

Original Article

Dan Med J 2020;67(10):A03190160

Providing targeted healthcare services for immigrants with complex health needs

Hanna S. Rosenkrands¹, Maria Kristiansen², Amalie Lipczak Hansen¹ & Marie Norredam^{1, 2}

1) Section of Immigrant Medicine, Department of Infectious Diseases, Hvidovre Hospital, 2) Danish Research Centre for Migration, Ethnicity and Health, Section for Health Services Research, Department of Public Health, University of Copenhagen, Denmark

Dan Med J 2020;67(10):A03190160

ABSTRACT

INTRODUCTION: Providing targeted healthcare for immigrants with complex needs is an innovative approach to reducing health inequities. This study explores sociodemographic characteristics, symptoms and morbidity patterns of patients attending one such pioneering clinic.

METHODS: This was a cross-sectional survey based on 408 patients seen from 1 January 2014 to 20 November 2017. Data on socio-demographics, referral patterns, migration background, symptoms and multimorbidity were collected using a standardised screening questionnaire. Baseline blood test results were included for a subpopulation (n = 178). Data were analysed using descriptive statistics and logistic regression analysis.

RESULTS: The patients, among whom 83% (n = 334) were women, represented 43 nationalities and had a mean age of 49 years. A total of 19% (n = 78) had no formal schooling. More than 70% (n = 287) reported an (oral and written) interpreter need despite most (63%) having resided in Denmark for > 20 years. Reported symptoms were often pain-related, and 87% (n = 355) reported ≥ 5 symptoms. Multi-morbidity (≥ 2 reported diagnoses) was seen in 73% (n = 298) of the patients. Women had a significantly lower odds ratio (OR) of having > 5 symptoms (OR = 0.44; 95% confidence interval (CI): 0.21-0.92) and an insignificantly lower risk of multi-morbidity (OR = 0.76; 95% CI: 0.40-1.43) than men; no significant differences were seen according to migrant status.

CONCLUSIONS: The patients presented with a complex disease burden, language and a disadvantaged socioeconomic status highlighting the need for targeted health services for vulnerable immigrant groups in order to reduce inequities in health.

FUNDING: Department of Infectious Diseases, Hvidovre Hospital.

TRIAL REGISTRATION: none.

In 2019, more than 82 million international migrants were living in Europe – corresponding to approx. 16% of the population – an increase of nearly 10% since 2015 [1]. In Denmark, immigrants constituted 10% of the population in 2019 of whom 58% were of non-Western origin, and refugees constituted around 25% [2].

The rise in immigration to Western Europe has increased population diversity, which in turn challenges existing healthcare systems. Failing to properly manage this new diversity in the healthcare system may increase health inequalities and may negatively impact the integration of immigrants in the short and long-term alike. Despite the tendency of migrating people to be healthier and younger than the average population of their countries of origin, i.e. the so-called “Healthy Migrant Effect” [3], previous studies have shown that immigrants in Europe tend to have a lower self-rated health [4] as well as higher incidences and poorer health outcomes for a number of diseases than local-born populations for communicable as

well as non-communicable diseases (NCD) [5-8]. However, findings vary between immigrant subgroups depending on their region of origin, length of stay, immigrant status and socioeconomic position [9]. Inequalities in access to healthcare may explain some of the observed differences in health outcomes; accordingly, previous European studies suggest that informal barriers to healthcare access exist [10-12]. These barriers include a lack of qualified interpreters, health illiteracy, “newness” to the healthcare system, a lack of cultural competence among healthcare providers as well as negative interactions between psychosocial problems and complex morbidity patterns [10, 13].



Blood pressure measurement.

Thus, there appears to be a need for more specific, socio-culturally sensitive healthcare interventions. This study describes the population attending one such Danish pioneering initiative founded in 2013. A clinic specifically addressing immigrant patients with multi-morbidity, complex symptoms and adherence problems. The clinical work is based on interdisciplinary teamwork where doctors, nurses, a pharmacist, a social counsellor, peer-mentors with ethnic minority background and physiotherapists all take part in the individual diagnostic work-up and treatment of referred patients over the course of about six months. In this context, the aim of the present study was to describe the patients referred to the clinic in terms of sociodemographic characteristics, symptom prevalence, morbidity patterns and blood test results and to discuss implications of targeted health care for these patients.

METHODS

Study population

This cross-sectional survey included a population of 408 patients who attended the clinic from 1 January 2014 to 20 November 2017. The referral criteria for patients were as follows: i) ethnic minority background *with* ii) complex symptomatology, multi-morbidity or polypharmacy often in combination with psychosocial stressors, *where* iii) problems are too multifaceted for primary care or other services. Patients cannot be referred if they present with i) isolated mental health problems, ii) isolated linguistic problems, iii) need for evaluation of work qualifications or iv) need of admission.

Data collection

Data on the population were collected through a specific screening questionnaire (SQ), including domains related to sociodemographic characteristics, migration history including potentially traumatic life-events, healthcare use, symptoms and self-reported morbidity. The SQ was developed in dialogue with clinical staff at the clinic and implemented initially in a pilot phase and subsequently as an integrated part of the

daily work in the clinic. The SQ was completed during or after consultations by clinic doctors based on information obtained during consultations and from the patient files. Data were then entered into the Immigrant Medicine Database (IMD) using double entry validation. Baseline blood test results for a subpopulation (n = 178) from 1 January 2014 to 20 November 2015 were drawn from the test result register at the Department of Clinical Biochemistry and added to the IMD. Baseline blood tests were performed upon the initial evaluation.

Analysis

Descriptive analyses were performed by frequency counts for the SQ and blood test results. Furthermore, risks of multiple symptoms and multimorbidity by gender and migration background were analysed by logistic regression analysis, adjusting for age and gender.

Ethics

Collection of data through the SQ for the IMD and blood test results required informed oral and written consent from the patients. When necessary, professional video interpretation was used. Ethical approval for the IMD was obtained through the Danish Data Protection Agency and the Administration, Hvidovre Hospital.

Trial registration: none.

RESULTS

Sociodemographic characteristics and referral patterns

Table 1 shows sociodemographic characteristics of the study. Patients represented 43 different countries of birth, more than 20 different native languages/dialects and were primarily women (83%). A total of 19% of the patients had no basic schooling. Interpretation needs for both oral (74%) and written (72%) communication were reported more often by women than men, even though most patients had held their Danish residence permit for more than 20 years. **Table 2** shows the trauma-related migration history of the study population by migrant status. A high percentage of family-reunified patients also reported having experienced war and persecution. The majority of patients were referred by general practitioners (86%).

Symptom patterns

Table 3 shows the distribution of the ten most reported specific symptoms by gender along with a symptom index grouping the patients by number of symptoms reported. The predominant symptoms were pain-related, arising from the musculoskeletal system. The majority (62%) reported sleeping difficulties, more often men (71%) than women (60%). Gastrointestinal symptoms as well as less organ-specific somatic symptoms were common. The majority of patients (87%) reported ≥ 5 symptoms. Results from the logistic regression analysis showed a statistically significant protective effect of being a woman as compared with being a man on the risk of having more than five symptoms (odds ratio = 0.44; 95% confidence interval: 0.21-0.92), whereas no protective effect of being a refugee was identified.

TABLE 1 / Sociodemographic characteristics of the study population, by gender.

	% of number of respondents for each question (n)			% of the total number of patients (n) (N = 408)
	men	women	total	total missing
General distribution	17 (69)	83 (337)	100 (408)	0.5 (2)
<i>Geographical regions of origin</i>				2 (7)
Middle East	72 (49)	71 (236)	71 (285)	
Asia	0 (0)	3 (9)	2 (9)	
Africa	22 (15)	19 (64)	20 (81)	
Eastern and Southern Europe	6 (4)	7 (22)	6 (26)	
<i>5 most common countries of origin</i>				1 (4)
Turkey	18 (12)	25 (82)	23 (94)	
Iraq	20 (14)	13 (43)	14 (57)	
Pakistan	9 (6)	14 (48)	13 (54)	
Somalia	10 (7)	7 (24)	8 (32)	
Morocco	4 (3)	8 (28)	8 (31)	
Other	39 (27)	33 (112)	34 (140)	
<i>Age, yrs</i>				0.5 (2)
18-34	6 (4)	6 (20)	6 (25)	
35-49	44 (30)	50 (167)	48 (197)	
50-64	42 (29)	38 (128)	39 (157)	
≥ 65	9 (6)	6 (20)	7 (27)	
<i>Migration background</i>				7 (28)
Immigrant	19 (13)	5 (17)	8 (29)	
Refugee	61 (39)	19 (61)	27 (101)	
Family reunified	20 (13)	75 (236)	66 (250)	
<i>Time since residence permit, yrs</i>				16 (65)
0-10	22 (14)	8 (21)	10 (35)	
10-20	20 (13)	28 (77)	27 (91)	
> 20	58 (37)	66 (180)	63 (217)	
<i>School: basic education</i>				8 (32)
0 yrs	6 (4)	22 (68)	19 (72)	
< 2 yrs	11 (7)	6 (18)	7 (25)	
2-7 yrs	29 (18)	33 (100)	31 (118)	
8-10 yrs	13 (8)	20 (62)	19 (71)	
> 10 yrs	41 (26)	21 (64)	24 (90)	
<i>Higher education</i>				7 (30)
0 yrs	56 (36)	82 (258)	78 (295)	
Short: 2-3 yrs	17 (11)	7 (21)	9 (32)	
Medium: 3-4 yrs	13 (8)	6 (20)	7 (28)	
Long: > 4 yrs	11 (7)	4 (11)	5 (18)	
Other: unskilled labourer	3 (2)	1 (3)	1 (5)	
<i>Source of basic income</i>				5 (19)
Job	7 (5)	3 (11)	4 (16)	
Cash benefits	57 (39)	65 (207)	64 (247)	
Early retirement pension	9 (6)	6 (20)	7 (26)	
State pension	6 (4)	6 (18)	6 (22)	
Other governmental subsidies	18 (12)	15 (47)	15 (59)	
No governmental subsidies	3 (2)	5 (17)	5 (19)	
<i>Need for interpretation</i>				
Speech	68 (46)	77 (253)	74 (300)	11 (3)
Formal letters	70 (45)	78 (246)	72 (292)	25 (6)

TABLE 2 / Trauma related to migration history of the study population, by migrant status. The values are % (n)^a.

	All immigrants (8% (n = 29))	Family reunified (66% (n = 249))	Refugee (26% (n = 100))	Total ^b (100% (N = 378))	Missing
<i>Gender</i>					
Men	41 (12)	5 (13)	39 (39)	17 (64)	
Women	59 (17)	95 (236)	61 (61)	83 (314)	
<i>Potentially traumatic life events^c</i>					
Waiting for asylum	-	-	54 (54)	14 (54)	35 ^d (33)
Living in refugee camp	-	9 (22)	34 (34)	15 (56)	23 (86)
War	3 (1)	27 (67)	78 (78)	39 (146)	15 (56)
Persecution	-	19 (47)	66 (66)	30 (113)	16 (61)
Prison/work camp	-	4 (9)	30 (30)	10 (39)	15 (58)
Torture	-	5 (12)	31 (31)	11 (43)	18 (68)

a) Where nothing else is noted, % are based on the total number of respondents in each category.

b) Based on missing immigrant status (n = 28) and missing gender (n = 2) 30 patients have been excluded.

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

d) Based on 94 asylum seekers.

TABLE 3 / Ten most frequent symptoms and symptom index, by gender among all patients and risk of having more than five symptoms depending on gender and migration background.

	% of number of respondents to each question (n)			% of the total number of patients (n) (N = 408)		n	OR (95% CI)	p-value
	men	women	total	missing				
<i>Symptoms^a</i>								
Pain/discomfort:								
Arms/hands/legs/knees/hips/joints	83 (52)	87 (268)	87 (320)	9 (38)				
Shoulder/neck	71 (45)	86 (264)	83 (309)	10 (40)				
Upper/lower back	75 (47)	85 (258)	83 (305)	9 (37)				
Headache	75 (47)	83 (257)	82 (304)	9 (37)				
Insomnia ^b	71 (29)	60 (193)	62 (122)	51 (212)				
Heartburn	59 (37)	51 (156)	52 (193)	10 (39)				
Stomach ache	37 (23)	45 (139)	44 (162)	9 (38)				
Shortness of breath	41 (26)	41 (126)	41 (152)	10 (41)				
Constipation	27 (17)	40 (122)	38 (139)	9 (37)				
Frequent urination	33 (21)	37 (112)	37 (133)	9 (37)				
<i>Symptom index</i>								
≤ 2	6 (4)	10 (31)	9 (35)					
3-5	33 (21)	22 (67)	24 (88)					
6-10	48 (30)	52 (162)	52 (192)					
> 10	13 (8)	16 (49)	15 (57)					
<i>Risk of ≥ 5 symptoms</i>								
Gender: ^{c, d}								
Men					69	1		0.03
Women					337	0.44 (0.21-0.92)		
Migration background: ^{e, f}								
Not refugee ^g					279	1		0.930
Refugee					101	0.97 (0.44-2.13)		

CI = confidence interval; OR = odds ratio; SQ = screening questionnaire.

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

b) High number of missing values as the question was not included in newest version of SQ.

c) 2 missing.

d) Adjusted for age.

e) 28 missing.

f) Adjusted for age and gender.

g) Including immigrants and family reunified people.

Morbidity patterns

A total of 23 specific diagnoses, none of which were psychiatric diagnoses, were considered in the SQ.

Table 4 presents the 20 most commonly reported diagnoses, whereof two were additional psychiatric diagnoses, post-traumatic stress disorder (PTSD) and depression, reported in adjacent free text fields provided in the SQ.

Logistic regression analysis did not show a statistically significant effect of gender or migrant background on the risk of multi-morbidity.

TABLE 4 / Diagnoses and multi-morbidity index, by gender among all patients and risk of being multi-morbid depending on gender and migration background.

Indication	% of number of respondents in each category (n)						% of total number of patients (n) missing
	men		women		total		
	yes ^a	no ^b	yes ^a	no ^b	yes ^a	no ^b	
Diagnoses							
Vitamin D deficiency	30 (29)	70 (44)	46 (139)	54 (166)	43 (158)	57 (210)	10 (40)
Hypercholesterolaemia	37 (23)	63 (40)	37 (113)	63 (192)	37 (136)	63 (232)	10 (40)
Hypertension	32 (20)	68 (43)	28 (85)	72 (217)	29 (105)	71 (260)	11 (43)
Type 2 diabetes	27 (17)	73 (46)	20 (63)	80 (245)	22 (80)	78 (291)	9 (37)
Arthrosis	9 (6)	91 (57)	25 (75)	75 (229)	22 (81)	78 (286)	10 (41)
Depression ^{c, d}	6 (4)	-	21 (69)	-	18 (73)	-	-
Disc herniation/prolapse	19 (12)	81 (51)	15 (46)	85 (257)	16 (58)	84 (308)	10 (42)
Asthma	8 (5)	92 (58)	16 (48)	84 (257)	14 (53)	86 (315)	10 (40)
Lactose intolerance ^e	5 (2)	95 (37)	14 (34)	86 (208)	13 (36)	87 (245)	31 (127)
PTSD ^{c, d}	19 (13)	-	12 (40)	-	13 (53)	-	-
Ischaemic heart disease	13 (8)	87 (54)	4 (14)	96 (294)	6 (22)	94 (348)	9 (38)
Eczema	3 (2)	97 (60)	7 (20)	93 (284)	6 (22)	94 (344)	10 (42)
Other heart disease	5 (3)	95 (60)	4 (14)	96 (294)	5 (17)	95 (354)	9 (37)
Hepatitis	5 (3)	95 (60)	5 (14)	95 (290)	5 (17)	95 (350)	10 (41)
Cancer	3 (2)	97 (61)	4 (12)	96 (293)	4 (14)	96 (354)	10 (40)
Tuberculosis	8 (5)	92 (58)	3 (9)	97 (295)	4 (14)	96 (353)	10 (41)
COPD	5 (3)	95 (60)	3 (9)	97 (296)	3 (12)	97 (356)	10 (40)
AMI	11 (7)	89 (55)	1 (3)	99 (304)	3 (10)	97 (359)	10 (39)
Chronic sinusitis ^e	5 (2)	95 (37)	3 (7)	97 (233)	3 (9)	97 (270)	32 (129)
Stroke	2 (1)	98 (61)	3 (8)	97 (299)	2 (9)	98 (360)	10 (39)
<i>Multi-morbidity index^{d, f}</i>							
0	13 (8)		10 (32)		11 (40)		
1	16 (10)		17 (52)		17 (62)		
2-3	37 (23)		39 (121)		39 (144)		
>3	35 (22)		34 (104)		34 (126)		

AMI = acute myocardial infarction; COPD = chronic obstructive pulmonary disease; PTSD = post-traumatic stress disorder;

SQ = screening questionnaire.

a) "Yes, currently" or "Yes, previously" or, for the extra diagnoses, listed individually by the patient/doctor.

b) "Do not know" or "No".

c) Extra diagnoses, added in text field.

d) % are based on the total number of patients.

e) High % of responses "do not know" due to subsequent implementation of the questions.

f) Number of diagnoses/patients, based on the 25 somatic diagnoses included in the SQ and PTSD or depression identified in the text field, patients may have > 1 diagnosis.

Blood samples

Forty-nine percent (n = 87) had vitamin-D deficiency (< 50 nmol/l). The vitamin-D deficiency was moderate to severe (13-25 nmol/l or ≤ 12 nmol/l) in 20% (n = 36). The diabetes prevalence in our study population was 28%. Newly diagnosed diabetes is considered well-managed if levels of glycated haemoglobin are below 48 mmol/l; however, 54% of reported diabetics in our study population exceeded this level. Only 19% of reported diabetic patients (33% of men and 14% of women) had total cholesterol levels within the recommended limits for diabetics (< 4 mmol/l). In comparison, 48% of non-diabetics (50% women, 41% men) had total cholesterol levels within the limits for non-diabetics (< 5 mmol/l). Regarding communicable diseases, 4% had positive hepatitis B surface-antigen; 2% had positive hepatitis C antibodies and 1% was HIV positive.

DISCUSSION

First, our study population was generally disadvantaged in terms of socioeconomic background with low education levels, a high proportion receiving social security benefits and one in four being analphabetic. Although immigrants in Denmark generally receive subsidies more often than native Danes and have a lower employment rate, these rates were by far exceeded by the clinic patient population. A need for interpretation was uncovered despite the majority of patients having resided in Denmark for more than 20 years. This was notable especially when compared with another Danish study in which 20% of patients in general practice reported needing interpretation after > 3 years of stay, and only 15% after > 7 years [14]. Consequently, our study population appears to represent a more disadvantaged patient group in terms of socioeconomic background and language skills than other immigrant populations studied; both of these factors are known to be associated with the access to and quality of healthcare services. This may explain their initial referral to the clinic, which is often related to adherence problems and suboptimal healthcare use. Thus, the clinic appears to be fulfilling a need for specific and targeted healthcare services adapted to this particular socioeconomically and linguistically disadvantaged and vulnerable group.

Second, symptom and morbidity patterns were shown to be complex with a high prevalence of musculoskeletal, pain-related complaints as well as relatively unspecific somatic symptoms such as stomach ache and dizziness – not unlike the symptom patterns seen in general practice [15]. Some of these symptoms may be explained by the high levels of vitamin-D deficiency, which are underpinned by another study on a similar migrant population [16].

Multimorbidity was also common in our study population, and type II diabetes was among the most common NCDs requiring complex treatment and adaptation of health behaviours. Also, blood glucose control did not meet current recommendations, possibly reflecting adherence issues. Congestive heart failure was not reported at all, which was a surprising finding [17]. We are unaware of the reason for this; one explanation might be that most patients attending the clinic are women below the typical onset age for cardiac disease in women. Urinary incontinence was reported by a relatively high proportion of female clinic patients compared with Danish women of similar age; a symptom which may potentially cause social isolation and integration difficulties for the women affected.

Third, the prevalence of PTSD found in the study population (13%) was higher than the lifetime prevalence found in previous American and European studies (2-8%) [18]. However, both are likely underestimated, especially among refugees, due to the lack of a systematic assessment with regards to PTSD and depression occurrence in the SQ, which lacked specific questions regarding psychiatric disease. A high percentage of the patients attending the clinic reported having been subjected to torture (11% of patients with known migrant status; 31% of refugees and 5% of family-reunified patients), corresponding well with the findings of a similar American study of foreign-born patients in an urban primary care practice (13%) [19].

Finally, the above-mentioned health issues of our study population likely reflect an accumulated adverse health effect of experiences related to the migration process, having a different ethnic background than the majority population as well as being socioeconomically disadvantaged [12, 20]. Consequently, a more holistic bio-psycho-social approach is required to respond effectively to these health needs. The clinic was initially founded because these needs can be difficult to meet in “regular” healthcare systems that tend to build on a mono-disciplinary, single-disease and mono-sectorial approach to diagnosing and treating patients. In Denmark, there are now two well-established clinics for immigrant health.

Discussion of methods

One of the strengths of this study is the partial validation of the data collected in the SQs, as the

questionnaires were filled out by the treating doctor, and therefore reflect a combination of the patients' own reports and the objective evaluation of the examining doctor. Furthermore, we performed double-entry for all SQs. However, there are also certain limitations to the study. First, a considerable part of the data collected in the SQ are self-reported and therefore subject to bias; i.e. recall bias as well as faulty reports based on low educational levels and health illiteracy, both of which are highly prevalent within the study population. Second, data collection did not include standardised culturally validated questionnaires like the Harvard Trauma Questionnaires, the Hamilton Depression Scale or measures of performance as it was not within the capacity of the clinical work to include such instruments in the initial assessment of every patient. Third, data on health behaviour and health attitudes do not form part of the SQ. Fourth, due to the vast need for interpretation complicating the communication along with the sensitive nature of some of the SQ questions, these have not always been answered chronologically, which may also have affected the responses.

CONCLUSIONS

Describing the clinic population is a first step in understanding the healthcare needs of this most vulnerable immigrant population. One of the next steps is to evaluate the various aspects of the effect of the clinic's work, which currently includes both refugee screening programmes and consultancy work at other clinical departments as well as training of healthcare staff to enhance the cultural competence and diversity sensitivity in mainstream services through pre- and postgraduate education programmes. Such evaluations could be based on register data as well as through qualitative follow-up studies based on interviews with patients, their families as well as general practitioners, hospital staff and municipality workers. Further insights into the cost-effectiveness of this clinic and other immigrant-specific initiatives would help to evaluate the financial benefit of targeted services.

Correspondence: Marie Norredam. E-mail: mano@sund.ku.dk

Accepted: 28 May 2020

Conflicts of interest: none. Disclosure forms provided by the authors are available with the full text of this article at Ugeskriftet.dk/dmj

LITERATURE

1. International Organization of Migration (IOM). World Migration Report 2020. Geneva: IOM, 2020.
2. Statistics Denmark. Immigration in Denmark 2019. Copenhagen: Statistics Denmark, 2019.
3. Razum O. Migrant mortality, healthy migrant effect. In: Kirsh W, ed. Encyclopedia of public health. New York: Springer; 2008:933-5.
4. Nielsen SS, Krasnik A. Poorer self-perceived health among migrants and ethnic minorities versus the majority population in Europe: a systematic review. *Int J Pub Health* 2010;55:357-71.
5. Uitewaal PJ, Manna DR, Bruijnzeels MA et al. Prevalence of type 2 diabetes mellitus, other cardiovascular risk factors, and cardiovascular disease in Turkish and Moroccan immigrants in North West Europe: a systematic review. *Prevent Med* 2004;39:1068-76.
6. Norredam M, Garcia-Lopez A, Keiding N et al. Risk of mental disorders in refugees and native Danes: a register-based retrospective cohort study. *Soc Psych Psych Epidemiol* 2009;44:1023-9.
7. Andersen GS, Kamper-Jørgensen Z, Carstensen B et al. Diabetes among migrants in Denmark: incidence, mortality, and prevalence based on a longitudinal register study of the entire Danish population. *Diabetes Res Clin Pract* 2016;122:9-16.
8. Rechel B, Mladovsky P, Ingleby D et al. Migration and health in an increasingly diverse Europe. *Lancet* 2013;381:1235-45.
9. Byberg S, Agyemang C, Zwisler AD et al. Cardiovascular disease incidence and survival: Are migrants always worse off? *Eur J*

- Epidemiol 2015;31:667-77.
10. Nørredam M. Migration and health. *Dan Med J* 2015;62(4):B5068.
 11. Norredam ML, Nielsen AS, Krasnik A. Migrants' access to healthcare. *Dan Med Bull* 2007;54(1):48-9.
 12. Ingleby D, Krasnik A, Lorant V et al. Health inequalities and risk factors among migrants and ethnic minorities. *COST Series on Health and Diversity – 1*. 2012.
 13. Spallek J, Zeeb H, Razum O. Prevention among immigrants: the example of Germany. *BMC Pub Health* 2010;10:92.
 14. Harpelund L, Nielsen SS, Krasnik A. Self-perceived need for interpreter among immigrants in Denmark. *Scand J Pub Health* 2012;40:457-65.
 15. Moth G, Vedsted P, Olesen F. *Kontakt- og sygdomsmønstret i almen praksis*. 1st ed. Aarhus: Forskningsenheden for Almen Praksis, 2010.
 16. Nielsen DS, Rasmussen DN, Sodemann M. Vitamin D status in patients attending a Danish migrant health clinic: a clinical retrospective study. *J Immigrant Min Health* 2015;17:474-81.
 17. Bo A, Zinckernagel L, Krasnik A et al. Coronary heart disease incidence among non-Western immigrants compared to Danish-born people: effect of country of birth, migrant status, and income. *Eur J Prev Cardiol* 2015;22:1281-9.
 18. Kessler RC, Sonnegard A, Bromet E et al. Posttraumatic stress disorder in the National Comorbidity Survey. *Arch Gen Psych* 1995;52:1048-60.
 19. Crosby SS, Norredam M, Paasche-Orlow MK et al. Prevalence of torture survivors among foreign-born patients presenting to an urban ambulatory care practice. *J Gen Int Med* 2006;21:764-8.
 20. Spallek J, Zeeb H, Razum O. What do we have to know from migrants' past exposures to understand their health status? A life course approach. *Emerg Them Epidemiol* 2011;8:6.