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Article

Self-Perceived Health Among Migrants Seen in Médecins du Monde Free Clinics in Europe: Impact of Length of Stay and Wealth of Country of Origin on Migrants' Health

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Abstract: Health of migrant is a widely studied topic. It has been argued that migrant health may deteriorate over time. Though migrants are 'a hard to reach' population in survey data, this paper builds on a unique dataset provided by Médecins du Monde from five countries. We study self perceived health (SPH) in connection with socio-economic and demographic factors and length of stay. Results show different results for men and women. Asylum seekers compared to other documented migrants have a worse health. Migrants with better living conditions tend to be in better health. Employment and stable accommodation has a positive effect on SPH. Women from poorer countries have a better physical SPH after 3 months of residing in the host country. This paper contributes widely to knowledge of health of migrants. Contrarily to other evidence, health of migrants tends to improve for some migrants.

Keywords: migrant health; length of stay; Médecins du Monde; self-perceived health; migration; Human Development Index

1. Introduction

The health of migrant populations is an emerging trend in public health research which has produced mixed results [1–3]. Inconsistent evidence shows that migrants can be either in better or worse health than the population of their host country [4–11]. Many factors can contribute to these inconsistent results, such as the host country itself (migrants in North America and southern Europe are in better health than migrants in northern Europe [12]), migrants' social integration in the host country (migrants living in host countries where they are more easily integrated tend to be in better health [7]) or their length of residence (migrants' health worsens over time [4]). On average, migrants tend to live in worse conditions than their host populations [13]. In Europe, the health of migrants who have settled during recent years may be worse than those of migrants who arrived during the 1970s, when labour migration was more common, the labour market was more in demand and borders were more open [13].

Many researchers have explained the better health status of recent migrants in terms of a "healthy migrant effect". According to this hypothesis, self-selection and migration policy result in only the healthiest candidates having privileged access to emigration. Compared to the population of industrialized countries, migrants from developing countries may also have healthier lifestyle

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habits (eating behaviours, smoking, physical activity, etc.). However, after a certain period of time in the host country, cultural integration, difficult employment and living conditions, lower social status, and the weakening of social and familial links may have a negative impact on their health [14,15]. Access to healthcare is also more of a challenge for migrants than nationals for many reasons: lower healthcare literacy, reduced ability to assert their rights, discrimination in healthcare services [16]. More recently, in light of the differences in migrants' health according to their country of origin, some authors have argued that migration from a society in an earlier phase of the health transition to a society in a more advanced phase has a positive effect on migrants' health [3].

In this article, we discuss whether length of stay and the wealth of the country of origin have an impact on health. In order to do so, we have analysed data collected by Doctors of the World/*Médecins du Monde* from free clinics in 5 countries to estimate the respective effects of the wealth of the country of origin and the length of residence in the host country on the perceived health of adult migrants (separately for men and women), while taking into account various living conditions in the host country. Migrants from wealthier countries are expected to be in better health when they first arrive compared to migrants from poorer countries. After a while in the country of residence, we would expect living conditions to level off migrants' health, i.e. the length of stay in the host country would modify the effect of country of origin on migrants' health.

2. Materials and Methods

Studied population

The main mission of Doctors of the World/Médecins du Monde (MdM) is to provide access to healthcare through free social and medical services for people who face barriers to the mainstream healthcare system. In Europe, MdM works mainly with vulnerable people such as homeless people, drug users, destitute nationals, sex workers, undocumented migrants, asylum seekers and Roma communities.

The programmes which collected our data are fixed clinics run by MdM or its partners, which offer free primary healthcare consultations as well as social support and information about the healthcare system and patients' rights with regard to accessing healthcare. Ultimately, these programmes aim to help patients reintegrate into the mainstream healthcare system, where this is legally possible. MdM programmes are run predominately by volunteers (90% are volunteers and the remaining 10% are paid staff, of which around 90% are health professionals - including nurses, general practitioners, midwives, dentists, medical specialists, psychologists - and 10% are social workers, support workers, mediators, translators). The MdM International Network has developed a quantitative and qualitative information system that includes systematic patient data collection and annual statistical analysis, narrative patient testimonies, de jure and de facto legal analysis of healthcare systems, as well as identification of best practices.

For this analysis we based our sample on total population seen by MdM. In the end we included 1356 adult migrants who consulted an MdM volunteer at one of the free clinics run by MdM or its partners in 5 countries for the first time in 2014. These free clinics are located in Munich (Germany), Alicante, Bilbao, Malaga, Seville, Tenerife, Valencia, Zaragoza (Spain), La Chaux de Fonds, Neuchâtel (Switzerland), Istanbul (Turkey) and London (United Kingdom). Unfortunately, we could not include patients seen in Greece as their asylum status and length of stay in Greece were not available.

Data collection

Data was collected by MdM volunteers (doctors, nurses, social workers) through a medical and social questionnaire administered to every new adult patient. The medical

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questionnaire collected information on perceived health, vaccination, pregnancy and contraception, experiences of violence, history of HBV, HBC and HIV testing, reasons for consultation, and diagnoses at the end of the consultation. The social questionnaire collected information on housing conditions, occupation and resources, administrative situation, health coverage and obstacles to accessing healthcare. No ethics committee approval was required for this study as it uses socio-medical data routinely collected by health professionals. The medical records used in the study were collected and archived under the supervision of health professionals and according to the national laws and regulations of each country. The data used by the authors of this study was fully anonymised.

Outcomes

We used two indicators of self-perceived health (SPH) in order to distinguish between physical and mental health. We used the answers to the questions "How is your physical health state?" and "How is your emotional and psychological health state" respectively and categorized both of them (Very good and good versus fair, bad or very bad; the latter three categorizations are referred to as "deteriorated self-perceived health" in the rest of the paper).

Covariates

Two characteristics relating to patients' migration status were used in the analysis: residence status (residence permit, undocumented, asylum seeker) and length of stay in the host country (in 3 categories: < 3 months, between 3 months and 5 years, more than 5 years), as well as four indicators of socioeconomic status (SES): housing conditions (unstable/stable), income satisfaction (not enough/enough for basic needs), job (yes/no), health coverage (yes/no). In the second part of the analysis, we used the Human Development Index (HDI) of patients' countries of origin [17].

Statistical analysis

Since self-perceived health is known to differ between men and women [18,19] – although it should be noted that very few studies have analysed migrant health in particular by gender [20] – all of our data has been analysed by gender.

Firstly, we estimated a logistic regression model which included demographics (age in quartiles, country of residence, i.e. where people were interviewed and region of origin), migration status (residence status and length of stay in the host country) and SES (housing conditions, income satisfaction, job, health coverage).

Secondly, we created a binary variable indicating whether or not the person is from a wealthy country (HDI above 0.5), using the cut-off point of 0.5 following Chaix et al. [17]. We tested whether the HDI of the country of origin is linked to our outcomes in men and women (see full results online), then tested whether the effect of length of stay in the host country modified these associations. We defined two categories of length of stay according to the results of the first model (< 3 months, ≥ 3 months). In this final model, the Human Development Index of the country of origin was added as a modifier to test the hypothesis that individuals coming from a more developed country have better SPH [21] and that the change in SPH is influenced by the amount of time spent in the host country.

3. Results

Descriptive statistics

The final data shows the results from 577 women and 767 men for physical SPH, and 576 women and 765 men for mental SPH.

Table 1 shows the descriptive statistics of each explanatory variable cross-referenced with each dependent variable for men and women. We have presented the proportion of people who are in good or very good health. We tested for the difference in the proportion of being in good or very good health across genders. The results show that women in the first age quartile are more likely to be in better mental health than men (31.9% vs 20.8%), and that men residing in Spain are more likely to be in better physical health than women (50.0% vs 33.6%). Men from Africa are more likely to be in better physical health than women (37.0% vs 26.6%). With regard to undocumented migrants, women are more likely to be in better mental health (25.1% vs 15%) while men are more likely to be in better physical health (43. 3% vs 33.0%). When living in unstable accommodation, men are more likely to be in better physical health than women (32.5% vs 22.7%). When income is deemed insufficient, men are more likely to be in better health than women (33.6% vs 26.9%). When migrants have a job, women are more likely to be in better mental health than men (30.0% vs 20.2%). Finally, when migrants have health coverage, men are more likely to be in better health than women (39.0% vs 28.6%).

Table 1. Proportion of people in very good or good health, by gender and covariates.

		Physical		Mental	
	n	Women %	Men %	Women %	Men %
Age group					
1st quartile [18;28[	310	30.1	41.1	31.9	20.8*
2nd quartile [28;34[	383	32.5	37.2	15.3	17.3
3rd quartile [34;44[	379	24.2	28.5	27.9	21.0
4th quartile [44;85]	284	24.1	23.7	29.7	26.6
Total	1356	27.6	33.4	25.7	20.9
Surveyed Countries					
Germany	46	24.0	28.6	36.0	19.1
Switzerland	30	50.0	25.0	66.7	29.2
Spain	210	33.6	50.0*	36.4	40.0
Turkey	552	31.0	39.7	8.0	6.6
United Kingdom	518	22.2	19.6	32.1	32.7
Total	1356	27.6	33.4	25.7	20.9
Origin					
Middle East	78	11.5	17.3	11.5	19.2
Africa	708	26.6	37.0**	13.9	11.6
Americas	110	40.5	36.1	33.8	27.8
Asia	327	25.3	24.9	39.0	38.1
Europe	49	25.9	40.9	40.7	31.8
Maghreb	84	30.0	45.5	40.0	34.1
Total	1356	27.6	33.4	25.7	20.9
Residence status					
Other documented	220	30.8	41.4	32.7	31.9
Undocumented	548	33.0	43.3*	25.1	15.0**
Asylum Seeker	588	21.3	21.2	23.3	22.7
Total	1356	27.6	33.4	25.7	20.9

Length of stay					
<3 months	218	19.2	40.3**	24.2	19.3
3 months-5 years	791	30.3	34.7	22.3	18.3
>5 years	346	27.7	25.0	32.9	29.0
Total	1356	27.6	33.4	25.7	20.9
Housing conditions					
Unstable	715	22.7	32.5**	17.1	15.5
Stable	641	31.8	34.6	33.1	28.2
Total	1356	27.6	33.4	25.7	20.9
Income satisfaction					
Not enough	1227	26.9	33.6*	23.0	20.5
Enough	129	31.8	29.6	41.2	27.3
Total	1356	27.6	33.4	25.7	20.9
Job					
Yes	874	25.3	27.9	23.8	21.3
No	482	32.8	42.1	30.0	20.2*
Total	1356	27.6	33.4	25.7	20.9
Health coverage					
Yes	364	28.6	39.0*	33.0	33.0
No	992	27.1	31.7	22.4	17.2
Total	1356	27.6	33.4	25.7	20.9

Comparing female proportion to male proportion., pvalues below 0.1%; 1% 5% are shown with three, two or one star (resp).

Multivariate models

We will now discuss multivariate models in order to explain good health using logistic regression.

Asylum seekers

One significant result of our study is the finding that asylum seekers are in worse health than other documented patients. The results for both models and both genders are negative but are significant only for female asylum seekers' physical SPH and male asylum seekers' mental SPH. The physical SPH of female asylum seekers is twice as poor as that of other documented women. Male asylum seekers are three times more likely to have worse mental SPH than other documented men.

Living conditions

Living in stable accommodation is associated with better health. While this variable is positive for both models and both genders, it is significant for women's physical and mental SPH, and men's mental SPH. Women living in stable accommodation are twice as likely to be in better mental SPH than women who do not have stable accommodation.

Finally, work is also associated with better health. This is significant for both the physical and mental SPH of men. Men in employment are twice as likely to be in better mental SPH than men who are not in employment.

Length of stay (LOS)

In *Table 2* we present the results for the following thresholds of length of stay: less than 3 months, between 3 months and 5 years, and more than 5 years. We tried different sensitivity analyses following different research articles [22,23]. We tested the following durations of residence:

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less than 3 months, between 3 months and 5 years, between 5 years and 10 years, and more than 10 years[1]. The only significant result is the finding that female migrants who have spent more than three months in their host country have better physical SPH than the women who have stayed for less than three months.

We did not find interpretative results for the mental SPH of men or women regarding the effect of length of stay on health. One interesting hypothesis is that women's physical SPH seemed to decrease in women who have stayed in their host country for more than 10 years. In a sensitivity analysis[1] document we tested different specifications to test this hypothesis of an inverted U shape effect of LOS on health. The resulting assumption is that health improves as the host country is wealthier than country of origin, then deteriorates as migrants tend to live in poor conditions and suffer discrimination. However, although this result appears in some specifications, it is not consistent across models.

Table 2. Multivariate analysis of characteristics associated with good or very good perceived Physical and Mental health, by gender.

		Women	Men	Women		Men	
				Physical	Mental	Physical	Mental
	n	%	%	aOR [95%CI]	aOR [95%CI]	aOR [95%CI]	aOR [95%CI]
Age group							
1st quartile [18;28[	310	36.5%	63.5%	Ref.	Ref.	Ref.	Ref.
2nd quartile [28;34[	383	41.0%	59.0%	1.07 [0.61; 1.90]	0.52 [0.26; 1.00]	0.92 [0.60; 1.40]	0.96 [0.55; 1.69]
3rd quartile [34;44[	379	43.5%	56.5%	0.65 [0.36; 1.17]	0.63 [0.34; 1.15]	0.64 [0.41; 1.00]*	1.08 [0.61; 1.92]
4th quartile [44;85]	284	51.1%	48.9%	0.66 [0.35; 1.23]	0.59 [0.31; 1.10]	0.65 [0.38; 1.13]	0.89 [0.48; 1.64]
Surveyed Countries							
Germany	46	54.3%	45.7%	Ref.	Ref.	Ref.	Ref.
Switzerland	30	20.0%	80.0%	6.27 [0.81; 51.34]	4.84 [0.67; 44.95]	1.12 [0.27; 4.71]	3.10 [0.69; 15.55]
Spain	210	52.4%	47.6%	0.53 [0.14; 2.12]	0.74 [0.21; 2.62]	2.14 [0.75; 6.76]	3.25 [1.00; 12.91]
Turkey	552	33.9%	66.1%	0.91 [0.19; 4.45]	0.08 [0.02; 0.38]*	1.54 [0.40; 6.24]	0.11 [0.02; 0.55]*
United Kingdom	518	48.6%	51.4%	0.38 [0.09; 1.68]	0.30 [0.08; 1.20]	0.61 [0.16; 2.43]	0.97 [0.23; 4.65]
Region of Origin							
Middle East	78	33.3%	66.7%	Ref.	Ref.	Ref.	Ref.

[1] All those results are available online in a Sensitivity Analysis document T1, T2, T3, T4.

		Women	Men	Women		Men	
				Physical	Mental	Physical	Mental
	n	%	%	aOR [95%CI]	aOR [95%CI]	aOR [95%CI]	aOR [95%CI]
Africa	708	37.7%	62.3%	2.87 [0.85; 13.37]	2.20 [0.59; 11.35]	1.20 [0.53; 2.92]	0.82 [0.35; 2.06]
America	110	67.3%	32.7%	9.15 [2.12; 50.56]*	2.48 [0.55; 14.38]	0.75 [0.23; 2.44]	0.42 [0.12; 1.45]
Asia	327	44.6%	55.4%	3.73 [0.96; 19.14]	3.55 [0.89; 18.99]	2.16 [0.89; 5.73]	1.51 [0.66; 3.68]
Europe	49	55.1%	44.9%	2.75 [0.58; 15.91]	2.31 [0.50; 13.24]	1.77 [0.50; 6.33]	0.68 [0.18; 2.48]
Maghreb	84	47.6%	52.4%	4.14 [0.84; 24.91]	3.38 [0.66; 21.36]	1.92 [0.68; 5.68]	0.89 [0.30; 2.69]
Immigration Status							
Residence permit	220	47.3%	52.7%	Ref.	Ref.	Ref.	Ref.
Undocumented	548	41.4%	58.6%	0.70 [0.39; 1.28]	0.92 [0.50; 1.71]	1.09 [0.67; 1.78]	0.41 [0.22; 0.75]*
Asylum Seeker	588	42.3%	57.7%	0.50 [0.27; 0.94]*	0.73 [0.39; 1.41]	0.59 [0.35; 1.01]	0.32 [0.17; 0.60]*
Length of Stay							
<3 months	218	45.4%	54.6%	Ref.	Ref.	Ref.	Ref.
3 months-5 years	791	39.2%	60.8%	2.10* [1.14; 4.01]*	0.70 [0.37; 1.34]	0.75 [0.47; 1.19]	0.88 [0.49; 1.63]
>5 years	346	49.1%	50.9%	2.25 [1.08; 4.85]*	0.72 [0.35; 1.49]	0.63 [0.35; 1.16]	0.63 [0.32; 1.26]
Housing conditions							
Unstable	715	37.6%	62.4%	Ref.	Ref.	Ref.	Ref.
Stable	641	48.5%	51.5%	1.78 [1.18; 2.70]*	1.96* [1.26; 3.08]*	1.29 [0.91; 1.82]	1.57 [1.04; 2.39]*
Income satisfaction							
Not Enough	1227	40.3%	59.7%	Ref.	Ref.	Ref.	Ref.
Enough	129	65.9%	34.1%	1.39 [0.76; 2.54]	1.22 [0.69; 2.17]	0.98 [0.46; 2.04]	0.47 [0.21; 0.99]*
Job							
No	874	45.8%	54.2%	Ref.	Ref.	Ref.	Ref.

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		Women	Men	Women		Men	
				Physical	Mental	Physical	Mental
	n	%	%	aOR [95%CI]	aOR [95%CI]	aOR [95%CI]	aOR [95%CI]
Yes	482	37.3%	62.7%	1.32 [0.84; 2.06]	1.46 [0.89; 2.41]	1.82 [1.26; 2.62]*	2.16 [1.35; 3.49]*
Insurance coverage							
Yes	364	50.0%	50.0%	Ref.	Ref.	Ref.	Ref.
No	992	40.1%	59.9%	1.38 [0.59; 3.66]	1.80 [0.79; 4.52]	0.65 [0.29; 1.53]	1.67 [0.76; 3.96]

aOR: adjusted Odds Ratio, 95%CI: 95% Confidence Intervals, *p<0.05

Wealth of country of origin and length of stay, effect modifier

Next, we tested the effect of the Human Development Index, firstly to determine its impact on health and secondly to test whether the wealth of the country of origin is an effect modifier for Length of Stay (LOS). Table 3 shows the results for women's physical SPH only. Full results are available online. Introducing effect modifiers in male models did not change the general finding that length of stay has no effect for males[2]. Interaction models with LOS in three categories do not provide much more information than LOS in two categories (less than 3 months and more than 3 months), therefore we have only presented interactions for the latter. The introduction of the effect of wealth (effect modifier) does not change the results for the other covariates shown in *Table 2*.

The effect of the wealth of the country of origin shows that women from wealthier countries have better physical SPH when they have stayed for less than 3 months compared to women from poorer countries. The physical SPH of women from wealthier countries does not change with time spent in the country. Women from poorer countries see their physical SPH improve with a length of stay longer than 3 months. Similarly to LOS, we tried different specifications of the wealth cut-off point and while some results were significant for men, they were not robust when tested with different cut-off point specifications. However, the effect for women was similar regardless of the wealth cut-off point (0.5; 0.6 or 0.7)[3].

Table 3 Effect of LOS and Human Development Index; Effect modifier of length of stay on wealthy country of origin (COO); regarding physical perceived health in women.

No interaction		With interaction; effect modifiers	
	aOR [95% CI]		aOR [95% CI]
Effect of wealthy COO vs poor COO	1.94* [1.06; 3.56]	Effect of wealthy COO vs poor COO when LOS<3 months	5.96* [1.65; 21.49]
Effect of stay longer than 3 months vs stay shorter than 3 months	1.96* [1.05; 3.65]	Effect of stay longer than 3 months vs stay shorter than 3 months when women are from poorer countries	4.72* [1.51; 14.72]

[2] See Full tables online T5, T6.

[3] The Sensitivity analysis document shows and annotates all of these results T7, T8.

No interaction	With interaction; effect modifiers	
aOR [95% CI]		aOR [95% CI]
	Effect of stay longer than 3 months vs stay shorter than 3 months when women are from wealthy countries	1.22 [0.59; 2.55]

* 1 is outside the confidence interval. Interpretation: when women have stayed less than 3 months, those from wealthier countries are 5.96 times more likely to be in good physical health compared to women from poorer countries. OR are adjusted on all the characteristics in Table 3.

4. Discussion

This study of migrant patients visiting MdM health centres in Europe provides an interesting insight into the health status of vulnerable migrants. This population is not homogenous and different factors impact on their health.

Firstly, we have learnt that the effect of being an asylum seeker compared to other documented migrants has a negative effect on women's physical SPH and men's mental SPH.

Secondly, when patients have better living conditions they tend to be in better health. Employment has a positive effect on both the physical and mental SPH of men. Stable accommodation has a positive effect on women's SPH (physical and mental) and men's mental SPH.

Lastly, the duration of stay in host countries has contradictory effects depending on the wealth of the country of origin. Women from poorer countries, as measured by the Human Development Index, see their physical SPH improve after 3 months of residing in the host country, whereas there is no effect for those from wealthy countries.

Perceived health

We used indicators of self-perceived health (SPH) to assess migrants' health. There is a strong body of evidence showing that SPH predicts mortality and morbidity as well as medical diagnosis [24,25]. It is a better predictor for underprivileged people [26] and/or those with lower levels of education. SPH has been shown to vary according to ethnicity [27]; however, Chandola and Jenkins have shown that there is no joint effect of SPH and ethnicity predicting morbidity [28], i.e. the predictability of SPH is not modified by ethnicity. A recent article showed that the effect of being a non-EU citizen living in the EU on SPH was similar to that of people who suffer from a chronic condition or report limitations in daily life [7].

The health of asylum seekers

Most of the literature concerns the health status of asylum seekers, refugees, and undocumented migrants [16]. This is consistent with policies and migration trajectories in host countries. These 3 administrative categories face risk factors for mental health disorders during premigration (persecution, armed conflicts, and economic hardship), perimigration (different kinds of violence, life-threatening conditions, separation from family and support network) and post migration. Once in the host country, while refugees struggle to fully integrate into society, asylum seekers also experience feelings of uncertainty about their asylum applications (the longer the procedure, the worse their mental health) and fear of detention. Toar et al. [29] have shown that asylum seekers have a higher level of self-reported post-traumatic stress disorder and depression/anxiety compared to refugees.

Our results show the negative effect of being an asylum seeker on women's physical health and men's mental health compared to other documented patients. These results are consistent with literature showing the significant impact of the stress of asylum procedures and living through a period of uncertainty [30].

Administrative situations can change over time. For example, asylum seekers may previously have been undocumented, refugees may previously have been asylum seekers, and migrants may become refugees or legal residents through other procedures. As such, in order to understand how an administrative situation affects health, qualitative research may be more appropriate for understanding the process by which health deteriorates. A combination of qualitative and quantitative methods can help to provide insight into the process that results in individual health status; for France, see Cognet et al. [14].

Health and living conditions

Most research on health and being economically active focuses on the detrimental effect of working conditions on health [31–33]. Others have shown that there is a selection effect of those in good health into work [34], and at a macro-economic level that where there is better health there is more widespread labour supply [35]. There is also evidence that more permanent employment positions have a beneficial impact on individuals' mental health [36]. Labour force participation reduces the risk of mortality, and being active lowers the risk of mortality when unmarried [37]. It is a public health issue to facilitate access to the labour market in order to improve the health of deprived communities [38–40].

In correspondence with these studies, our results show the positive impact of employment on men's SPH (both physical and mental). There is no significant evidence for the same impact on women's SPH. The population we have studied is specific as it cannot benefit from social protection [41]. Furthermore, according to a 2015 MdM report [42], 66% of the patients do not have the right to reside which means that they also do not have the right to work. As the remaining 34% of the people who have the right to reside do not necessarily have the right to work, 66% is therefore an underestimation of those who do not have the right to work. Employment is the primary way to receive income in Western societies and can be perceived positively, even if the salary is low (91.3% of MdM patients were living below the poverty line, and this figure does not take into account the number of people living on this income).

Employment conditions for migrants and refugees are usually more strenuous than for host populations [43]. Studies on migrant workers (44) have shown that migrants and refugees are at higher risk of occupational exposure, injury and illness [44]. This is a result of their relegation to the most dangerous jobs and the most dangerous tasks within these jobs, a lack of safety training, the transient nature of much of the work, fear of reprisal for demanding better conditions or reporting an injury or illness, and linguistic and cultural complexities that eliminate or severely minimize the existence and effectiveness of training [44].

As such, migrants in employment are in better health than those who are not; though those in employment suffer from detrimental working conditions.

Our study shows the positive impact of stable accommodation on both women's physical and mental SPH and men's mental SPH. Fazel et al. [45] have shown that homeless individuals have worse mortality outcomes than the general population in Europe and the USA. In these countries, various programmes have been developed to provide stable and safe accommodation for the homeless. Programme evaluations show the positive impact of housing on health, but few research studies [46] have been developed to understand the impact of unstable accommodation on physical and mental health. Robert and Vanoni [46] argue that poor housing increases the risk of health issues and violence. A study of female patients in Médecins du Monde in the Paris region show that 44% had experienced violence in their host country and 6% had been raped. Among female victims of violence, 55% reported negative effects on their health. Violence may also be enacted by close acquaintances such as the person(s) hosting the migrants [47]. In France, among homeless families who had accommodation, 3.1% left their previous accommodation due to violence or exploitation by the host [48].

As argued in the Ottawa Charter, shelter is a fundamental condition for health [49]. Our evidence shows that we can go further than this to argue that shelter must be stable and safe in order to be a fundamental condition for health.

Health - length of stay versus wealth of country of origin

Our results show that length of stay, and length of stay stratified by wealth of the country of origin, have no impact on men's health, and the same is true of women's mental health. Length of stay has an impact on women's physical SPH (female migrants that have spent between three months ten years in their host country are 2.5 times more likely to be in better physical health than women who have stayed for less than three months). Women from wealthier countries are 6 times more likely to be in better health than those from poorer countries on arrival (less than three months). Women from poorer countries are over 4 times more likely to be in good health when they stay for longer than 3 months. There is no effect for migrants staying for longer than ten years.

These results are consistent with the notion that migrants coming from a country in an earlier phase of the health transition to a society in a more advanced phase experience a positive effect on their health [3]. After a little while in their host countries, women from poorer countries see an improvement in their physical health. Our results reveal an interesting gender difference, which may be explained by the more frequent use of health facilities by women.

The role of social class in health inequality has been well documented [50]. On the topic of migrant populations, Borrell et al. [51] have studied how social class in host countries may mediate the impact of migration status on health. However, Gosselin et al [52] have shown that sociodemographic factors from the country of origin have little impact on the settlement of sub-Saharan African migrants in France.

We tested different models in order to gain information about the impact of length of stay in the host country on migrants' health. We have shown that LOS has a positive effect on women's physical SPH. However, the hypothesis of an inverted U shape effect of LOS on health could become a potential object of further study.

Limitations

It should be noted that our study is not representative of the health status of vulnerable migrants. Firstly, our study is limited to MdM patients. It is likely that vulnerable migrants have different networks regarding health, depending on factors such as host country and country of origin. Moreover, some may not have access to health facilities. Secondly, the profile of patients also depends on the health centre. For example, as the health centre in Turkey is managed by individuals from sub-Saharan Africa, it tends to work with migrants from this region predominantly.

The term "migrants" in the results shown refers to migrants seen by MdM and partners.

We are aware that our findings are not a result of multiple hypothesis testing. We limited our ambitions to one effect modifier only as we are cautious not to test for every possible interaction. Moreover, when testing different sensitivity analyses we focused on the results which remained robust when tested with different specifications.

5. Conclusions

Stable and safe accommodation is a fundamental condition for health. Therefore, we recommend that countries who ratified the International Covenant on Civil and Political Rights, as well as the European Convention on Human Rights, to implement the right to housing.

In light of the positive effect of employment on social integration and its short-term health benefits, we would recommend facilitating access to the job market for migrants.

Longitudinal cohort studies on migrant populations are required to better understand the impact of work and poor housing on health, taking into account the different types of work and housing and the evolution of these social determinants over their lifetimes. These kinds of studies will also take into account the trajectories of migration, which appears to be a better way to understand migrant health. Qualitative studies may also provide insight into migrant pathways. Further studies are required to better understand the factors which affect health in the country of origin as well as in the host country, and which impact migrants at the various stages of their lives.

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