to several international reports and action plans (5, 6). These highlight that asylum-seeking children are a particularly vulnerable group whose health needs are largely unmet (6, 7).

The majority of available data on health care provision and needs in asylum-seekers focuses on adults or originates from the late 1990s. Current asylum-seeking populations in Europe are, however, distinctly different compared to 1990s when the majority of asylum-seekers originated from the Balkan states and the proportion of children was reaching only 10% (8–12). In recent years, however, the majority of asylum-seekers originate from the horn of Africa and middle Eastern countries and on average 30% are children and adolescents (13).

. A systematic literature review on the health of migrant children in Switzerland including evidence until 2011 concluded that migrant children had important differences in health needs compared to their local peers reflected in higher hospital admission rates, intensive care admissions, dental care and mental health consultations (14). In contrast to this, a recent study of asylum-seeking hospitalized children showed that a large proportion was admitted with infections similar to those prevalent in the local population. However, a direct comparison between the groups was not done (15). Only one recent study from Germany included health care delivery data from both asylum-seeking and non-asylum seeking children (16). The study showed that

asylum-seeking children were more frequently admitted for diseases with the potential for outpatient care, when detected early

In summary, there is a knowledge gap on recent health data of asylum-seeking children in comparison with non-asylum-seeking children. This absence of information has been highlighted as a research priority by several international organizations including the World Health Organization (WHO) and the International Society for Social Paediatrics and Child Health (ISSOP) (5, 17, 18).

The aim of this study was therefore to fill an important knowledge gap by comparing health visits from asylum-seeking and non-asylum-seeking children to analyse and understand differences in their health needs.

## Methods

### Study population

In this cross-sectional study data of all visits at the University Children's Hospital Basel in Switzerland was extracted from the administrative electronic health records from 1<sup>st</sup> Jan 2016 to 31<sup>st</sup> Dec 2017. The asylum-seeking status was systematically assessed and recorded at our institution for all patients. Patients were registered as asylum-seeking if any of the following conditions were met: (i) referred from one of the reception and processing centers run by the State Secretary for Migration; (ii) referral sheet stating that the patient is asylum-seeking; (iii) asylum-seeking identity card, which is routinely issued to all individuals lodging an asylum request in Switzerland. To ensure only recently arrived asylum-seeking patients were included, children that had visits recorded one year or longer before the study period (i.e. before 1<sup>st</sup> January 2015) were excluded from the current analysis.

### Data collection and analysis

Data extraction for all identified patients was done using administrative and medical electronic health records for the following variables: number of visits per group as primary outcome and asylum status, nationality, age, gender, date of visit, department visited, time of visit (office hour visit defined as 7:00 - 5:59 pm), hospital admission or outpatient treatment. Extracted data was transferred to a Redcap-database (Vanderbilt University/IC 6.9.4). Data cleaning and quality control tests were performed. Visits with missing data were not excluded from analysis but reported as such. Statistical analysis and generation of graphs were done using STATA (Stata/IC 13.1 2013).

### Ethics

The study was approved by the Ethics committee of North-West Switzerland (EKNZ 2017–01585). Informed consent was not required as per EKNZ as not deemed feasible for the analysis of the large dataset.

### Results

## Primary outcome

The final study population included 202'316 visits by 55'789 patients of which 1674 (1%) visits by 439 (1%) patients were in asylum-seeking and 200'642 (99%) visits by 55'350 (99%) patients were in non-asylum-seeking children (*Figure 1*). A total of 294 visits by 33 asylum-seeking patients were excluded as these had records of visits prior to 1<sup>st</sup> Jan 2015 (*Table 1*).

## Nationality

Asylum-seeking patients originated from 38 countries and the most frequent nationalities were Eritrea (14%), Afghanistan (13%), and Syria (9%). In the non-asylum-seeking patients 141 countries were noted with the majority from Switzerland (64%), followed by Germany (7%), Turkey and Italy (4% each). (*Table 1; Figure 3*).

## Age and sex

The median age was higher in the asylum-seeking compared to the non-asylum seeking patients: 13 (IQR 3–16) years and 7 years (IQR 2–12), respectively. In both groups, visits from children < 3 years of age were most frequent with 39% (646/1674) and 23% (45'478/200'642) in the asylum-seeking and non-asylum-seeking patients; with the proportion being significantly higher in asylum-seeking patients (p-value < 0.001) (*Figure 2*.) A bimodal age-distribution was seen in the asylum-seeking patients with a second peak in adolescent aged 15 to 17 years. Visits from adolescents represented 25% (421/1674) in the asylum-seeking and 13% (25'736 / 200'642) in the non-asylum seeking group (p < 0.001).

There was a predominance of male patients among the asylum-seeking compared to the non-asylum-seeking patients, 70% versus 55% of visits (p < 0.001). This difference was highest in the adolescent group with 87% (366/421) of visits by males in the asylum-seeking and 50% (12'922/25'736) in the non-asylum-seeking group, respectively. The sex distribution in children < 3 years was similar in both groups; 54% males (352/646) in asylum-seeking and 56% (25'347/45'478) in non-asylum-seeking patients, respectively.

## Visits stratified by departments

Outpatient visits were most frequent in both groups with 89% (1490/1674) in the asylum-seeking and 93% (185'950/200'642) in the non-asylum-seeking patients, respectively. The emergency department was most frequently visited in both groups with a significantly lower proportion in the asylum-seeking patients with 19% (317/1674) compared 32% (64'315/200'642) in the non-asylum-seeking patients (p < 0.001) (*Table 1*).

The proportion of hospital admissions was higher in asylum-seeking patients with 11% (184/1674) compared to 7% (14'692/200'642) in the non-asylum-seeking children (p < 0.001). Asylum-seeking patients were most frequently admitted to the paediatric department (36% (67/184)) and non-asylum-seeking patients to the surgical/orthopedic department (40% (5857/ 14'692)). Hospital admissions to psychiatry were infrequent in both groups with 4% (7/184) in asylum-seeking and 2% (282/14'692) in non-asylum-seeking patients.

# Frequency of health care visits

The median number of visits per patient was 1 (IQR 1–2; range 1–179) in the asylum-seeking and 2 (IQR 1–4; range 1–221) in the non-asylum-seeking children. The frequency of visits per patient was < 4 times in 84% (369/439) and 72 % (40 451/55'350), of the asylum-seeking and non-asylum-seeking children, respectively. When analysing patients with frequent visits (> 15 visits per patient), these occurred in 4% (16/439) of the asylum-seeking and in 3% (1482/55 350) of the non-asylum-seeking patients. Frequent visits accounted for 48% (807/1674) and 25% (49'886/200'642) of the total visits in the asylum-seeking and non-asylum-seeking patients, respectively (*Figure 4*).

## Discussion

This is the first comprehensive analysis of hospital visits comparing paediatric asylum-seeking with non-asylum-seeking patients in Europe. Overall, the number of visits by asylum-seeking patients was small but the comparison to visits of non-asylum-seeking patients showed important differences.

Asylum-seeking patients originated from a considerable number of countries with Afghanistan, Eritrea and Syria being the most frequent countries of origin in the period studied. Compared to our previous analysis of asylum-seeking patients in 2015 the main difference is that Syrian patients have become more frequent (15). This shift is a result of current migration patterns in which Syrians represented 54% of the total number of recorded arrivals in Europe in 2015 and 2016 (19). In 2018, 2.7 million Syrian refugee children were living outside of Syria (20). Due to the severity and complexity of the armed conflict, Syria has shifted from a temporary to a permanent country of origin of refugees. This results in a continuously decreasing health status of Syrian citizens as also demonstrated that by a recent study in which only 64% had access to general pediatric care, 28% had up-to-date vaccination status and 16% access to healthy nutrition (21). The Syrian context is contrasted by Afghanistan, which has been one of the top 20 countries of origin of refugees since the 1980s(1). These changing trends in nationalities, contexts and demographics of the asylum-seeking population influence the health needs of asylum-seekers and highlight the need for host countries to continuously monitor their practice of health provision.

A substantial number of visits by asylum-seeking patients were by male adolescents. This is an important patient group reflecting the current age and sex distribution among refugees in Europe. In 2017, 82% of the first-time asylum seekers were less than 35 years old and 75% of the 14 to17 years old asylum-seekers were male, many being unaccompanied minor refugees (22). The frequency of this age group in hospital visits may be a surrogate for poor health or limited access to health care in this group of refugees. The Unaccompanied Refugee Minors Program of the United States showed that and that long-term health care remained challenging in this group (23). The results of our study show that most visits in this age group were in somatic departments and relatively few admissions to the psychiatric department were noted. This is somewhat surprising in the light of literature describing the importance of mental health problems in asylum-seeking adolescents (23–28). One explanation may be cultural differences in expressing mental health needs. Symptoms may appear somatic to health care providers in high-resource countries and underlying mental health problems may have passed undetected (23).

A further important age group in the asylum-seeking patients was children below three years of age; however, this was also the case in the non-asylum-seeking patients. In both groups a considerable number of emergency department visits were noted. A similar age distribution in paediatric emergency department visits was seen in other parts of the world. A Californian and a Korean study both showed frequent visits to emergency departments were more common in children aged 1 to 4 years (29, 30). However, these studies did not detail if asylum-seeking children were included. Interestingly, in our study the asylum-seeking children had a lower proportion of emergency department visits compared to non-asylum-seeking children. This finding contrasts to a recently published study, showing that asylum-seeking children were 5 times more likely to use emergency services (16). One explanation for the lower proportion in our setting may be that the nurse-led health care system present at Swiss asylum-seeking reception centers which may help to prevent visits to the emergency department, as diseases are detected early. Alternatively, it is possible that asylum-seeking children did not have sufficient access to the emergency department.

The generally low proportion of 1% of visits by asylum-seeking patients and the lower proportion of emergency department visits are in line with results from a recent report by the University College London Lancet Commission on Migration (31). The results underline that public statements in current debates about asylum-seekers disproportionately burdening the health care system are not true for all settings (31). A study done at an emergency department at the inner city of London also echoed these results, showing that asylum-seekers were only a minority group (32). Improved access to community-based physicians was described as an option to improve health care and lower the impact of migrants on emergency departments in general (32). Current health care delivery models to asylum-seekers vary substantially between regions and countries. As mentioned in a German study, presentations with ambulatory care sensitive conditions at tertiary health care facilities could be used as an indicator to compare primary care delivery models for asylum-seekers in different regions (16).

One further important finding of our study is that a small proportion of asylum-seeking patients had a high number of visits accounting for almost half of the visits. One likely explication is that asylum-seeking patients presented with serious medical conditions, as their health needs had not sufficiently been addressed in their country of origin and while being on the escape. Once arrived in the host country, they required more intense and prolonged treatment compared to their local peers with the same conditions. Alternatively, the spectrum of disease in asylum-seeking and non-asylum-seeking patients with frequent visits may be different and asylum-seeking patients may suffer more frequently from complex and rare diseases (33). A study analyzing adults with multiple chronic diseases showed that their average annual health care expenditures were three times higher compared to patients without chronic diseases (34). Despite costs, investment in paediatric patients is generally considered to be cost effective, as it is preventing expensive chronic conditions in adulthood (35). A third explication for more frequent visits could be that they the asylum-seeking patients had less access to primary care paediatricians, resulting in more frequent presentations at the tertiary health care facility.

This study has several limitations. The systematic registration of patients as “asylum-seeking” allowed identifying the health information of this study population. This is considered as strength of the study and described as urgently needed in more settings (36). However, some asylum-seeking patients might have been missed by administration staff and the number of asylum-seeking patients was potentially underestimated. Another limitation was that the retrospective nature of the study resulted in missing data and contacting

patients to gather additional information was not deemed feasible. Finally, patients which required a change of wards were counted as separate hospital admission. This allowed us to correctly identify all wards where patients were admitted, however, this may have resulted in overestimation of hospital admissions in both groups.

## **Conclusion**

In summary, hospital visits by asylum-seeking children represented a small proportion of all visits. The emergency department had the highest number of visits in all patients but was less frequently used in asylum-seeking children. Nationalities, age and gender distributions of asylum-seeking patients may vary over time and should be considered to identify important specific health needs in asylum-seeking patients. Higher admission rates and a larger proportion of visits from frequently visiting patients suggest that asylum-seeking patients may present with more complex diseases.

## **Declarations**

### ***Ethics approval and consent to participate***

The study was approved by the Ethics committee of North-West Switzerland (EKNZ 2017-01585).

### ***Consent for publication***

Not applicable

### ***Availability of data and materials***

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

### ***Competing interests***

The authors declare that they have no conflict of interest.

### ***Funding***

JB received a personal one year research grant from the “Botnar foundation” to conduct the study.

## ***Authors' contributions***

Julia Brandenberger: Conceived the study, performed data analysis, drafted the initial manuscript and approved the final manuscript as submitted.

Christian Pohl, Florian Vogt and Thorkild Tylleskär: Contributed to the interpretation of data, reviewed the manuscript and approved the final manuscript as submitted.

Nicole Ritz: Conceived the study, supervised analysis, reviewed and revised the manuscript and approved the final manuscript as submitted.

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# Table

Table 1: baseline characteristics, nationality and most visited departments by asylum-seeking and non-asylum-seeking patients 2016-2017 at University Children's Hospital Basel

Characteristics	Asylum-seeking				Non-asylum-seeking				
	Visits n = 1674		Patients n = 439		Visits n = 200'642		Patients n = 55'350		
	N	%	N	%	N	%	N	%	
<b>Age groups:</b>									
0-2	646	39	96	22	45'478	23	13'297	24	
3-14	575	34	152	34	117'546	58	32'819	59	
15-17	421	25	171	39	25'736	13	5938	11	
> 17	32	2	20	5	11'882	6	3296	6	
Total 2016	812	49	243	55	100'842	50	36'560	66	
Total 2017	862	51	243	55	99'800	50	36'767	66	
Male gender	1172	70	307	70	110'567	55	29'520	53	
<b>Most frequent nationalities:</b>									
Syria	442	26	41	9	Switzerland	124'714	62	35'381	64
Eritrea	210	13	60	14	Germany	12'961	6	3853	7
Afghanistan	192	11	58	13	Turkey	9310	5	2080	4
Algeria	182	11	4	1	Italy	7292	4	1984	4
Armenia	157	9	4	1	Kosovo	5368	3	1325	2
Other	371	22	154	35	Other Missing Data	40'973	20	10'714	19
Missing Data*	120	7	118	27		24	0	13	0
Outpatient visits	1490	89	ns	ns		185'950	93	ns	ns
Office hour visits (7.00 am - 5.59 pm)	1505	90	ns	ns		167'901	84	ns	ns
<b>Most visited outpatient departments:</b>									
Emergency	317	19	ns	ns	Emergency	64'315	32	ns	ns
Exercise therapy	200	12	ns	ns	Surgery	18'507	9	ns	ns
Radiology	173	10	ns	ns	Orthopedics	16'225	8	ns	ns
Occupational therapy	144	9	ns	ns	Ear, nose, throat	15'775	8	ns	ns
Haemato-oncology	141	8	ns	ns	Neurology	10'338	5	ns	ns

ns = not specified

\* Missing data nationality asylum-seeking: in 95% of cases patients only seen for radiological examination as part of a State Secretary of Migration age estimation-programme.

## Figures

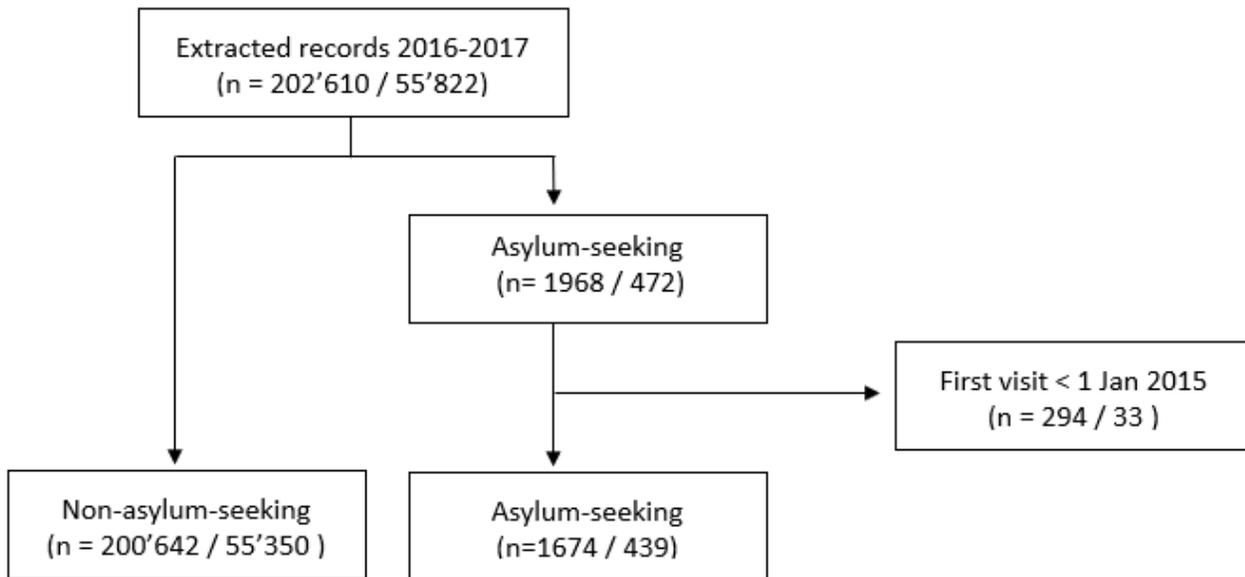
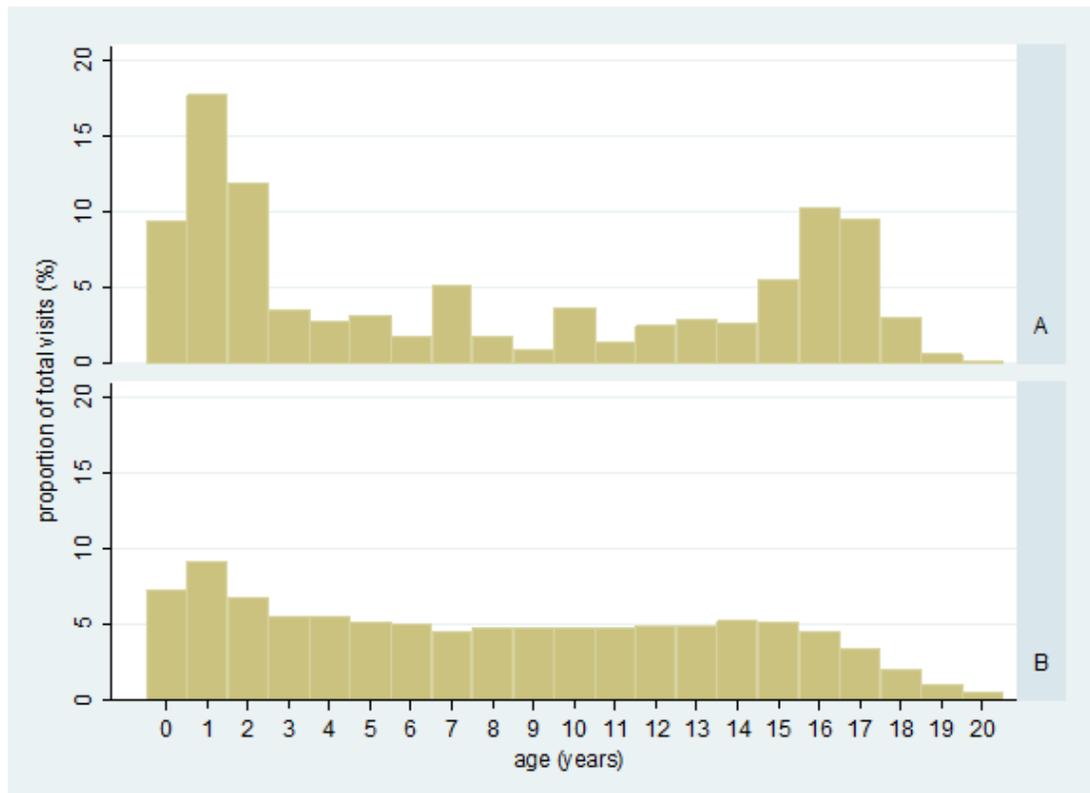


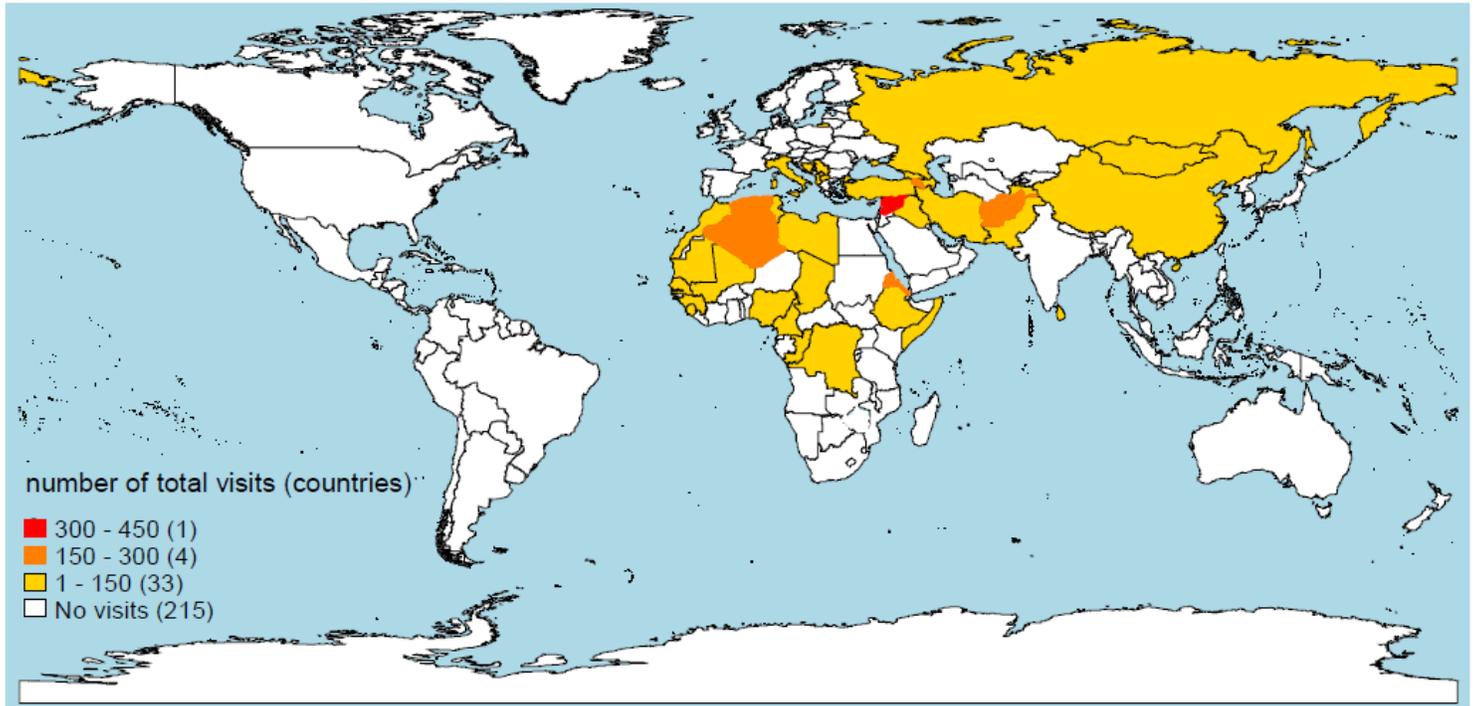
Figure 1

Study profile. n = n visits / n patients



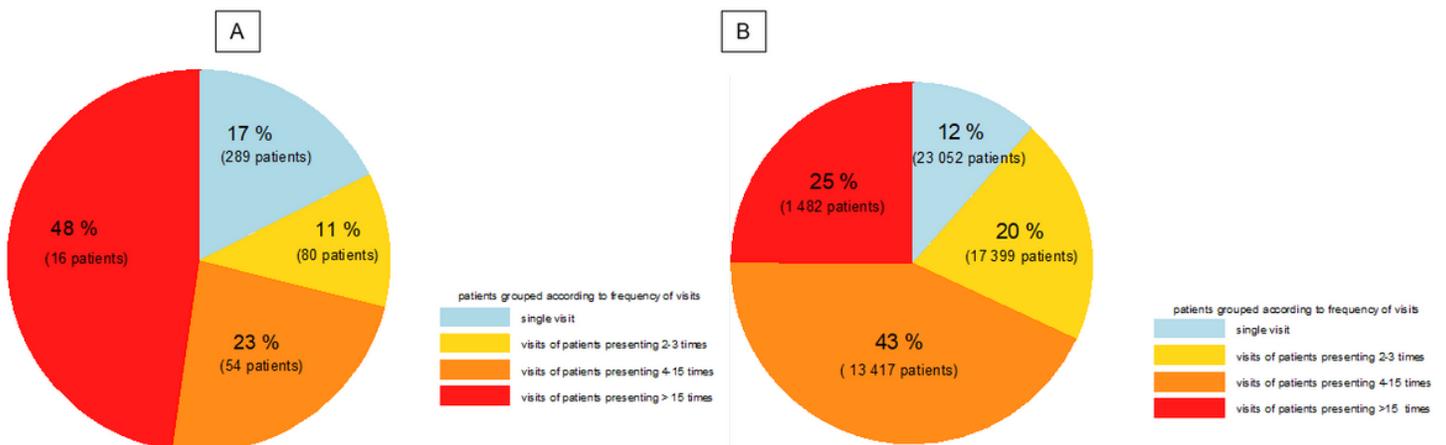
**Figure 2**

Age distribution of visits of asylum-seeking children (n = 1674; panel A) and non-asylum-seeking children (n = 200'642; panel B) in the years 2016 and 2017. Some few patients aged above 20 years are not depicted



**Figure 3**

Asylum-seeking patients originated from 38 countries and the most frequent nationalities were Eritrea (14%), Afghanistan (13%), and Syria (9%). In the non-asylum-seeking patients 141 countries were noted with the majority from Switzerland (64%), followed by Germany (7%), Turkey and Italy (4% each). Note: The designations employed and the presentation of the material on this map do not imply the expression of any opinion whatsoever on the part of Research Square concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. This map has been provided by the authors.



## Figure 4

Pie charts depicting frequency of visits and proportions of total visits by (A) asylum-seeking (n = 439 with 1674 visits) and (B) non-asylum-seeking children (n = 55'350 with 200'642 visits) in 2016 and 2017