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Mental Health

Prolonged periods of waiting for an asylum decision and the risk of psychiatric diagnoses: a 22-year longitudinal cohort study from Denmark

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Abstract

Background: The high prevalence of psychiatric disorders among resettled refugees necessitates identification of factors that reduce the risk of mental illness. In this 22-year longitudinal cohort study, we assessed whether the length of asylum-decision waiting periods is associated with resettled refugees' risk of being diagnosed with a psychiatric disorder.

Methods: We used full-population data from the Danish Civil Registration System to establish a cohort of 46 104 refugees resettled in Denmark during 1995–2016. Hazard ratios (HRs) for first-time psychiatric hospital contact (ICD-10) after residence permit issuance across varying lengths of asylum-decision waiting periods were estimated by cross-linkage with the Danish National Patient Register.

Results: Long asylum-decision waiting periods were associated with an increased risk of psychiatric disorders. Compared with refugees who waited 0–6 months for their asylum decision, the HRs of any psychiatric diagnosis were 1.22 [95% confidence interval (CI): 1.12–1.33] for those who waited 13–24 months and 1.46 (95% CI: 1.27–1.69) for those who waited 25–71 months. Associations varied across diagnoses and length of follow-up: whereas the risk of nervous disorders increased with longer asylum-decision waiting periods in the follow-ups of 0–2.9, 3–5.9 and 6–11.9 years, the risk of psychotic disorders was associated with longer asylum-decision procedures only in the 0–2.9-year follow-up.

Conclusion: Resettled refugees who waited longer than 1 year for an asylum decision face an increased risk of psychiatric disorders. Host countries should consider that long asylum-decision waiting periods could lead to mental illness among refugees.

Key words: Asylum, refugees, waiting, psychiatric disorders, longitudinal, cohort

Key Messages

- We established a 22-year longitudinal cohort covering all refugees resettled in Denmark during 1995–2016, to investigate the association between the length of the asylum-decision waiting period and the risk of psychiatric disorders.
- We found that longer periods of waiting for an asylum decision were associated with a higher risk of psychiatric disorders.
- The strength of the association varied across type of psychiatric disorder and duration of stay after resettlement.

Introduction

The number of forcibly displaced persons worldwide is the highest it has been since World War II.¹ In the European Union during 2014–17, 3.7 million first-time asylum seekers applied for protection and 1.6 million had their applications accepted and were resettled as refugees.² Most resettled refugees remain in the receiving countries for decades; accordingly, their successful integration is critical. However, the prevalence of mental illness is found to be higher among refugee populations resettled in high-income countries than it is among native populations or non-refugee migrants.^{3,4} This applies not only to affective and nervous disorders—particularly post-traumatic stress disorder (PTSD)—but also to psychotic disorders like schizophrenia.^{5–10} The high prevalence of mental illness can impede the integration of refugees.^{10–12} Thus, to prevent or remedy the potentially harmful consequences of fleeing, receiving countries must identify the policies and practices associated with increased short- and long-term risk of mental illness.

One common practice in high-income countries is to force asylum seekers to live in asylum facilities while their application for protection is being processed. Even though asylum seekers are usually provided food, shelter and basic health care in such facilities, the safety is only temporary, and several studies have found many aspects of the asylum-seeking phase in general and of living in an asylum facility in particular to be associated with higher risk of mental illness. These aspects include, *inter alia*, being refused asylum or receiving a temporary as opposed to a permanent residence permit,^{13–17} living in an asylum facility with limited staff availability and few recreational activities,¹⁸ frequent re-allocations between asylum facilities,¹⁹ experiencing violence or sexual harassment during the asylum-seeking period^{20,21} and being held in detention.^{20,22–26}

Moreover, previous studies showed that the risk of mental illness is associated with the duration of the asylum-seeking phase. The two largest studies were based on the medical records of 4516 and 7007 asylum seekers in Denmark, respectively. One study showed that referrals to medical specialists increased with the length of stay in an asylum facility for all examined categories of psychiatric

disorders,²⁷ and the other concluded that long stays were burdensome, especially for those who had been subjected to torture.²⁸ Other studies based on smaller samples of between 70 and 246 asylum seekers from The Netherlands, Denmark, Switzerland, Australia and the USA also found that long waiting times increased the risk of mental illness.^{26,29–32} A single study based on a large survey of 2907 refugees resettled in The Netherlands found only a reduction in perceived mental health among those who spent more than 5 years in the asylum system.³³ However, the previous studies all have methodological limitations: some are based on small, non-representative samples,^{29,30} and the larger studies are cross-sectional³³ or cover only the asylum-seeking phase.^{27,28}

The aim of the present study was to assess whether long asylum-decision waiting periods were associated with a short- and long-term risk of being diagnosed with a psychiatric disorder. It surmounts the methodological limitations seen in previous related studies assessing similar topics, by establishing a large-scale ($n = 46\ 085$), individual-level, longitudinal, nationwide dataset combining information on dates of asylum application with register information on psychiatric diagnoses from the post-resettlement phase. Specifically, it uses stratified Cox proportional hazard modelling to test the hypothesis that longer asylum procedures were associated with a higher risk of psychiatric disorders in general and of specific disorders, especially nervous disorders such as PTSD. It covers all refugees resettled in Denmark during 1995–2016. The high-quality data enable us to take into account censoring due to emigration and death.

Methods**Study population**

The study population included all refugees in Denmark satisfying the following criteria: the first residence permit was based on a recognized need for asylum and was granted during 1 January 1995–31 December 2016 ($n = 87\ 056$). Refugees not waiting in Denmark—that is, quota refugees ($n = 9861$) and refugees applying from abroad ($n = 392$)—

and those with missing date of application ($n = 3540$) or a non-valid date of application ($n = 103$) were excluded. Refugees with serious health problems were entitled to a humanitarian residence permit. However, this prolonged their asylum procedure as it necessitated special procedures. Thus, for refugees with a humanitarian residence permit, a long asylum-decision period could be a consequence of mental health problems. To avoid such reverse causality, refugees with a humanitarian residence permit were excluded ($n = 7176$). Further, refugees from the former Yugoslavian Republic were excluded as they were subject to special legislation affecting both the length of their asylum procedure and the composition of the group regarding mental health problems ($n = 19\ 714$) (see also the [Supplementary Appendix](#), available as [Supplementary data at IJE online](#)). Additionally, refugees who had waited more than 6 years for an asylum decision were excluded to avoid outlier bias ($n = 152$). Last, refugees with very irregular migration patterns were also excluded due to risk of unregistered emigrations ($n = 33$). The final analysis sample consisted of 46 085 resettled refugees.

The Danish asylum system

All persons applying for asylum in Denmark are registered by the police and are assigned a unique foreign identification number. With few exceptions, asylum seekers with no previous residence permit are required to live in an asylum centre during the asylum-seeking phase. During that phase, life is restricted, albeit only rejected asylum seekers are detained. Most asylum centres are located in sparsely populated areas, limiting the asylum seekers' interaction with the surrounding society as transportation is not usually provided. Until May 2013, asylum seekers were not permitted to take up employment; however, even after the law was changed, only few have obtained permission to work.^{34,35} Regarding health services, children in the asylum process *de facto* have similar rights of access to health care as do Danish children, whereas adult asylum seekers only have access to health care in case of an emergency or if in need of general practitioner services.³⁶

Data sources

After being granted a residence permit, refugees are registered in the Danish Civil Registration System and assigned a new identification number (a so-called 'CPR number').³⁷ Information from different authorities can be linked via the CPR number, and researchers can access the linked data in an anonymous format through Statistics Denmark. This study was based on the following individual-level, linked data from three sources. First, the Danish

Immigration Service granted access to information on dates of application for asylum and residence permit issuance, refugee status and the decision authority for all refugees recognized during 1995–2016. Second, Statistics Denmark provided information on date of birth, sex, country of origin, date of marriage, in- and out-migrations and links between children and parents and between spouses. Third, we retrieved data on psychiatric disorders from the Danish National Patient Register which contains information on all psychiatric hospital contacts in Denmark since 1995.³⁸

Variables

Outcomes

Psychiatric disorders were coded according to ICD-10. Health problems during the asylum-seeking phase were not registered in the Danish National Health Register, and neither were untreated mental health problems after residence permit issuance. Hence the study examined treated psychiatric disorders among resettled refugees from their date of residence permit issuance. As in related studies, we used first-time psychiatric hospital contact as outcome.⁵ We examined the risk of any psychiatric disorder, including F1–F6, F9 and DX6 (suicide and self-harm); supplementary diagnoses of actions regarding psychiatric examinations requested by the authorities or not classified elsewhere, and observations at hospitals due to suspicion of psychopathology or other behavioural disturbance, were also included (recorded in Denmark by the codes 'DZ004', 'DZ032' and 'DZ0460'). Further, we conducted separate analyses for the three most frequent diagnoses: 'psychotic disorders' (F20–29, 69% schizophrenia), 'affective disorders' (F30–F39, 84% depression) and 'neurotic disorders' (F40–F48, 90% stress-related, including 62% PTSD). Each refugee could be registered with more than one diagnosis. Emergency room diagnoses were included only in the 'any psychiatric diagnosis' category.

The study end date was 1 July 2017. All events were measured on dates. There were 685 first-time contacts with psychotic disorders, 947 contacts with affective disorders and 4150 contacts with nervous disorders. In total, 5677 first-time psychiatric contacts regarding any of the selected diagnoses were registered during the 22.5-year follow-up.

Exposure, covariates and family units

The length of the asylum-decision waiting period was defined as the difference between the date of asylum application and the date of residence permit issuance, measured in

months. The length was categorized as 0–6, 7–12, 13–24 and 25–71 months' waiting.

Variables for decision-making authority (the Immigration Service, the Refugee Appeals Board) and refugee status (convention, protection, temporary) were included as covariates. Sex, country/region of origin (Syria, Middle East and North Africa, sub-Saharan Africa, other), age at application (0–17, 18–24, 25–34, 35–44, +45 years) and application period (1992–96, 1997–2001, 2002–06, 2007–11, 2012–16) were used for stratification.

Some refugee families fled together and therefore stayed in the Danish asylum system in the same period of time. To take into account that individuals belonging to the same family are not independent, we constructed nuclear family units by establishing linkages between spouses and between parents and children (see the [Supplementary Appendix](#), available as [Supplementary data](#) at *IJE* online, for a detailed description). Individuals were defined as belonging to a family unit if they had a parent-child relationship or were spouses married before the date of application; 33 394 unique family units were identified and assigned a family ID number.

Statistical analysis

Unadjusted incidence rates per 1000 person-years were calculated for 0–2.9-, 3–5.9-, 6–11.9- and 12–22.5-year follow-ups, where calculations for follow-ups exceeding 2.9 years excluded refugees diagnosed in the previous period(s). Hazard ratios (HRs) and 95% confidence intervals (CIs) were obtained by estimating stratified Cox proportional hazard models using STATA 15.1. The stratification minimized the restrictions on the baseline hazard caused by the proportional hazard assumption. Duration of stay in Denmark measured since residence permit issuance was used as the time scale. Models were fitted for the full follow-up (0–22.5 years), and for the 0–2.9-, 3–5.9-, 6–11.9- and 12–22.5-year follow-ups. Robust standard errors that allow for intragroup correlations within families were applied (see also the [Supplementary Appendix](#), available as [Supplementary data](#) at *IJE* online).^{39,40}

Proportional hazard assumptions were tested based on Schoenfeld residuals. All 22.5-year follow-up models were also tested for time-variant associations between outcome variables and the length of the asylum-decision period. These tests revealed that the association between the waiting period for an asylum decision and psychotic disorders varied with the length of the follow-up. When the time variance regarding psychotic disorders was considered, no tests of proportional hazard assumptions for the disorder-specific models were rejected at a 5% significance level.

As a robustness check, all main analyses were repeated with biological age as time scale and delayed entry set to the age at residence permit issuance. The results were similar to those presented. The analyses are reported in the [Supplementary Appendix](#), available as [Supplementary data](#) at *IJE* online.

Ethical approval

The study was approved by the Danish Data Protection Agency, reference number J.nr. 2015–41-4324. When conducting registry-based research in Denmark, no further approval is required.

Results

The study sample totalled 46 104 resettled refugees, of whom 68.6% were men ([Table 1](#)). Only 3.5% of the refugees in the study sample waited more than 24 months for their asylum decision. The mean asylum procedure time was 8.1 months, median 6.3. [Figure 1](#) shows that the procedure time varies largely over country of origin and year of residence permit issuance.

A third of the individuals were 25–34 years old upon arrival. Seven in 10 refugees originated from the Middle East or North Africa, 55% of whom were Syrian ([Table 1](#)). The incidence rate per 1000 person-years of any psychiatric diagnosis was the highest among Iranians (IR = 40.9) and the lowest among Somalis (IR = 7.1). Less than 10% ($n=4\ 231$) were censored due to emigration, and <1% ($n=379$) died during the analysis period.

The unadjusted incidence rates of any psychiatric diagnosis were similar across different waiting periods ([Table 1](#)). However, this result does not account for the mean follow-up being approximately 2.5 times longer for those who waited 25–71 months for an asylum decision compared with those who waited less than 7 months (10.8 vs 4.4 years), or for the incidence rate being the highest in the first 3 years after residence permit issuance ([Table 2](#)). When the length of follow-up was considered, the incidence rates of any psychiatric diagnosis increased with longer asylum procedures ([Table 2](#)). For instance, the incidence rate was 26.3 per 1000 person-years for any psychiatric diagnosis among refugees who waited 0–6 months for an asylum decision and 31.7 for those who waited 25–71 months in the 0–2.9 months follow-up.

The results from the stratified and adjusted Cox proportional hazard models showed an increased risk of any psychiatric disorder, psychotic disorder and nervous disorder with longer asylum procedures ([Table 3](#)). For example, for any psychiatric diagnosis, the 25–71 months' waiting period was associated with an approximately 46% higher

Table 1. Distribution of population at start and end of follow-up (numbers and percentages), mean follow-up, person-years (PY), cases (n) and unadjusted incidence rates (IR) per 1000 PY for any psychiatric diagnosis, death and emigration, by asylum processing time, sex, age at application, refugee status, decision authority, period of application and region of origin

	Population, study start		Population, study end		Mean follow-up time		Person-years		Any psychiatric diagnosis		Deaths		Emigrations	
	n	%	n	% ^a	Years	PY	n	IR	n	IR	n	IR	n	IR
Asylum-decision waiting time	0–6 months	21 625	46.9	18 304	84.6	4.4	95 454	1916	20.1	88	0.9	1317	13.8	
	7–12 months	15 761	34.2	11 836	75.1	7.6	119 707	2073	17.3	163	1.4	1689	14.1	
	13–24 months	7080	15.4	4592	64.9	10.0	70 656	1340	19.0	98	1.4	1050	14.9	
	25–71 months	1619	3.5	1066	65.8	10.8	17 485	348	19.9	30	1.7	175	10.0	
Sex	Female	14 464	31.4	11 189	77.4	7.0	101 077	1615	16.0	132	1.3	1528	15.1	
	Male	31 621	68.6	24 609	77.8	6.4	202 225	4062	20.1	247	1.2	2703	13.4	
Age at application	0–17 years	11 141	24.2	9233	82.9	7.0	77 590	586	7.6	23	0.3	1299	16.7	
	18–24 years	9210	20.0	7336	79.7	5.5	50 566	1008	19.9	20	0.4	846	16.7	
	25–34 years	15 174	32.9	11 380	75.0	6.7	102 356	2287	22.3	55	0.5	1452	14.2	
	35–44 years	6873	14.9	5106	74.3	6.8	46 708	1286	27.5	61	1.3	420	9.0	
	+45 years	3687	8.0	2743	74.4	7.1	26 081	510	19.6	220	8.4	214	8.2	
Refugee status	Convention	23 699	51.4	20 512	86.6	4.4	105 012	2281	21.7	94	0.9	812	7.7	
	Protected	19 387	42.1	12 422	64.1	10.0	194 504	3279	16.9	285	1.5	3401	17.5	
Decision authority	Temporary	2999	6.5	2864	95.5	1.3	3786	117	30.9	0	0.0	18	4.8	
	Immigration Service	41 135	89.3	32 385	78.7	6.2	255 489	4716	18.5	311	1.2	3723	14.6	
Period of application	Refugee Appeal Board	4950	10.7	3 413	68.9	9.7	47 813	961	20.1	68	1.4	508	10.6	
	1992–96	5125	11.1	2478	48.4	14.9	76 598	751	9.8	133	1.7	1763	23.0	
	1997–2001	10 273	22.3	6155	59.9	13.1	134 478	2240	16.7	198	1.5	1680	12.5	
	2002–06	1243	2.7	858	69.0	9.9	12 255	255	20.8	10	0.8	120	9.8	
	2007–11	5007	10.9	3688	73.7	5.5	27 470	980	35.7	12	0.4	327	11.9	
	2012–16	24 437	53.0	22 619	92.6	2.1	52 500	1451	27.6	26	0.5	341	6.5	
Middle East (ME) & North Africa	2012–16	33 467	72.6	26 664	79.7	6.1	202 531	4616	22.8	263	1.3	1924	9.5	
	Syria	18 520	55.3	16 965	91.6	2.4	45 309	1243	27.4	25	0.6	287	6.3	
	Afghanistan	4762	14.2	3435	72.1	10.3	48 881	975	19.9	63	1.3	289	5.9	
	Iraq	6379	19.1	3636	57.0	12.5	79 492	1562	19.6	148	1.9	1033	13.0	
Sub-Saharan Africa (SA)	Iran	2386	7.1	1691	70.9	5.7	13 490	552	40.9	13	1.0	130	9.6	
	Other, ME	1420	4.2	937	66.0	10.8	15 358	284	18.5	14	0.9	185	12.0	
	Somalia	9550	20.7	6960	72.9	7.6	72 233	549	7.6	90	1.2	1951	27.0	
Other regions (OR)	Eritrea	5199	54.4	2913	56.0	10.8	56 110	401	7.1	75	1.3	1810	32.3	
	Other, SA	3492	36.6	3402	97.4	2.1	7223	73	10.1	3	0.4	14	1.9	
	Russia	859	9.0	645	75.1	10.4	8900	75	8.4	12	1.3	127	14.3	
Total	Other, OR	3068	6.7	2174	70.9	9.3	28 537	512	17.9	26	0.9	356	12.5	
	Other, OR	1321	43.1	957	72.4	6.7	8861	218	24.6	3	0.3	143	16.1	
Total	1747	56.9	1217	69.7	11.3	19 676	294	14.9	23	1.2	213	10.8		
Total	46 085	100.0	35 798	77.7	6.6	303 301	5677	18.7	379	1.2	4231	13.9		

^aOut of population at study start.

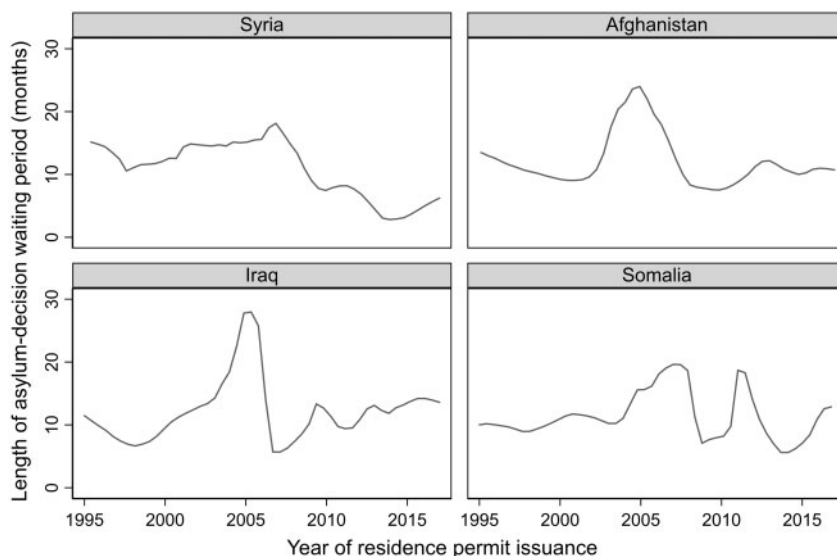


Figure 1. Average asylum-decision time in months by time of residence permit issuance for refugees from the four largest countries of origin.

Table 2. Number of first-time psychiatric diagnoses (cases), person-years (PY), and unadjusted incidence rates (IR) per 1000 PY for any, psychotic, affective or nervous disorder, by duration of stay since residence permit issuance

	0–2.9 years stay			3–5.9 years stay			6–11.9 years stay			12–22.5 years stay		
	Cases	PY	IR	Cases	PY	IR	Cases	PY	IR	Cases	PY	IR
Any psychiatric diagnosis												
0–6 months' waiting	1327	50 450	26.3	199	15 397	12.9	199	16 273	12.2	191	13 316	14.3
7–12 months' waiting	831	36 663	22.7	346	24 027	14.4	530	34 048	15.6	366	24 968	14.7
13–24 months' waiting	527	18 376	28.7	215	14 678	14.6	368	21 776	16.9	230	15 845	14.5
25–71 months' waiting	140	4420	31.7	58	3677	15.8	87	5606	15.5	63	3782	16.7
Average	2825	109 910	25.7	818	57 779	14.2	1184	77 702	15.2	850	57 910	14.7
Psychotic disorder												
0–6 months' waiting	61	52 359	1.2	33	16 672	2.0	35	17 790	2.0	28	15 528	1.8
7–12 months' waiting	91	37 799	2.4	61	25 856	2.4	85	37 895	2.2	47	29 724	1.6
13–24 months' waiting	68	19 129	3.6	32	15 926	2.0	64	24 595	2.6	35	18 984	1.8
25–71 months' waiting	17	4620	3.7	11	4048	2.7	12	6390	1.9	5	4541	1.1
Average	237	113 907	2.1	137	62 503	2.2	196	86 669	2.3	115	68 778	1.7
Affective disorder												
0–6 months' waiting	123	52 272	2.4	37	16 602	2.2	47	17 689	2.7	42	15 464	2.7
7–12 months' waiting	104	37 773	2.8	71	25 795	2.8	121	37 796	3.2	82	29 472	2.8
13–24 months' waiting	63	19 137	3.3	46	15 934	2.9	94	24 530	3.8	59	18 960	3.1
25–71 months' waiting	10	4637	2.2	13	4066	3.2	21	6359	3.3	14	4497	3.1
Average	300	113 820	2.6	167	62 398	2.7	283	86 374	3.3	197	68 393	2.9
Nervous disorder												
0–6 months' waiting	1066	50 852	21.0	142	15 745	9.0	135	16 924	8.0	140	14 342	9.8
7–12 months' waiting	608	37 027	16.4	230	24 674	9.3	365	35 843	10.2	300	27 123	11.1
13–24 months' waiting	360	18 654	19.3	134	15 207	8.8	250	23 209	10.8	188	17 424	10.8
25–71 months' waiting	84	4506	18.6	42	3855	10.9	64	5938	10.8	42	4131	10.2
Average	2118	111 038	19.1	548	59 481	9.2	814	81 914	9.9	670	63 019	10.6

risk (HRs 1.46, 95% CIs: 1.27–1.69) when evaluated for the full 22.5-year follow-up (Table 3, column 1). The association was the strongest in the first 3 years after resettlement (Table 3, column 2). During this period, the risk of

any psychiatric disorder was roughly 30% higher for refugees experiencing 7–12 months' waiting (HRs 1.29, 95% CIs: 1.13–1.47), and around 59% higher for refugees experiencing more than 24 months' waiting (HRs 1.59,

Table 3. Hazard ratios (HRs) and 95% confidence intervals (CIs) for any, psychotic, affective or nervous disorder for five durations of follow-up, by length of asylum-decision time

	0–22.5 years follow-up HRs (95% CIs)	0–2.9 years follow-up HRs (95% CIs)	3–5.9 years follow-up HRs (95% CIs)	6–11.9 years follow-up HRs (95% CIs)	12–22.5 years follow-up HRs (95% CIs)
Any psychiatric disorder					
0–6 months waiting	1.00	1.00	1.00	1.00	1.00
7–12 months waiting	1.07 (1.00–1.15)	1.04 (0.94–1.15)	1.08 (0.90–1.30)	1.22* (1.03–1.44)	0.96 (0.80–1.14)
13–24 months waiting	1.22*** (1.12–1.33)	1.29*** (1.13–1.47)	1.15 (0.93–1.43)	1.38*** (1.15–1.65)	0.98 (0.79–1.21)
25–71 months waiting	1.46*** (1.27–1.69)	1.59*** (1.28–1.98)	1.41 (0.99–2.02)	1.51** (1.12–2.03)	1.27 (0.93–1.73)
Psychotic disorder					
0–6 months waiting	1.00	1.00	1.00	1.00	1.00
7–12 months waiting	1.12 (0.91–1.39)	1.57* (1.08–2.28)	0.90 (0.59–1.38)	1.12 (0.75–1.67)	0.79 (0.48–1.30)
13–24 months waiting	1.17 (0.92–1.50)	1.95** (1.26–3.02)	0.66 (0.38–1.14)	1.22 (0.79–1.88)	0.82 (0.47–1.44)
25–71 months waiting	1.06 (0.71–1.57)	2.17* (1.14–4.14)	0.77 (0.32–1.84)	0.97 (0.46–2.07)	0.42 (0.15–1.17)
Affective disorder					
0–6 months waiting	1.00	1.00	1.00	1.00	1.00
7–12 months waiting	1.10 (0.92–1.30)	1.16 (0.87–1.55)	1.09 (0.73–1.63)	1.09 (0.77–1.55)	1.02 (0.70–1.48)
13–24 months waiting	1.13 (0.93–1.39)	1.10 (0.75–1.61)	1.10 (0.69–1.75)	1.22 (0.84–1.78)	1.04 (0.69–1.58)
25–71 months waiting	1.03 (0.73–1.45)	0.79 (0.38–1.64)	1.42 (0.71–2.86)	1.04 (0.57–1.90)	0.93 (0.47–1.85)
Nervous disorder					
0–6 months waiting	1.00	1.00	1.00	1.00	1.00
7–12 months waiting	1.07 (0.99–1.17)	1.03 (0.92–1.16)	1.04 (0.83–1.30)	1.21 (0.99–1.49)	1.02 (0.83–1.26)
13–24 months waiting	1.21*** (1.09–1.34)	1.24** (1.06–1.45)	1.08 (0.83–1.40)	1.42** (1.14–1.77)	1.04 (0.82–1.32)
25–71 months waiting	1.45*** (1.22–1.72)	1.39* (1.06–1.84)	1.60* (1.06–2.43)	1.79*** (1.27–2.53)	1.16 (0.79–1.69)

Diagnoses based on first-time hospital contacts. Duration of stay since residence permit issuance is survival time scale. Adjusted for refugee status, and decision authority; stratified on sex, country/region of origin, age at application and period of application. SEs clustered on family ID.

* $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$.

95% CIs: 1.28–1.98), compared with refugees who waited less than 7 months.

For psychotic disorders, the risk of being diagnosed in the first 3 years after residence permit issuance was more than double (HRs 2.17, 95% CIs: 1.14–4.14) for refugees who waited 25–71 months compared with those who waited 0–6 months. The association was non-significant for longer stays, among those with no psychotic diagnosis in the first 3 years after resettlement. The pattern was different for nervous disorders: there was an increased risk of diagnosis for those who waited longer than 24 months in all follow-ups except the 12–22.5-year period. For example, HR was

1.39 (95% CI: 1.06–1.84) in the 0–3-year follow-up and 1.79 (95% CI: 1.27–2.53) in the 6–11.9-year follow-up. The risk of affective disorders also increased with longer asylum procedures, albeit less so, and all HRs were insignificant.

Discussion

This study showed that longer periods of waiting for an asylum decision were associated with an increased risk of being diagnosed with a psychiatric disorder. It is important to note that even high-quality, prospective cohort data

cannot establish causal relationships. Nevertheless, analyses here control for a range of potential confounders. Meanwhile, there are important potential mechanisms through which such causal pathways might exist. For instance, conditions during the asylum-seeking phase and the constitution of the asylum seekers; asylum seekers living in crowded asylum facilities risk verbal and physical attacks from other asylum seekers and risk witnessing others engage in self-harm. Further, they report extreme boredom, isolation and worries about their future.^{31,41} Prolonged periods of such living conditions are likely to be detrimental to most humans, but especially so to a vulnerable group like asylum seekers.^{3,9,28}

Another main result was that the strength of the association between the length of the asylum-decision period and risk of psychiatric diagnosis varied with the duration of stay and the diagnosis. For psychotic disorders, the risk increased only during the first 3 years of stay. For nervous disorders, the risk increased with longer asylum procedures in all follow-ups, except the 12–22.5-year period. This suggests that some potentially adverse effects on mental illness of long asylum procedures may only show after many years.

Part of the diagnosis-specific difference can be explained by the characteristics of the disorders. For example, the mental functioning of persons with psychosis is usually severely impaired, whereas some persons with PTSD exhibit more subtle deficits and can often undertake everyday activities.^{42–44} Accordingly, if there is a larger probability of detecting psychotic rather than nervous disorders, especially for persons living in asylum facilities where professional employees are present, this could partly explain the strong association between prolonged asylum procedures and the risk of psychotic disorders shortly after resettlement. However, as the incidence rate of psychotic disorder was highly increased among those with long asylum procedures in the 0–2.9-year follow-up, it is unlikely that an increased probability of detection can fully explain the association between prolonged asylum procedures and increased risk of psychotic disorders.

Contrary to earlier studies, we found only a small and statistically non-significant increase in the risk of affective disorders with longer asylum procedures.^{27,30,31} The discrepancies may be explained by differences in: (i) outcome measures: most previous studies used questionnaire measures, catching less severe problems than hospital-based diagnoses; (ii) populations: some studies included rejected asylum seekers or asylum seekers with undecided applications—groups shown to have more mental illness problems than resettled refugees^{27,28}; and (iii) asylum systems: several studies focused on detained asylum seekers who experienced more prison-like conditions than the asylum seekers in this study.^{23,24} Given these differences, our results are consistent with earlier findings.

Strengths and weaknesses

To our knowledge, this is the first full-population, follow-up study combining information on the length of the asylum-decision procedure with register-based, high-validity data on psychiatric disorders in the resettlement phase. The size of the study and the length of the follow-up make it unique. Further advantages were the individual-level data, the possibility of tracking all individuals until disease, emigration or death, and the clustering on families. Further, the access to data on the full Danish population enabled us to exclude refugees who had held a non-refugee residence permit before applying for asylum, thereby avoiding any negative bias caused by better social networks among those established in Denmark before applying for asylum.

Our data also have limitations. Most importantly, the data are observational, which leads to the question of how strongly the results support a causal conclusion. We have identified a number of sources of variation in waiting times, which are likely to be unrelated to the unobserved individual characteristics of asylum seekers.⁴⁵ First, in the analysis period the waiting time tended to be inversely correlated with the country-specific recognition rates, i.e. the share of asylum seekers from a specific country who had their claim for protection accepted.⁴⁶ The recognition rates were decided based on the Danish authorities' assessment of whether it was safe to return asylum seekers from a certain country. These assessments could change abruptly, for instance in the case of events abroad, such as the fall of the Taliban (2001) or the capture of Saddam Hussain (2003). Consequently, the waiting time would be prolonged or shortened for asylum seekers still awaiting an asylum decision. Second, legislative changes—such as the abolition in 2002 of the special Danish protection status called '*de facto*'—caused changes in the waiting time. Moreover, large numbers of asylum seekers, lack of translators and cuts in the number of caseworkers at the Danish Immigration Service plausibly led to longer waiting times. The existence of such system-generated variation in the waiting time supports a causal interpretation of the results.

Our main concern is unobserved confounding. For instance, we lacked registrations from non-hospital providers including rehabilitation centres for survivors of torture and trauma. This could have led to underestimation if those with long waiting times tended to be treated by such health providers, and may partly explain the non-significant association between the length of asylum procedures and the risk of affective disorders. Further, we had no information from the pre-migration or the asylum-seeking phase on, for example, experiences of torture, loss of family members or the characteristics of the asylum facilities. However, if these factors were not systematically correlated with the

length of the asylum procedure, this type of unobserved variables represents a minor problem. Unobserved confounders associated with both the length of the asylum-decision process and the outcomes are more critical. For example, unregistered minority affiliation could have biased the results if the minority faced both enhanced risk of mental illness due to persecution in the country of origin and a higher probability of a long asylum-decision procedure because the asylum authorities had difficulty providing interpreters. Additionally, reverse causality could have occurred, if undiscovered or unregistered psychiatric disorders during the asylum-seeking phase postponed the interview with the Danish Immigration Service or influenced the asylum seeker's ability to make a clear statement, both of which would have prolonged the waiting time. We have tried to account for this type of reverse causality by excluding refugees with a humanitarian residence permit. However, we cannot rule out that psychiatric disorders at the time of application have influenced the length of the period waiting for an asylum decision. Therefore, we are not able to claim a causal interpretation of the results.

Conclusions and implications

In line with previous findings, our study supports the conclusion that long asylum-decision procedures are associated with an increased risk of mental illness. The results suggest that receiving countries should consider prioritizing keeping the asylum procedures as short as possible, to avoid potential adverse mental health effects. However, it is also important not to shorten the procedures too much, in order to secure asylum seekers' legal right to a fair and thorough asylum-decision process.

Supplementary data

Supplementary data are available at *IJE* online.

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Author contributions

C.H., J.H.P. and M.N. designed and interpreted the results. C.H. performed the literature search and wrote drafts of the paper. M.N. and J.H.P. commented on the drafts of the paper. The corresponding

author had full access to data and held the final responsibility for the results and the submission

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