

Original Article

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Health status of refugees newly resettled in Denmark

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ABSTRACT

INTRODUCTION: The municipality of Copenhagen offers general health assessment (GHA) to all newly resettled refugees, conducted at the Section of Immigrant Medicine, Hvidovre Hospital. This study described their disease burden and sociodemographic characteristics.

METHODS: In this cross-sectional study, all adult individuals assessed from 1 January 2017 to 30 January 2019 were included. Doctors performed the GHA, including a structured questionnaire, clinical examination and blood testing.

RESULTS: In total, 160 refugees were included. Few suffered from communicable diseases (e.g., 1% hepatitis B virus) or other somatic diseases (4% diabetes Type 2). However, deficiencies such as vitamin D deficiency (76%), vitamin B₁₂ deficiency (31%) and anaemia (12%) were frequent. The majority reported headache (54%) or other pain (53%). Furthermore, signs of post-traumatic stress disorder were frequent (33%) and significantly associated with experience of torture, prison and persecution.

CONCLUSIONS: The population presented with pertinent health issues such as vitamin deficiencies, mental health issues and symptoms of pain. Few suffered from non-communicable or communicable diseases. Our results suggest that an offer of specialised services at municipality level for all newly resettled refugees may be beneficial. Furthermore, the study underlines the need for more research within the field of refugee health.

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In 2015, the so-called refugee crisis resulted in more than 1.3 million individuals seeking asylum in Europe [1]. While the High Commissioner for Refugees described the Syrian conflict as the “biggest humanitarian and refugee crisis of our time”, it was soon also to be considered a major public health challenge – leading to the host countries, upon the arrival of refugees, having to make strenuous efforts to meet the healthcare needs of this large and vulnerable group [2].

Refugees are defined as any person who “as a result of events ... and owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his (*sic*) nationality...” [3]. Refugees serve as a subgroup of migrants. Previous studies have shown a trend concerning the health of migrants known as the “Healthy Migrant Effect” [4]. The hypothesis implies that migrant populations show a health advantage compared with local-born individuals because they often represent the healthiest individuals of their birth country. However, this theory, among others, has been contested by studies concerning refugees’ health which have shown complex health issues [5]. Thus, pre-

migration experiences and the fleeing itself are most often related to a number of risk factors for ill health [5]. Contextual exposures, such as high rates of infectious diseases, inadequate nutrition, lack of access to care and medicine and poor sanitary conditions may affect refugees' long-term health outcomes [6, 7]. Waiting time for asylum is further associated with long-term mental health problems [8].

The World Health Organization [9] and the European Centre for Disease Prevention and Control [10] recommend offering optional health assessments to all migrants, including refugees and have published detailed guidelines on these assessments. Even so, national guidelines in European countries demonstrate great variation regarding both who the general health assessment (GHA) is offered to, and how the examination is conducted [11]. Importantly, GHAs are recommended in order to support refugees' health and wellbeing. It should, however, also be considered that good health and awareness of health problems are essential in the integration process, and for refugees to be able to sustain their own livelihood. Further, the GHA serves as an introduction to the respective national healthcare systems [12].

The International Organization for Migration has conducted pre-arrival GHAs for quota refugees to Denmark since 1989 [13]. Since 1984, Red Cross Denmark has provided Danish asylum seekers with a voluntary GHA conducted at the reception centre [13]. In 2013, it became mandatory for all municipalities to offer GHAs to all newly resettled refugees to enhance the integration effort. However, in 2016 an amendment to the Integration Act made it optional to offer the GHA. Today, only two municipalities, Aarhus and Copenhagen, continue systematically to offer GHAs to all newly resettled refugees [13].

It is likely that these shifting policies reflect an urgent need for knowledge about GHAs and refugees' health problems – knowledge around which future policies can be designed. To date, no studies have addressed the overall outcomes of the GHAs of newly resettled refugees in Denmark. We aimed to describe the burden of disease and sociodemographic characteristics of refugees resettled in the municipality of Copenhagen.

METHODS

Study population

In this cross-sectional study, the population consisted of 160 adult individuals who participated in the GHA from 1 January 2017 to 31 January 2019 at the Section of Immigrant Medicine, Hvidovre Hospital. The population consisted of newly resettled refugees (individuals who had obtained asylum < 6 months ago), who had either stayed at an asylum center prior to resettlement or who were family reunified with other refugees – the two groups will be analysed together and referred to as the refugee population.

Of all newly resettled refugees in Copenhagen, 19% declined the GHA. The children who participated (n = 100) will be addressed in another study.

The general health assessment

Medical doctors experienced in migrant and refugee health performed the GHA. The GHA included a structured questionnaire, general clinical examination and various blood tests. The questionnaire covered sociodemography, migration and medical history, potential traumatic events and symptoms within the two previous weeks. Professional interpreters mediated all GHAs.

All GHAs resulted in a conclusion and plan for follow-up, including referral to specialists and recommendations for follow-up by family practitioner, municipal authority and social services.

Statistical analyses

To test for possible associations between potential traumatic events and signs of post-traumatic stress disorder

(PTSD) during the statistical analyses, we used logistic regression adjusting for age and sex. Odds ratios (OR) are presented with two-tailed 95% confidence intervals (CI), and p-values were defined as significant at levels $p < 0.05$.

Ethics

All who underwent GHA were included by oral and written consent. To secure informed consent, professional video interpretation was used. Ethical study approval was obtained through the Danish Data Protection Agency, the Capital Region of Denmark and the Danish Patient Safety Authority.

Trial registration: Ethical approval was obtained from the Capital Region of Denmark and the Danish Patient Safety Authority.

RESULTS

In total, 160 newly resettled refugees underwent GHA and were included in the study. All consented to their data being used for research.

Sociodemographics

In **Table 1**, characteristics of the population ($n = 160$) are presented. The mean age of the population was 33 years among whom 79 were females (49%) and 81 males (51%). Most had fled from Syria (33%; $n = 52$) and had finished their basic schooling of eight or more years (67%; $n = 107$).

TABLE 1 / Sociodemographic characteristics of the study population by gender. The values are n (%), and unless otherwise noted, % are based on number of respondents to each question.

	Men	Women	Total	Missing ^a
General distribution	81 (51)	79 (49)	160 (100)	0 (0)
<i>Geographical regions of origin</i>				1 (1)
Middle East ^b	34 (42)	39 (49)	73 (46)	
Asia	43 (53)	30 (39)	73 (46)	
Africa	2 (2)	7 (9)	9 (6)	
South America	2 (2)	2 (3)	4 (2)	
<i>Countries of origin</i>				1 (1)
Syria	22 (27)	30 (38)	52 (33)	
Iran	28 (35)	19 (24)	47 (29)	
Afghanistan	13 (16)	9 (12)	22 (14)	
Iraq	12 (15)	6 (8)	18 (11)	
Other	6 (7)	14 (18)	20 (13)	
<i>Migration background</i>				2 (3)
Asylum seeking	76 (96)	63 (84)	139 (89)	
Family reunification	3 (4)	15 (16)	18 (11)	
<i>Age</i>				0
18-26 yrs	21 (26)	28 (35)	49 (31)	
27-35 yrs	29 (36)	29 (37)	58 (36)	
36-44 yrs	18 (22)	11 (14)	29 (18)	
≥ 45 yrs	13 (16)	11 (14)	24 (15)	
<i>School: basic education</i>				1 (2)
0-2 yrs	6 (7)	11 (14)	17 (11)	
3-7 yrs	22 (27)	12 (16)	34 (22)	
≥ 8 yrs	53 (66)	54 (70)	107 (67)	
<i>Higher education</i>		4 (7)		
None	56 (69)	56 (78)	112 (73)	
Short: < 2 yrs	3 (4)	4 (6)	7 (5)	
Medium: 2-4 yrs	8 (10)	8 (11)	16 (10)	
Long: > 4 yrs	14 (17)	4 (6)	18 (12)	
<i>Source of basic income</i>				16 (25)
State educational grant	1 (1)	4 (6)	5 (4)	
Job	11 (16)	6 (9)	17 (13)	
Governmental subsidies	58 (82)	51 (80)	109 (81)	
No governmental subsidies	1 (1)	3 (5)	4 (3)	
<i>Children</i>				3 (5)
0	41 (52)	29 (38)	70 (45)	
1-2	21 (26)	26 (34)	47 (30)	
≥ 3	17 (22)	21 (28)	38 (25)	
<i>Housing status</i>				10 (15)
Living alone	28 (40)	8 (11)	36 (25)	
Living with family/other people	42 (60)	67 (89)	109 (75)	
<i>Need for interpretation^{c,d}</i>				
At a doctor's appointment	68 (94)	64 (90)	132 (92)	11 (17)
To read letters/leaflets from government agencies	65 (86)	61 (85)	126 (85)	8 (12)

a) % based on the total number of patients (N = 160).

b) The United Nations categorisation of Middle Eastern/Economic and Social Commission for Western Asia member states.

c) Sum of positive answers ("Yes, always" and "Yes, sometimes") to the need in question.

d) A person may be in need of interpretation in > 1 situation.

Health status

The distribution of diagnoses and symptoms is shown in **Table 2**. The most frequent self-reported somatic symptoms were headache, dizziness and pain. 45% (n = 72) reported three symptoms, whereas 20% (n = 32) reported six or more symptoms (not reported in table). For diagnoses, 33% (n = 53) had previously been diagnosed with PTSD, or were, during the GHA, assessed with possible PTSD.

TABLE 2 / The most frequent diagnosis and symptoms by gender in the study population. The values are n (%), and unless otherwise noted, % are based on number of respondents to each question.

	Men	Women	Total	Missing ^a
General distribution	81 (51)	79 (49)	160 (100)	
<i>Diagnosis^b</i>				
Hypertension	8 (10)	7 (9)	15 (9)	0
Asthma	3 (4)	3 (4)	6 (4)	0
Type 2 Diabetes	3 (4)	2 (3)	5 (3)	0
Arthrosis	3 (4)	2 (3)	5 (3)	0
Eczema	4 (5)	1 (1)	5 (3)	0
Spinal disc herniation ^d	3 (4)	1 (1)	4 (2)	0
PTSD ^e	29 (36)	24 (30)	53 (33)	0
Depression/anxiety/stress ^f	10 (12)	6 (8)	16 (10)	0
<i>Symptoms^c</i>				
Pain/discomfort:				
Arms/hands/legs/knees/hips/ joints	30 (38)	21 (27)	51 (32)	2 (1)
Shoulder/neck	16 (20)	20 (26)	36 (23)	4 (3)
Upper/lower back	30 (38)	23 (29)	53 (35)	2 (1)
Headache	39 (49)	46 (58)	85 (54)	2 (1)
Dizziness	17 (22)	20 (26)	37 (24)	3 (2)
Visual disturbances	14 (18)	20 (26)	34 (22)	3 (2)
Shortness of breath	12 (15)	14 (18)	26 (17)	3 (2)
Palpitations	14 (18)	12 (16)	26 (17)	4 (3)
Stomach ache	11 (14)	14 (18)	25 (16)	1 (1)

PTSD = post-traumatic stress disorder.

a) % based on total number of patients (N = 160).

b) Sum of positive answers ("Yes, currently" and "Yes, previously") to the diagnosis in question.

c) Sum of positive answers ("Yes, very" and "Yes, some") to the symptoms in question.

d) Verified by imaging.

e) Defined as positive if "earlier diagnosed with PTSD" or was by the clinicians assessed as "possibly having PTSD", no diagnoses are made.

f) Defined as positive if assessed as "possibly suffering from stress/depression/anxiety", no diagnoses are made.

Table 3 summarises blood testing results. The most frequent abnormal finding was vitamin D deficiency (< 50 nmol/l) in 76% (n = 120); of these cases, 25% (n = 40) were moderate to severe (< 25 nmol/l). Furthermore, 12% (n = 19) suffered from anaemia, comprising 22% (n = 17) of females. Few were diagnosed with infectious diseases. Less than 1% (n = 1) had signs of active hepatitis B virus (HBV) been positive for HBV-surface-antigen, 7% (n = 11) were vaccinated and therefore positive for HB serum antibodies (anti-HBs) only, and 6% (n = 6) showed previous infection (positive anti-HBs and anti-HBc). Two were positive for syphilis and three for HIV, all of whom had previously been diagnosed and were in treatment.

TABLE 3 / Results from routine blood samples by gender. The values are n (%), and unless otherwise noted, % are calculated from number of respondents in each category.

	Men		Women		Total		Missing ^{a, b}
	yes	no	yes	no	yes	no	
Vitamin D deficiency ^c	64 (80)	16 (20)	56 (72)	22 (28)	120 (76)	38 (24)	2 (1)
Hyperchole-sterolaemia ^d	16 (20)	64 (80)	12 (16)	63 (84)	28 (18)	127 (82)	5 (3)
Vitamin B ₁₂ deficiency ^e	25 (31)	55 (69)	23 (31)	52 (69)	48 (31)	107 (69)	5 (3)
Anaemia ^f	2 (3)	78 (97)	17 (22)	60 (78)	19 (12)	138 (88)	3 (2)
Positive for CC genotyping ^g	67 (93)	5 (7)	53 (80)	13 (20)	120 (87)	18 (13)	22 (14)
HbA _{1c} concentration > 44 mmol/mol ^h	5 (6)	75 (94)	6 (8)	69 (92)	11 (7)	144 (93)	5 (3)
Hepatitis B ⁱ	0	81 (100)	1 (1)	76 (99)	1 (1)	157 (99)	2 (1)
Hepatitis C ^j	1 (1)	80 (99)	0	77 (100)	1 (1)	157 (99)	2 (1)
IGRA positive ^k	9 (11)	72 (89)	10 (13)	67 (87)	19 (12)	139 (88)	2 (1)
Syphilis ^l	2 (2)	79 (98)	0	77 (100)	2 (1)	156 (99)	2 (1)
HIV ^m	1 (1)	80 (99)	2 (3)	75 (97)	3 (2)	155 (98)	2 (1)

HbA_{1c} = glycated haemoglobin; HBsAg = hepatitis B surface antigen; HCV = hepatitis C virus; Ig = immunoglobulin; IGRA = interferon-gamma release assay.

a) % based on total number of patients (N = 160).

b) High number of missing values due to later implementation of the test.

c) Defined by vitamin D concentration < 50 nmol/l.

d) Defined by total cholesterol concentration > 5 mmol/l, note that concentration > 5 mmol/l might be seen in healthy young women and athletic men, no values > 7 mmol/l were registered.

e) Defined by cobalamin concentration < 200 pmol/l.

f) Defined by haemoglobin concentration for men < 8.3 mmol/l, for women < 7.3 mmol/l, for children aged < 12 yrs < 6.5 mmol/l, for children aged 12-18 < 7.0 mmol/l.

g) CC genotyping is associated with lactose deficiency after age 12 yrs resulting in adult lactose intolerance genetic variants of -13.907 kb, -13.015 kb, which might retain the lactose production despite CC genotype, are not taken into account.

h) HbA_{1c} concentration > 44 mmol/mol might indicate metabolic syndrome or Type 2 diabetes.

i) Defined as positive for HBsAg resulting in active chronic or acute hepatitis.

j) Defined as positive anti-HCV IgG avidity assay.

k) A positive IGRA for *Mycobacterium tuberculosis* appears when a patient has latent or active TB.

l) Defined as positive for *Treponema pallidum* antibodies.

m) Defined as positive if there are detected either antigen/virus or antibodies in an HIV combination test.

Migration

Table 4 presents potentially traumatic events, including persecution (50%; n = 75) and experience of war (57%; n = 85). Logistic regression analysis, adjusting for age and gender, showed significant association between experiences of persecution (OR = 2.75; 95% CI: 1.30-5.81), prison/work camp (OR = 4.52; 95% CI: 2.04-10.01), torture (OR = 6.01; 95% CI: 2.58-14.00) family subjected to torture (OR = 2.40; 95% CI: 1.08-5.34) and signs of PTSD.

TABLE 4 / Association between potentially traumatic life events^c and mental health symptoms adjusted for age and gender.

	Men, n (%) ^a (n = 81)	Women, n (%) ^a (n = 79)	Total, N (%) ^a (N = 160)	Missing, n (%) ^b	Association with symptoms of PTSD	
					OR (95% CI)	p-value
Waiting for asylum at holding level	73 (92)	56 (78)	129 (85)	9 (6)	0.42 (0.65-8.71)	0.184
Living in refugee camp	12 (16)	14 (20)	26 (18)	17 (11)	2.25 (0.91-5.55)	0.078
War	45 (58)	40 (55)	85 (57)	10 (6)	0.82 (0.43-1.55)	0.513
Persecution	48 (63)	27 (37)	75 (50)	11 (7)	2.75 (1.30-5.81)	0.005
Prison/work camp	27 (34)	14 (19)	41 (27)	8 (5)	4.52 (2.04-10.01)	< 0.0001
Torture	26 (36)	13 (18)	39 (27)	16 (10)	6.01 (2.58-14.00)	< 0.0001
Family subjected to torture	19 (29)	21 (32)	40 (30)	28 (18)	2.40 (1.08-5.34)	0.031
Lost close relations because of war, persecution etc.	39 (54)	32 (47)	71 (51)	20 (13)	1.48 (0.71-3.09)	0.289

CI = confidence interval; OR = odds ratio; PTSD = post-traumatic stress disorder.

a) % are based on number of respondents to each question.

b) % based on total number of patients (N = 160).

c) A person may have experienced > 1 traumatic life event.

Referrals

Twenty-one (13%) individuals were referred to another specialised hospital department for follow-up, and another 29 (18%) were referred to a psychiatrist for further examination (not reported in table).

DISCUSSION

This cross-sectional study presented data from the GHAs of 160 newly resettled refugees aged 18-73 years in the Municipality of Copenhagen from 2017 to 2019.

The vast majority had obtained asylum on the basis of a spontaneous application and originated from Syria, Iran and Afghanistan. The majority had finished eight or more years of schooling, which is contrary to most other refugee groups arriving in Denmark. We believe that this likely reflects the educational level in the countries of origin, as the largest groups had migrated from Iran and Syria. A notable burden of mental health problems was present in the refugee population. Musculoskeletal pain and headache were frequent, whereas very few suffered from somatic diseases needing follow-up. The GHA revealed few infectious diseases, the majority of which had been diagnosed previously and were already in treatment.

The high burden of mental health problems is in accordance with previous studies [14]. Furthermore, the refugees who had experienced potentially traumatic events showed a significantly higher prevalence of psychological symptoms of depression and PTSD. Similar correlations have been documented before [15]. One study found a correlation between being a victim of torture and experiencing chronic pain or medically unexplained somatic symptoms [16]. However, our data were not extensive enough either to confirm or dispel this tendency. The prevalence of PTSD in the refugee population is of further interest, as studies have found that parental PTSD has a major negative impact on refugee children's school performance [17]. No research has yet been focused on the cost-effectiveness of screening for parental PTSD.

The high frequency of micronutrient deficiency is in line with previous findings [6]. These conditions are easily treated and this could enhance the overall health of the individual. Vitamin D deficiency, especially, was very common: with 76% (n = 120) of refugees having deficiency, and 25% (n = 40) a moderate to severe deficiency, an argument could be made for supplementing all refugees or instructing the population in preventive measures regarding diet and sunlight. Anaemia was present in 12% (n = 19). For women, the anaemia rate was 22% (n = 17), which is notably higher than the 9.7% previously found among Danish women [18]. The burden of anaemia

identified indicates the need for a routine screening of newly resettled refugee women.

We found low burdens of communicable diseases (CDs), reflecting that our refugee population has migrated from low-endemic countries. These findings are in line with other literature [6]. As the nationalities of newly resettled refugees in Denmark reflect the fluctuating social and political situation worldwide, the burden of CDs is likely to change continuously.

In summary, the refugees' health issues consisted mostly of micronutrient deficiency, pain-related symptoms and mental health issues. These are challenges that endanger the individual's well-being and might go undetected for a long period of time. Furthermore, the results may suggest that some have not received adequate help prior to resettlement.

In 2015, the Danish National Board of Social Services, together with the Danish Health Authority, published clinical guidelines regarding GHAs for newly resettled refugees [19]. However, after the 2016 amendment to the Integration Act, making GHAs optional, all areas but Copenhagen and Aarhus leave decisions on the need for GHAs to social workers in the local municipalities. If the task itself is allocated to less-than-fully-qualified employees without the necessary medical knowledge, this may entail a reduced quality of medical reception. This, in turn, may cause some refugees, who would benefit greatly from a GHA, to be overlooked.

The optimal timing of the GHA may be discussed. Early screening has been found to be cost effective in some cases [20]; yet the first period after resettlement is regarded a period of optimism, referred to as the honeymoon phase, which may potentially produce an underrepresentation of health issues. In contrast, the early GHA provides an introduction to Danish society as a whole including healthcare, which might help overcome the barriers experienced by newly resettled refugees when accessing healthcare [14]. Furthermore, it is likely that an early GHA will promote the well-being and health of the refugee and support integration efforts that take into consideration the individual's health needs.

We believe that a team-based effort including municipal social workers, local volunteers, GPs and specialists is essential to meet these individuals' needs. The main argument in support of completing the GHAs at the hospital is that GPs are currently not educated in immigrant health and cultural competences. The number of participants is also not likely to rise as the barrier of, e.g., transport would be persistent. The GPs hold a crucial role as the anchor person and are responsible for the follow-up process; yet a successful health effort is dependent on all parts acknowledging the importance of the multidisciplinary teamwork.

Limitations

This study is limited by the small sample size. Also, much of the data were self-reported and the lack of access to final diagnoses made by medical specialists post-referral would possibly have generated a greater understanding of the refugee group. Furthermore, the main focus during the data collection was on clinical and not scientific research, why the data of some individuals are missing. Various clinicians performed the GHAs, and therefore the collection was not done in a totally harmonised way.

This study could affect practice: to change the focus of the GHA towards the areas identified; to aspire to achieving the participation of all newly resettled refugees; to facilitate the training of clinicians; and enable decision makers to make informed decisions on whether or not to offer GHAs systematically to all newly resettled refugees.

CONCLUSIONS

The population in our study of newly resettled refugees in Denmark presented with particular health issues of

which the following were the most prevalent: vitamin deficiencies, mental health issues and somatic symptoms such as headache, dizziness and pain. Our results suggest that a specialised health offer for all newly resettled refugees at municipality level could be beneficial. The study underlines the need for more qualitative and quantitative studies on, e.g., the long-term benefits of early intervention and the interventions following the GHAs including the work of the GP and authorities.

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