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7|2019 Does facilitated access to the health system improve asylum-seekers' health outcomes? Evidence from a quasi-experiment

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Abstract

As long as their asylum application is not approved or their duration of stay does not exceed 15 months, asylum-seekers who require doctor visit have to claim it either by the local authority for foreigners or the responsible social assistance office in Germany. Since 2016 several Federal states and municipalities in Germany have launched the procedure to hand out electronic health cards (*eHC*) which allow immediate direct access to the health system for asylum-seekers. In this paper, we examine whether being eligible to the *eHC* as a result of the policy change has had an effect on the health outcomes of asylum-seekers in Germany. For empirical identification, we take advantage of the variation of the policy change across regions and over time. Relying on data from the IAB-BAMF-SOEP Survey of Refugees, we find that the introduction of the reforms allowing asylum-seekers' faster and more direct access to the healthcare system indeed reduced the risk of emotional disorder. We conclude by discussing the potential pros and contras of a comprehensive nationwide introduction of the *eHC* for asylum-seekers.

Zusammenfassung

Solange der Asylantrag nicht anerkannt wurde oder die Aufenthaltsdauer in Deutschland 15 Monate nicht überschreitet, müssen Asylbewerberinnen und Asylbewerber in Deutschland bei der Ausländerbehörde oder dem zuständigen Sozialamt einen Antrag zur Inanspruchnahme von Gesundheitsleistungen stellen. Seit dem Jahr 2016 haben mehrere Bundesländer und Kommunen das Verfahren umgestellt und geben elektronische Gesundheitskarten (*eHC*) aus, die Asylsuchenden einen unmittelbaren und unbürokratischen Zugang zum Gesundheitssystem ermöglichen. In diesem Beitrag untersuchen wir, ob sich diese Regeländerung auf die Gesundheit der zuletzt zugezogenen Asylbewerberinnen und Asylbewerber ausgewirkt hat. Für die empirische Untersuchung nutzen wir regionale und zeitliche Variation bei der Implementierung der *eHC*. Unsere Ergebnisse auf Grundlage der IAB-BAMF-SOEP-Befragung von Geflüchteten zeigen, dass der schnellere und direktere Zugang zum Gesundheitssystem durch die *eHC* das Risiko einer emotionalen Störung tatsächlich verringert hat. Abschließend diskutieren wir die potenziellen Vor- und Nachteile einer umfassenden bundesweiten Einführung der *eHC* für Asylsuchende.

JEL-Classification

F22, I14, I18, H75, R50

Keywords

Asylum-seekers, health, IAB-BAMF-SOEP survey of refugees in Germany, access to health system, asylum policy, dispersal policies, quasi-experiment, physical and mental health diseases, depression symptoms, post-traumatic stress disorder (PTSD).

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1 Introduction

The relevance of health status for individual educational achievements (Baird, Hicks, Kremer, and Miguel, 2016), economic integration (e.g., Chatterji, Alegria, and Takeuchi, 2011) as well as social inclusion (e.g., Steptoe, Deaton, and Stone, 2015) has been shown many times in the empirical literature. From the societal point of view, adverse health status of population (groups) may cause economic and fiscal damages due to fewer hours worked or overall work absenteeism (Hanna and Oliva, 2015). In this sense, restricted or even no access to the healthcare system for highly disadvantaged population groups such as asylum-seekers, refugees and undocumented migrants – typical for many developed countries (e.g., Kullgren, 2003; Norredam, Mygind, and Krasnik, 2006) – can be detrimental for the economy and society as a whole.

Against this background, this study addresses the important issue of whether improved access to the health system has a positive effect on the health outcomes of recently arrived humanitarian migrants – including all persons who move to another country for humanitarian reasons, irrespective of their legal status (e.g., refugee, asylum-seeker, or internally displaced person). In view of the often dramatic, life-threatening flight patterns and the resulting disproportionately high incidence of psychological illnesses, there is a concrete need for action for this group. Given that healthcare serves as an important basis for successful integration into the society and the labor market, focusing on humanitarian migrants, as virtually the most disadvantaged groups in terms of health risks, is of great relevance for integration research in general, particularly considering that humanitarian migration has become one of the major topics in research and politics in the recent years (OECD, 2018; UNHCR, 2018).

Beyond their pronounced health risks, the admission to medical treatment requires the consent of non-medically trained personnel from social and immigration offices in Germany within the first 15 months of stay or as long as the asylum claim is not yet approved. The resulting serious health impairments and illnesses – that likely remain unrecognized – may not only have severe consequences for asylum-seekers' health status and their personal life situation (Bischoff et al., 2003; Coffey, Kaplan, Sampson, and Tucci, 2010; Robjant, Hassan, and Katona, 2009) but also the solidarity community in the host country due to excessive burdens with financing of the treatment of protracted illnesses (Bozorgmehr and Razum, 2015). The recent policy changes in Germany basically modified the existing rules and introduced electronic health cards (*eHC*) which allow an immediate, almost unrestricted access to the health system directly after asylum-seekers' registration in Germany. The implementation of these policies is, however, subject to regional authorities and was adopted only in few Federal states and municipalities implying pronounced regional and temporal variability in equity in access to healthcare. Since asylum-seekers are exogenously allocated to their first place of residence, we are able to control potential problems of anticipated behavior and regional self-selection. These settings provide ideal conditions for the investigation of this important policy change in Germany and to examine whether being eligible to the *eHC* as a result of the policy change affects the health outcomes of asylum-seekers in Germany. Hence, by allowing causal inference our study adds important methodological value to the predominantly observational knowledge on migration and health outcomes.

For our empirical investigation we rely on recent data from the IAB-BAMF-SOEP Survey of refugees, which inter alia surveyed the risks of physical and mental health diseases, presence of depression symptoms and anxiety, and emotional distress of humanitarian migrants having arrived between 2013 and 2016 in Germany (Brücker et al., 2016; Brücker, Croisier, Kosyakova, Kröger, et al., 2019). Moreover, the richness of our dataset allows us to control for a variety of factors that may serve as important determinants of health in the context of humanitarian migration (Walther et al. 2019), including socio-demographic characteristics, health before migration but also the circumstances of escape. To the best of our knowledge our paper is the first to use micro-data for an empirical analysis of restricted access to health services on actual health status in the context of humanitarian migration.

2 Policy context

In the aftermath of the large influx of almost 1 million asylum-seekers and refugees in Germany in the summer of 2015 the German legislature introduced the asylum procedure acceleration law (*Asylverfahrenbeschleunigungsgesetz*) with a package of measures in October 2015. Beyond various measures aiming to accelerate the asylum process, enhanced access to language courses and the labor market (see Grote, 2018 for the full list of measures), the new law included important changes concerning asylum-seekers' access to the health system.

Before 1993, asylum-seekers were entitled to access the health system like 'regular migrants' and virtually equitable to natives. Since 1993, asylum-seekers' access to healthcare is regulated by the German social welfare law for asylum-seekers (*Asylbewerberleistungsgesetz*, AsylbLG, para.4). Basically, the law restricts their access to the healthcare system in the first 15 months of stay in Germany. During that time, asylum-seekers – either those waiting for decision on their claim or those whose claim was rejected but whose stay in Germany is tolerated (*Duldung*) – are only eligible for primary, basic treatment of acute illness, pain condition and further unpostponable interventions, e. g in case of pregnancy (Razum and Bozorgmehr, 2016). If they require doctor visit, asylum-seekers have to claim it in each single case either by the local authority for foreigners or the responsible social assistance office. The decision on the claim is made by usual employees without specific medical training which in many cases requires consultation with the local health authority and may take a few months in the worst-case scenario – these factors likely have severe consequences for health status of refugees. The situation becomes even more critical since these institutions constitute intermediaries which specifically reinforce barriers to healthcare for asylum-seekers as a group with high cultural and linguistic distance (Bischoff et al., 2003). Also from the host society's perspective restricting access appears counterproductive as it substantially increases not only treatment costs (Bozorgmehr and Razum, 2015) but also the administrative burden (Wächter-Raquet, 2016).

The new federal asylum procedure acceleration law opens up the possibility for the 16 federal states in Germany to compel health insurance funds to take care and ensure health provisions for asylum-seekers in their first 15 months of stay. If federal states opt for a general agreement with health insurance funds and regional administrative authorities at the lower regional level (district

or municipality) decide to join, asylum-seekers residing in affected territories gain far more comprehensive access to the healthcare system even in the first 15 months after their arrival to Germany. Practically, asylum-seekers and those tolerated obtain an *eHC* which treats them almost equivalent to ‘standard’ official health insurance contributors in scope of services. In possession of the *eHC*, asylum-seekers are allowed to directly approach (independent) physicians and hospitals without pre-contacting the local authority for foreigners or responsible social assistance office.

Whereas in some (urban) federal states, namely Bremen and Hamburg, corresponding arrangements were already agreed in 2005 and 2012, respectively, on a voluntary basis with insurance funds (based on individual case reimbursement of costs), after the reform in October 2015 a large-scale implementation in further German federal states became possible. However, in the period of investigation – between January 2013 and March 2018 – only several German federal states, districts and municipalities introduced the *eHC* for asylum-seekers on their territory (see Figure 1 and Table A1 in the Appendix).

3 Health status of humanitarian migrants and their access to healthcare systems

Within the group of migrants, humanitarian migrants seem to be particularly vulnerable regarding their health conditions due to their often traumatic experiences in the home country and on their way to the destination country (Brücker, Jaschke, and Kosyakova, 2019), as well as their precarious living conditions in the destination countries, worries about family members left behind and stressful and lengthy asylum procedures (Laban, Gernaat, Komproe, Schreuders, and De Jong, 2004). All of this has important consequences for their health status: up to 30 percent of adult refugees suffer from severe health impairments (Fazel, Wheeler, and Danesh, 2005; Robjant et al., 2009).

Beyond their pronounced health risks, humanitarian migrants are often excluded from or have more restricted access to health systems of the host countries compared to other migrants (e.g., Chase, Cleveland, Beatson, and Rousseau, 2017; Silove, Steel, McGorry, and Drobny, 1999). Comparative research disclosed high variation in access to healthcare for asylum-seekers in the EU-25 despite the national goals of equity in access. While access to medical screening upon arrival was safeguard in almost all these countries, in almost half of countries, pregnant, children or adult asylum-seekers faced legal restrictions in access to healthcare (Norredam et al., 2006). In most of these cases only emergency care is available. In some others, bureaucracy, such as identity card requirements, can create insurmountable obstacles for asylum-seekers. The results of the restricted access to the healthcare systems are consequential not only for individual health (Chase et al., 2017) but also for the host society (Bozorgmehr and Razum, 2015). Delayed treatments may not only increase treatment costs due to aggravation of diseases but also pose a high risk on public health through passing on of diseases to other groups of society (Kullgren, 2003).

Given the high significance of healthcare access for health outcomes, we may expect that the health policy changes in Germany (see Section 2) were consequential for asylum-seekers’ physical

and mental wellbeing. In particular, it could be hypothesized that asylum-seekers assigned in to the regions with an immediate access to the healthcare system via *eHC* (treated) show better health outcomes as compared to asylum-seekers residing in regions with restricted access to the health system (control).

4 Data and method

4.1 Data and sample

The IAB-BAMF-SOEP-Survey of Refugees is a longitudinal survey of refugees, who arrived as asylum-seekers in Germany and their household members (Brücker et al., 2016; Brücker, Rother, and Schupp, 2017). The population was sampled from the Central Register of Foreigners (*Ausländerzentralregister*, AZR) in Germany and targeted humanitarian migrants (irrespective of their asylum status) who arrived between January 1, 2013, and January 31, 2016 in Germany and have been registered at June 30, 2016 by the AZR at the latest. The interviews took place between June and December 2016. The second wave was carried out in 2017, and the response rate amounted to 67% of the participants in the first wave (Brücker, Croisier, Kosyakova, Kröger, et al., 2019). An additional survey covers also asylum-seekers who arrived until December 31, 2016 and have been registered by January 1, 2017. The interviews of the participants of the survey 2017 took place between July 2016 and March 2018. The corresponding sample covers 7,430 adult persons (18 years and older), who have been surveyed at least once; 35 percent of them participated in both waves (repeated respondents).

For the empirical investigation, we excluded respondents who have arrived before 2013 or who have not arrived as asylum-seekers in Germany. Since the date of arrival and of decision on asylum application, the decision outcome as well as the place of the first residence are critical for definition of our treatment and control groups (see Section 4.3), we further confined our data to the respondents with non-missing information on both dates and the first residence place. After list-wise deletion of several missings regarding our dependent and independent variables, we end up with 5,460 respondents contributing 7,396 person-wave observations (73 percent of the original sample). Although we have repeated observations for a subset of persons, each health indicator is only once available per individual. This will be worked out in the subsequent section.

4.2 Dependent variables and method

To address asylum-seeker's health risks we refer to the following health indicators:

- Physical component summary scale (*PCS*),
- Mental component summary scale (*MCS*),
- Symptoms of depressive illness and anxiety (*PHQ-4*) and
- Refugee health screener (*RHS-13*).

The underlying questions from the survey behind utilized health indicators are illustrated in Table B1 in the Appendix.

The sum scales for PCS and MSC are derived based on a series of questions related to self-reported assessments on symptoms, physical and mental aspects of health-related quality of life, in particular, physical functioning, the role of physical, bodily pain for general health, vitality, social functioning as well as the role of emotional, and mental health. This information was surveyed only by the first-time respondents interviewed in 2016 and 2017. In the empirical literature, both scales – although cannot replace empirical studies – became established instruments to proxy health status of the respondents in social sciences (Andersen, Mühlbach, Nübling, Schupp, and Wagner, 2007). The sum scale for PCS ranges from 11 to 77 and for MCS from 6 to 73. For both PSC and MCS a higher value corresponds to a higher level of well-being. The values were z-transformed such that 50 corresponds to the average value in the 2004 German population; ten points correspond to a standard deviation.

The PHQ-4 is a reliable four item measure of depression and anxiety (Löwe et al., 2010). The scale ranges from zero to twelve where a higher value corresponds to more symptoms reported. This information is only available for the first-time respondents in 2016. The threshold of six or greater designate a “yellow flag” and the threshold of nine a “red flag” for the presence of a depressive or an anxiety disorder (Löwe et al., 2010).

The RHS-13 instrument measures the degree of emotional distress, in particular the anxiety, depression, and posttraumatic stress disorder among refugees (Hollifield et al., 2013). The corresponding scale ranges from zero to 52 indicating higher mental disorder with growing values. The underlying questions were surveyed only in 2017 and only by the repeated respondents. Following the clinical validation studies, the cutoff point of twelve or more represents a threshold at which a person is so emotionally stressed that a posttraumatic stress disorder is feasible in the long run (Hollifield et al., 2013).

Given a high skewness of the RHS and the PCS indicators (see Figure C1 in the Appendix), we apply log-specifications in the subsequent multivariate analyses to take into account potential non-linear relationships between explanatory and dependent variables. Since the variables for the PCS, MSC, PHQ-4, RHS-13 are only available for one point in time, we apply cross-sectional ordinary least squares (OLS) estimation with robust standard errors.

4.3 Independent variables

Treatment and control groups

We define the treatment group in terms of having access to the health system as a consequence of the policy intervention as outlined in Section 2, i. e. *being qualified for an eHC via policy change*. Importantly, our analysis resembles an Intention-to-Treat Framework since we do not have factual information whether an individual possesses the eHC or not (see Gupta, 2011 for a review). Instead, belonging to the treatment or control group depends on four factors: assigned residence place (based on the survey question on their first or longest residence place in Germany), date of policy introduction (if at all in the region), length of stay in Germany and date of decision on asylum application.

Basically, in the first 15 months of their stay in Germany, asylum-seekers receive benefits according to the Asylum Seekers Benefits Act (*Asylbewerberleistungsgesetz*). This restricts the utilization of health services to the basic provisions as outlined in Section 2. Upon approval of their asylum

application or after 15 months duration of stay, asylum-seekers or those tolerated receive the *eHC* and, hence, health care access. Correspondingly, the respondents in our sample may be qualified for the *eHC* not only via the policy change, but also as a result of the asylum application approval or duration of stay. To address potential heterogeneity within the control group, we consider the following categorization for our explanatory variable:

1. Eligibility to the *eHC* via policy change (treatment)
2. Eligibility to the *eHC* via status approval (control)
3. Eligibility to the *eHC* via duration of stay (control)
4. Not eligible to the *eHC* (control)

Figure 1 illustrates the localities in Germany in which the *eHC* was introduced by the end of the year 2018. In total, only five Federal States – Schleswig-Holstein, Thuringia, Hamburg, Bremen and Berlin – have introduced the *eHC* for asylum-seekers throughout their territories. In Brandenburg, Lower-Saxony, Rhineland-Palatinate and North Rhine-Westphalia only selected districts or municipalities have done so. Table A1 in the Appendix includes a detailed overview on localities with the *eHC* as well as information on the date when the policy was implemented for each specific region.

Accordingly, we define individuals as belonging to the treatment group – those *eligible to the eHC via policy change* – if the following conditions apply: (1) asylum-seekers reported their assigned residence place in one of the regions subject to the above-described policy intervention; (2) by the date of the policy intervention, their asylum application was not yet decided (independent of the eventual decision type by the interview date); (3) they arrived less than 15 months before the date of the policy intervention. Consider, for example, an asylum-seeker arrived on July 2015 assigned to Berlin and asylum approval date of August 2016. The reform on *eHC* implementation in Berlin took place on January 2016. Given that the policy intervention in Berlin occurred before the application approval and not later than 14 months since arrival we define the asylum-seeker in the example as treated, i.e. *eligible to eHC*.

We define asylum-seekers as *eligible to the eHC via status approval* if their asylum application were approved by the interview date and this approval occurred within the first 15 months of stay in Germany. For the respondents assigned to regions subject to the *eHC* reforms, approval should occur before the date of the reform. Asylum-seekers are defined as *eligible to the eHC via duration of stay* when their duration of stay exceeds 14 months and (a) the decision on asylum applications have not yet been received (or asylum-seekers are rejected and their stay in Germany is tolerated) until that date or (b) their asylum application was approved and the date of approval lays after the date when duration stay exceeds 14 months. For the respondents assigned to regions subject to the *eHC* reforms, the 15 months or longer duration of stay should occur before the date of the reform. In all other cases – assigned to the district without reform and no or a negative decision on the asylum application and duration of stay does not exceed 15 months by the interview date – asylum-seekers are defined as *not eligible to the eHC*.

Figure 1: The electronic health card (eHC) coverage in German regions.



Maps based on municipal boundaries at December-31-2017. Dark areas denote localities with *eHC*. Bright areas denote localities without *eHC*. White segments denote unincorporated areas.

Source: Own illustration.

Confounders

Generally, the quasi-experimental research design ensures that the lack of information on confounders is randomly distributed across regions since asylum-seekers' regional allocation is exogenously driven – i.e. assignment to treatment and control is exogenous; hence, omitting any observables and unobservables should not bias our results as long as they are not related to health outcomes. However, a quasi-experiment such as ours allows for more noise than a controlled laboratory experiment. For this reason, we control for commonly-observed predictors of individual health in our multivariate analyses (see, e.g., Mascini and Van Bochove, 2009; Nickerson, Bryant, Steel, Silove, and Brooks, 2010; Walther et al. 2019). These include *gender*, *age* and *age squared*, *residence place of partner*, *ISCED-2011 educational attainment level*, and *having work experience*.

Controls specific to (humanitarian) migrants include *duration of stay* (until the interview) and *duration of stay squared*, *living in reception centers or communal accommodations*, *satisfaction with health before migration* and *traumatic experience* (during escape), and *worries about the staying perspective in Germany*. We account for *German language proficiency* because it may correlate positively with health outcomes: proficiency in German likely increases chances of precise and clear explanation of the health symptoms and problems and, consequently, promote access to health services. To absorb any unobserved systematic time-invariant or long-lasting differences in characteristics across countries of origin (such as risk of traumatic experience) or across German regions (such as health services coverage), which might correlate with the unequal treatment of asylum-seekers in one way or another, we include fixed effects for *country of origin* and for *region* measured via the district of assignment. Finally, to absorb any systematic differences related to the survey design or interview situation, we control for the type of the respondent and the survey wave. Details on the variables' construction are presented in Table B2 and descriptive statistics in Table C1 in the Appendix.

5 Results

5.1 Eligibility to the eHC and health status of asylum-seekers

Table 1 depicts the asylum-seekers' eligibility to eHC by survey year and respondent type. While depending on respondent type, between 9 and 13 percent of asylum-seekers were *eligible to the eHC via policy change*, the control group is considerably heterogeneous. In 2016, 63 percent were eligible to the eHC either via status approval or duration of stay (15 months or more); the quarter faced restrictions in healthcare access. Among the first-time respondents in 2017 – who exhibit, on average, higher duration of stay (see Table C1 in the Appendix) – only 5 percent were not eligible to eHC at all, whereas more than 80 percent via approval or duration of stay. Among repeated respondents, all asylum-seekers were granted access to the healthcare system via eHC in 2017 in one way or another.

Table 1: Eligibility to eHC by respondent type and survey year

| Eligibility to eHC | Respondent type, survey year | | |
|----------------------|------------------------------|---------------------------|-----------------------------|
| | First-time respondent, 2016 | Repeated respondent, 2017 | First-time respondent, 2017 |
| Via policy change | 11.81 | 8.89 | 13.35 |
| Via status approval | 38.76 | 46.6 | 40.78 |
| Via duration of stay | 24.42 | 44.51 | 41.11 |
| Not eligible | 25.01 | - | 4.76 |
| Total | 100 | 100 | 100 |
| Observations | 3,383 | 1,966 | 2,047 |

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017 (weighted).

How do the respective differences in the eHC eligibility relate to the health risks of asylum-seekers? Table 2 addresses this question and provides first descriptive evidence with mean health scores

disaggregated depending on the type of access to the health system. An overview on statistical tests on group comparisons is available in Table C3 in the Appendix.

On average, the PCS-score makes about 55 points suggesting that physical well-being is higher among humanitarian migrants than in the population average in Germany in 2004 (see also Brücker, Croisier, Kosyakova, Kröger, et al., 2019, p. 3). Individuals that qualify for the *eHC* as a consequence of the reform, have at least one point significantly higher physical health (PCS) compared to those eligible to the *eHC* via status approval or duration of stay. Eligibility to the *eHC* via policy change is also associated with higher PCS compared to those non-eligible at all, though this difference is not statistically significant. Within the control group, asylum-seekers with no access to the healthcare system are – statistically insignificant – better off compared to those with access as a result of approval or duration of stay.

Table 2: Health outcomes by eligibility to the *eHC*

| Health outcomes | Total ¹ | Eligibility to the <i>eHC</i> | | | N | |
|-----------------|--------------------|-------------------------------|---------------------|----------------------|-------|--------------|
| | | Via policy change | Via status approval | Via duration of stay | | Not eligible |
| PCS | 55.02 | 56.19 | 54.81 | 54.78 | 55.10 | 5,807 |
| MCS | 46.88 | 46.11 | 48.17 | 46.94 | 44.59 | 5,807 |
| PHQ4 | 3.41 | 3.55 | 2.98 | 3.40 | 4.00 | 3,086 |
| RHS-13 | 10.26 | 9.14 | 9.15 | 11.83 | - | 1,805 |

¹ Detailed statistics on dependent variables by respondent type is available in Table C2 in the Appendix. PCS = physical component summary scale; MCS = mental component summary scale; PHQ-4 = symptoms of depressive illness and anxiety; RHS-13 = refugee health screener (emotional distress).

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017 (weighted).

Other than for physical health, the mental wellbeing with the average score of 47 is below the population average in Germany. This indicates pronounced risks of mental illnesses in the population of the recently arrived humanitarian migrants with those not eligible to the *eHC* indicating the worst mental health status (MCS). Still, the data suggest not statistically significant differences compared to those eligible to the *eHC* via policy change. Asylum-seekers eligible to the *eHC* via status approval, have the highest MSC-score, followed by asylum-seekers eligible to the *eHC* via duration of stay and by those eligible via policy change.

The average PHQ4-Score of roughly 3 points to the medium level of depressive symptoms and anxiety, which is higher than in the German population (Brücker, Croisier, Kosyakova, Kröger, et al., 2019, p. 3). Additional analyses show that roughly 20 percent are greater than “yellow flag” and six percent are greater than “red flag” for the presence of depressions or anxiety. The risks of depression and anxiety are increased among asylum-seekers population non-eligible to the *eHC*. Compared to that, asylum-seekers eligible to the *eHC* via policy change show lower risks of depression and anxiety (not statistically significant difference), though they are worse off compared to asylum-seekers eligible to the *eHC* via status approval or duration of stay (not statistically significant difference).

Given threshold values specified in Section 4.2, the average RHS-score of ten points suggest that the pronounced share of asylum-seekers (in fact, 37 percent) may be counted to the at-risk group

of posttraumatic stress disorder. This is reduced for the asylum-seekers eligible to the *eHC* via reform as compared to those that qualify for obtaining the *eHC* via duration of stay. As pointed out in Section 4.2, the RHS variable is only available for repeated respondents interviewed in 2017 and have a correspondingly longer duration of stay. Consequently, the whole group is granted access to *eHC* in one way or the other such that the cell for “not eligible” remains empty.

5.2 Effect of policy change on health outcomes of asylum-seekers

The results from multivariate regressions of the PCS, MCS, PHQ-4 and RHS-13 on the eligibility to the *eHC* and a whole set of explanatory variables are summarized in Table 3.

Table 3: Multivariate Regressions of PCS, MCS, PHQ-4 and RHS-13

| | Ln(PCS) | | Ln(MCS) | | Ln(PHQ-4) | | Ln(RHS-13) | |
|--|-------------------|-------------------|-------------------|--------------------|------------------|-------------------|-------------------|-------------------|
| | M 1.1 | M 1.2 | M 2.1 | M 2.2 | M 3.1 | M 3.2 | M 4.1 | M 4.2 |
| | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) |
| Eligibility to <i>eHC</i> (Ref. via policy change) | | | | | | | | |
| Via status approval | -0.00 (0.02) | -0.00 (0.02) | -0.03 (0.02) | -0.04 (0.02) | -0.06 (0.07) | -0.02 (0.07) | 0.37*** (0.13) | 0.38*** (0.14) |
| Via duration of stay | -0.01 (0.02) | -0.01 (0.02) | -0.04 (0.02) | -0.02 (0.02) | 0.08 (0.08) | 0.02 (0.08) | 0.31** (0.14) | 0.27** (0.14) |
| Non-eligible | 0.00 (0.02) | 0.00 (0.02) | -0.07** (0.03) | -0.04 (0.03) | 0.07 (0.08) | -0.01 (0.08) | | |
| Worries about staying perspective | | 0.00 (0.00) | | -0.05*** (0.01) | | 0.16*** (0.02) | | 0.15*** (0.03) |
| Constant | 4.02*** (0.10) | 4.02*** (0.10) | 3.87*** (0.11) | 3.84*** (0.11) | 0.88** (0.35) | 1.06*** (0.37) | 1.06 (1.06) | 1.02 (1.07) |
| Citizenship fixed effects | YES | YES | YES | YES | YES | YES | YES | YES |
| District of 1st residence fixed effects | YES | YES | YES | YES | YES | YES | YES | YES |
| Controls | YES | YES | YES | YES | YES | YES | YES | YES |
| Observations | 5,087 | 5,087 | 5,087 | 5,087 | 3,086 | 3,086 | 1,805 | 1,805 |
| Adjusted R2 | 0.26 | 0.26 | 0.09 | 0.12 | 0.12 | 0.15 | 0.20 | 0.21 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

PCS = physical component summary scale; MCS = mental component summary scale; PHQ-4 = symptoms of depressive illness and anxiety; RHS-13 = refugee health screener (emotional distress). For all models, linear regressions with robust standard errors are estimated. Controls include: months since arrival to Germany, months since arrival to Germany squared, education level, age, age squared, years of work experience before migration, living arrangements, marital status, residence place of the partner, German language proficiency, health satisfaction before migration, traumatic experience, reporting on sensitive questions, district of 1st residence, nationality, respondent type, and indicators for missing values.

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017.

In line with the descriptive analyses, we do not find that eligibility to the *eHC* via policy change has any statistically significant effect on the physical health compared to asylum-seekers non-eligible to the *eHC* (Model 1.1). The differences to other control groups such as asylum-seekers eligible to the *eHC* via status approval or duration of stay turned out to be not statistically significant. Overall, asylum-seekers who have by any means access to *eHC* do not show better physical wellbeing than those with no access.

In turn, Model 2.1 suggests that asylum-seekers eligible to the *eHC* via policy change enjoy 7 percent higher MCS-score compared to the non-eligible asylum-seekers. Although the treatment group seems to have also higher MSC-scores than asylum-seekers eligible to the *eHC* via other ways, the differences are not statistically significant. Hence, we may infer that eligibility to the *eHC* generally improves asylum-seekers' mental well-being. To better grasp the mechanism behind

these relationships, we control additionally for worries about the staying perspective in Germany in Model 2.2 because asylum-seekers who are not eligible to *eHC* are generally those who are either not yet through the asylum procedure or reside less than 15 months in Germany. This group is likely to be concerned about their future and staying perspectives which, in turn, likely conditions their mental well-being – that is probably why we observe a negative effect of being non-eligible to the *eHC* on the MCS in Model 2.1. In line with that, inclusion of worries in Model 2.2 eliminates all group differences. Note, that worries are important determinants of health: a one standard deviation increase reduces MCS score by 5 percent and is a significant predictor for other psychological outcomes (Models 3.2 and 4.2).

The results for the depression symptoms and anxiety show no significant differences between asylum-seekers eligible to the *eHC* via policy change compared to other groups (Model 3.1). On the other hand, asylum-seekers with *eHC* access due status approval have 13 percent lower PHQ 4 score than those non-eligible at all (these results were tested via changing the reference category). In this sense, the mechanisms behind are less clear. Perhaps, it is not access to the healthcare system per se but rather more secure staying perspectives owing to the approved status that make one feel less depressive and anxious. This conjecture is tested in Model 3.2. We observe that inclusion of worries about the staying perspective in Germany reduces the differences between all four groups under scrutiny. Accordingly, the positive effect of eligibility to the *eHC* via status approval is likely to be driven by worries about the staying perspective in Germany, which, in turn, promotes depression symptoms and anxiety.

Other than for health outcomes above, we find a noticeable and significant effect of having access to the healthcare system as a consequence of the policy change on emotional distress (Model 4.1): After controlling for observable differences between treatment and control groups, asylum-seekers eligible to the *eHC* via policy change bear 37 percent lower RHS-13 score than those eligible via status approval and 31 percent lower RHS-13 score than those eligible after expiry of the waiting period. As pointed out, the RHS-13 variable is only available for respondents that were interviewed for the second time in 2017 and have a correspondingly rather long duration of stay so that the whole group is granted access to health care in one way or the other. In this context, those eligible to the *eHC* via policy change probably gain earlier access to the healthcare system compared to those eligible via status approval or duration of stay. These results are stable even after controlling for worries about staying perspectives (Model 4.2). Hence, provision of early, easily surmountable and unbureaucratic access to healthcare services as implemented by the *eHC* apparently has considerable positive effects on the emotional distress.

6 Discussion

As long as their asylum application is not yet approved or their duration of stay does not exceed 15 months, asylum-seekers who require doctor visit have to claim it either by the local authority for foreigners or the responsible social assistance office in Germany. The decision on the claim is met by usual employees without specific medical training which in many cases requires consultation with the local health authority and may take a few months in the worst-case scenario – these factors likely have severe consequences for the health status of refugees. Given their often dramatic,

life-threatening flight patterns and the resulting disproportionately high incidence of physical and psychological diseases, as well as substandard conditions in which many of them have to live after they enter the host country, restricted access to healthcare services may not only deteriorate the health status of humanitarian migrants but also have adverse economic and societal consequences for the host society. Such policy constellations are neither unique for Germany (e.g., Chase et al., 2017; Norredam et al., 2006; Silove et al., 1999) nor for the specific group under scrutiny – in the US, for instance, undocumented migrants face a lot of barriers in accessing health services (Kullgren, 2003).

To facilitate asylum-seekers' (earlier) access to the healthcare system, several Federal states and municipalities in Germany have introduced electronic health cards (*eHC*) which allow immediate direct, non-bureaucratic and comprehensive utilization of health services. Whether and to which extent this policy change has had an effect on the health outcomes of recently-arrived asylum-seekers in Germany, is the question we addressed in this study. For empirical identification, we take advantage of the variation of the policy change across regions and over time. The national dispersal policies on the spatial assignment of asylum-seekers to their first place of residence allows us to circumvent potential problem of regional (self-)selection, i.e., into treatment and control regions.

Our analyses show significant health improvements in terms of a lower risk of emotional distress if early general access to the health system – i. e. in the first 15 months of stay – is provided. Although no effects on physical and mental wellbeing and depressive symptoms can be proven, we are confident about the validity of our results. The used measures for physical (PCS) and mental (MCS) well-being, and symptoms of depression and anxiety (PHQ-4) are based on rather general questions and can be regarded to some extent as “soft indicators”. In turn, emotional distress (RHS-13) is in fact the most “severe” one and is directly linked to the experience of a trauma, particularly in the context of humanitarian migration. Importantly, each second in the newly-arrived population reported an experience of trauma – if at all answered to sensitive questions – and the average RHS-13 score lies closely at the threshold of increased risks of posttraumatic stress disorder. Thus, actual medical treatment is urgently needed so that for such cases the reform can unfold its positive effect by opening up treatment opportunities and options that would, otherwise, remain sealed.

The treatment of physical as well as mental illnesses requires time. In many cases the time span between the introduction of the *eHC* and the interviews with the surveyed population makes only up to two years. Hence, the success of therapy might in many cases not yet be visible. At the same time, the available capacity of relevant specialists (e.g., psychotherapists) is not even sufficient for the population in Germany, not to mention the recently arrived refugee cohorts (Albani, Blaser, Geyer, Schmutzer, and Brähler, 2010). Due to language barriers, we may expect that humanitarian migrants in particular face disadvantages regarding the first appointments with specialists (Murray and Skull, 2005). Moreover, the standard therapy offers in West European health systems such as Germany often are not able to address the needs of humanitarian migrants due to a lack of therapists specifically qualified for the treatment of posttraumatic stress disorder, on the one hand (Nationale Akademie der Wissenschaften Leopoldina, 2018; Schneider, Bajbouj, and Heinz, 2017), and targeted measures by non-specialists, for instance, provision of stress management techniques by laypersons or social workers (Bajbouj et al., 2018).

Altogether, the results evidence that the introduction of the reforms allowing asylum-seekers' faster and more direct access to the health system indeed had positive impact on their health outcomes such as emotional distress. Correspondingly, a comprehensive nationwide introduction of the *eHC* for asylum-seekers could benefit both humanitarian migrants and the German labor market and welfare state. Free access to health services, early detection of illnesses, handicaps and disabilities together with an effective treatment all may promote long-term integration into the German labor market and society. This underlines great potential from a nationwide introduction of the *eHC* for asylum-seekers and is well transferable to other countries since access to health services is restricted in most parts of the world not only for asylum-seekers and refugees but also for other groups of immigrants such as undocumented migrants.

Critics of such *eHC* reforms must be confronted with the fact that empirical results from very similar research contexts are available and – contrary to what might be assumed – prove that in fact such a reform reduces treatment costs in the medium/long run (Bozorgmehr and Razum, 2015). Another criticism is that a comprehensive introduction of the *eHC* could increase the attractiveness of Germany as a destination country relative to other contemplable destination countries and would act as an additional pull factor for humanitarian migration. However, a significant impact on the migration decision to leave the country of origin is questionable: an extremely risky journey would have to be withstood before asylum-seekers could benefit from the then unrestricted healthcare system in Germany or elsewhere in western countries.

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Appendix A: Policy context

Table A1: Regional and temporal variation in introduction of the electronic health card (eHC) for asylum-seekers in Germany

| Place (level) | | | Date | | |
|------------------------------|--------------------------|-------------------------|-------|------|------|
| Federal state | District | Municipality | Month | Year | |
| Baden-Wuerttemberg | - | - | - | - | |
| Bavaria | - | - | - | - | |
| Berlin | All | All | 1 | 2016 | |
| Brandenburg | Landkreis Teltow-Fläming | All | 9 | 2016 | |
| | Oberhavel | All | 10 | 2016 | |
| | Potsdam | All | 7 | 2016 | |
| | Dahme-Spreewald | All | 1 | 2017 | |
| | Havelland | All | 1 | 2017 | |
| | Potsdam-Mittelmark | All | 1 | 2017 | |
| | Cottbus | All | 1 | 2017 | |
| | Barnim | All | 2 | 2017 | |
| | Uckermark | All | 2 | 2017 | |
| | Frankfurt Oder | All | 2 | 2017 | |
| | Oder-Spree | All | 4 | 2017 | |
| | Prignitz | All | 4 | 2017 | |
| | Brandenburg an der Havel | All | 4 | 2017 | |
| | Spree-Neiße | All | 1 | 2018 | |
| Bremen | All | All | | 2005 | |
| Hamburg | All | All | | 2012 | |
| Hesse | - | - | - | - | |
| Lower Saxony | Delmenhorst | All | 1 | 2017 | |
| Mecklenburg-Hither Pomerania | - | - | - | - | |
| North Rhine-Westphalia | Bonn | All | 1 | 2016 | |
| | Bochum | All | 1 | 2016 | |
| | Mülheim an der Ruhr | All | 1 | 2016 | |
| | Köln | All | 3 | 2016 | |
| | Münster | All | 3 | 2016 | |
| | Düsseldorf | All | 4 | 2016 | |
| | Oberhausen | All | 4 | 2016 | |
| | Remscheid | All | 4 | 2016 | |
| | Mönchengladbach | All | 7 | 2016 | |
| | | Gevelsberg | | 1 | 2016 |
| | | Monheim am Rhein | | 1 | 2016 |
| | | Wetter (Ruhr) | | 3 | 2016 |
| | | Herdecke | | 4 | 2016 |
| | | Dülmen | | 4 | 2016 |
| | | Hattingen | | 4 | 2016 |
| | | Alsdorf | | 3 | 2016 |
| | | Leichlingen (Rheinland) | | 1 | 2016 |
| | | Wermelskirchen | | 2 | 2016 |
| | | Bocholt | | 3 | 2016 |
| | | Moers | | 4 | 2016 |
| | | Sprockhövel | | 4 | 2016 |
| | Gladbeck | | 1 | 2017 | |
| | Hennef | | 1 | 2017 | |
| | Troisdorf | | 1 | 2017 | |
| Rhineland-Palatinate | Trier | All | 1 | 2017 | |
| | Mainz | All | 7 | 2017 | |
| | Kusel | All | 7 | 2017 | |
| Saarland | - | - | - | - | |
| Saxony | - | - | - | - | |
| Schleswig-Holstein | All | All | 1 | 2016 | |
| Thuringia | All | All | 1 | 2017 | |

Source: (Berlin.de, 2015; Deutsches Ärzteblatt, 2017; Landkreis Teltow-Fläming, 2016; Maybaum, 2016; Medizinische Flüchtlingshilfe Göttingen e.V., 2019a, 2019c, 2019b; Ministerium für Soziales, Arbeit, 2017; Oderzeitung, 2016; Wächter-Raquet, 2016).

Appendix B: Details on construction of variables

Table B1: Survey questions underlying the utilized health indicators

| Indicator | Question | Response Scale | |
|---|--|---|---|
| PCS / MCS <i>(Different factor loadings for both indicators)</i> | If you have to climb stairs, i.e. walk up several floors: Does your state of health restrict you a lot, a little or not at all? | 1 ("A lot") – 3 ("Not at all") | |
| | And what about other strenuous activities in everyday life, e.g. when you have to lift something heavy or need to be mobile: Does your state of health restrict you a lot, a little or not at all? | 1 ("A lot") – 3 ("Not at all") | |
| | How often in the last four weeks, due to health problems of a physical nature, did you achieve less in your work or everyday activities than you actually intended? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks, due to health problems of a physical nature, have you been restricted in the type of tasks you can perform in your work or everyday activities? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks did you suffer from severe physical pain? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks did you feel full of energy? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks, due to health or psychological problems, have you been restricted in terms of your social contact to for example friends, acquaintances or relatives? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks, due to psychological or emotional problems, did you perform your work or everyday activities less carefully than usual? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks, due to psychological or emotional problems, did you achieve less in your work or everyday activities than you actually intended? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks did you feel calm and balanced? | 1 ("All the time") – 5 ("Never") | |
| | How often in the last four weeks did you feel in low spirits and melancholy? | 1 ("Not at all") – 4 ("Almost every day") | |
| | How would you describe your current state of health? | 1 ("Poor") – 5 ("Very Well") | |
| | PHQ-4 | Now let's talk about the last two weeks. How often have you felt negatively affected by the following complaints in the last two weeks? | |
| | | Little interest or pleasure in your activities? | 1 ("Not at all") – 4 ("Almost every day") |
| Low spirits, melancholy or hopelessness? | | 1 ("Not at all") – 4 ("Almost every day") | |
| Nervousness, anxiety or tension? | | 1 ("Not at all") – 4 ("Almost every day") | |
| Unable to stop or control worrying? | | 1 ("Not at all") – 4 ("Almost every day") | |
| RHS-13 | | Here is a list of symptoms. Please indicate the degree to which you had these symptoms in the last month. | |
| | | Muscle, bone or joint pain. | 1 ("Not once") – 5 ("A lot") |
| | | Feelings of unhappiness, melancholy or depression for most of the time. | 1 ("Not once") – 5 ("A lot") |
| | | Thinking or worrying too much. | 1 ("Not once") – 5 ("A lot") |
| | | Feelings of helplessness. | 1 ("Not once") – 5 ("A lot") |
| | Sudden and unexplained feelings of fear | 1 ("Not once") – 5 ("A lot") | |
| | Feeling faint, dizzy or weak | 1 ("Not once") – 5 ("A lot") | |
| | Anxiety or inner apprehension | 1 ("Not once") – 5 ("A lot") | |
| | Feeling fidgety, inability to sit still | 1 ("Not once") – 5 ("A lot") | |
| | Feeling the desire to cry suddenly | 1 ("Not once") – 5 ("A lot") | |
| The following symptoms can be related to traumatic events experienced during war and migration. To what degree did you experience these symptoms during the last month? | | | |
| Feeling as if you are re-experiencing this traumatic event, feeling as if it's happening all over again | 1 ("Not once") – 5 ("A lot") | | |
| Physical symptoms (e.g. outbreaks of sweat, rapid heartbeat) when you are reminded of this traumatic event | 1 ("Not once") – 5 ("A lot") | | |
| Feeling emotionally numb (e.g. feeling sad but unable to cry, inability to feel loving emotions) | 1 ("Not once") – 5 ("A lot") | | |
| Been more jumpy than usual, easier to startle (e.g. if someone comes up behind you) | 1 ("Not once") – 5 ("A lot") | | |

PCS = physical component summary scale, MCS = mental component summary scale, PHQ-4 = symptoms of depressive illness and anxiety, RHS-13= refugee health screener.

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017.

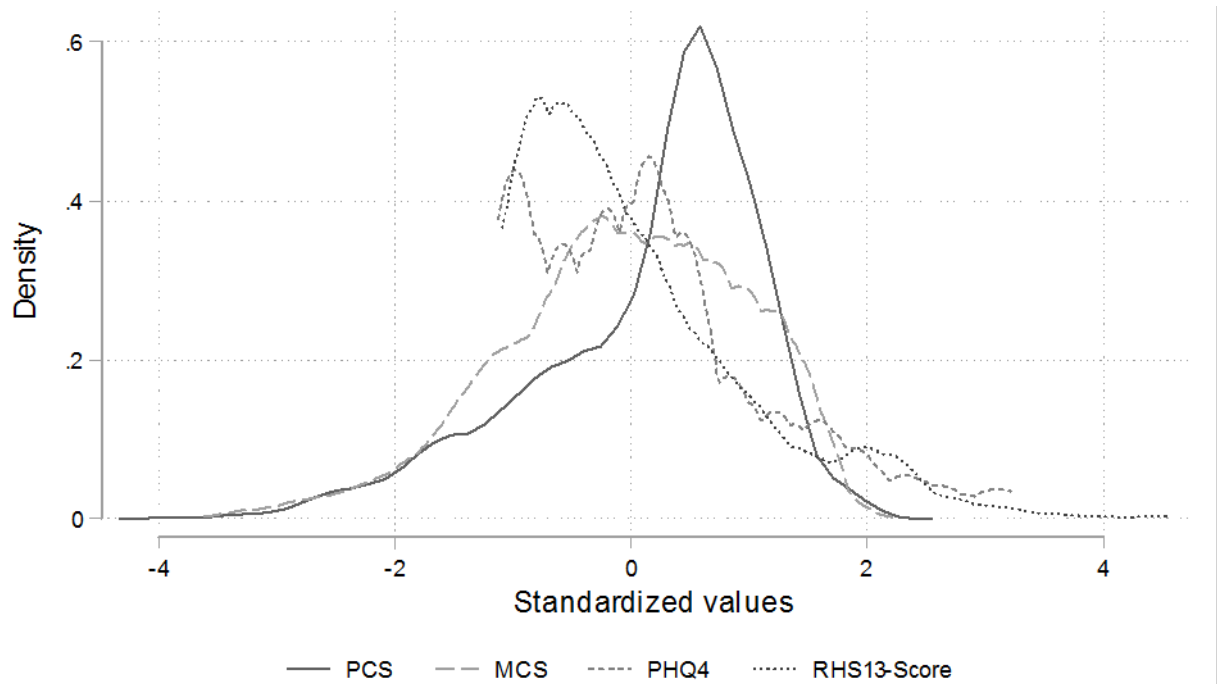
Table B2: Information about the coding of variables

| Variable | Coding |
|---|--|
| Age | Derived based on the birth year of the respondent and date of the interview. We also include age squared. |
| District of 1st residence | Dummy variables for the 1st or longest residence place in Germany. Based on two survey questions: "Now, please think of the accommodation in which you were housed the longest in Germany before your current accommodation. Where was this accommodation?" 1) Location; 2) Near; 3) State. „Is your current accommodation your first accommodation in Germany or have you previously lived in one or more other forms of accommodation in Germany?“ We assume that the longest residence place before the current one corresponds to the first (assigned) one. |
| Education level before arrival to Germany | We compute the ISCED-A 2011 indicator based on survey questions regarding (i) the highest education attainment, (ii) years of schooling, (iii) last visited type of school. From (iii) the completion of the previous educational program was assumed. Persons with at least 6 years of schooling were assigned ISCED 1 even if they did not report any educational attainment. |
| = 1 | Primary or less |
| = 2 | Lower secondary |
| = 3 | Upper secondary or post-secondary |
| = 4 | Bachelor level or above |
| Female | Self-reported gender. Male (=0); Female (=1) |
| German language proficiency | Respondents were asked about their current language proficiency (at the time of the interview) regarding speaking, writing and reading on a scale from 1 "Not at all" to 5 "Very well". For the dummy variable used in regressions we compute the mean over the three indicators and define a value of 4 or 5 as "good German". |
| Health satisfaction before migration | The variable is scaled between 0 ("totally dissatisfied") and 10 ("totally satisfied"). Underlying survey question: "Please think back to the time before the crisis, the war or the conflict in your country of origin. How satisfied were you with your health at that time?" |
| Living arrangements | Based on a survey question that was answered by the interviewer (recall that the IAB-BAMF-SOEP Survey of Refugees is a household survey where professional interviewers conduct CAPI on-site) we coded the following regarding the current type of accommodation: |
| = 0 | Shared/communal accommodation |
| = 1 | Private flat |
| Months since arrival | Derived based on the month of the interview and the months of arrival to Germany. Underlying survey question: "When did you arrive in Germany?". We also include the squared variable. |
| Nationality | Dummy variables based on the survey question: "What is your country of citizenship?" |
| Residence place of the partner | Derived based on the survey questions "Do you currently have a partner?" and "Where does your partner live?" |
| = 0 | No partner |
| = 1 | Partner lives in household |
| = 2 | Partner lives outside the household in Germany |
| = 3 | Partner lives outside Germany |
| Respondent type | Coded according to type of participation in the survey: |
| = 1 | Only wave 1, year 2016 |
| = 2 | Only wave 2, year 2017 |
| = 3 | Wave 1 and wave 2 |
| = 4 | Refreshment sample 2017 |
| Survey wave | Wave 1, year 2016 (=1); Wave 2, year 2017 (=2) |
| Traumatization experience (TC) | Based on the question regarding experience of one or more traumatic experience (financial fraud or financial exploitation; sexual harassment; physical attacks; shipwreck; robbery; blackmail; imprisonment) during the journey or escape. The question was asked only if the respondent agreed to report his or her experiences connected with the escape. |
| = 1 | No (none of the listed traumatic experiences is selected) |
| = 2 | Yes (at least one of the listed traumatic experiences is selected) |
| = 3 | No reporting of the experiences connected with the escape |
| Worries about staying perspective | The index is based on the z-standardized mean over two survey questions regarding worries about the staying perspective in Germany which can be answered on a 1 ("No, I don't worry at all") to 3 ("Yes, I worry a lot") scale. Are you worried about the result of your asylum application? Are you worried that you will be unable to stay in Germany? |
| Working experience (in years) | Derived based on calendar information from the survey in which people should indicate which type of activities they pursued in each year of their life since the age of 15. These included 10 categories of which more than 1 could be selected for every year. We added the years where either part time, full time employment or both were reported before migrating from the origin country, including regular, professional soldier and minor employment. |

Source: Own elaborations based on IAB-BAMF-SOEP Survey of Refugees 2016, 2017

Appendix C: Descriptives, additional analyses, model fit and omitted control

Figure C1: Distribution of (standardized) health indicators



Kernel-Density estimation (kernel=epanechnikov, bandwidth: 0.1444).

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017 (weighted).

Table C1: Descriptive statistics on control variables

| | Respondent type, Survey year | | | | | | Person-month observations |
|--|------------------------------|--------|------------------------|--------|----------------------|---------|---------------------------|
| | New respondent, 2016 | | Panel respondent, 2017 | | New respondent, 2017 | | |
| | Mean | (SD) | Mean | (SD) | Mean | (SD) | |
| Citizenship: Syria | 0.43 | (0.49) | 0.48 | (0.50) | 0.40 | (0.49) | 7,027 |
| Citizenship: Afghanistan | 0.15 | (0.36) | 0.10 | (0.30) | 0.18 | (0.38) | 7,027 |
| Citizenship: Iraq | 0.09 | (0.28) | 0.08 | (0.27) | 0.11 | (0.32) | 7,027 |
| Citizenship: Eritrea | 0.05 | (0.21) | 0.06 | (0.24) | 0.03 | (0.17) | 7,027 |
| Citizenship: Iran | 0.02 | (0.14) | 0.03 | (0.16) | 0.04 | (0.21) | 7,027 |
| Citizenship: Rest of MENA | 0.03 | (0.18) | 0.04 | (0.20) | 0.03 | (0.18) | 7,027 |
| Citizenship: Russia | 0.02 | (0.13) | 0.01 | (0.10) | 0.01 | (0.08) | 7,027 |
| Citizenship: Rest of former USSR | 0.02 | (0.12) | 0.01 | (0.11) | 0.02 | (0.15) | 7,027 |
| Citizenship: West Balkan | 0.05 | (0.21) | 0.03 | (0.17) | 0.02 | (0.13) | 7,027 |
| Citizenship: Rest of Africa | 0.10 | (0.30) | 0.10 | (0.30) | 0.09 | (0.29) | 7,027 |
| Citizenship: Rest | 0.04 | (0.21) | 0.05 | (0.21) | 0.04 | (0.19) | 7,027 |
| Citizenship: Missing | 0.02 | (0.14) | 0.02 | (0.14) | 0.02 | (0.13) | 7,027 |
| Current Age | 30.46 | (9.94) | 31.53 | (9.87) | 30.13 | (10.51) | 7,027 |
| Female | 0.25 | (0.43) | 0.20 | (0.40) | 0.32 | (0.47) | 7,027 |
| Months since arrival | 15.95 | (8.30) | 32.63 | (8.68) | 21.37 | (6.75) | 7,027 |
| Residence in shared accommodation | 0.51 | (0.50) | 0.33 | (0.47) | 0.48 | (0.50) | 7,001 |
| No partner | 0.49 | (0.50) | 0.45 | (0.50) | 0.46 | (0.50) | 6,986 |
| Partner lives in household | 0.32 | (0.47) | 0.35 | (0.48) | 0.39 | (0.49) | 6,986 |
| Partner lives in outside the household | 0.05 | (0.22) | 0.10 | (0.30) | 0.05 | (0.21) | 6,986 |
| Partner lives in outside Germany | 0.14 | (0.35) | 0.10 | (0.30) | 0.10 | (0.31) | 6,986 |
| ISCED: primary or less | 0.34 | (0.47) | 0.32 | (0.47) | 0.37 | (0.48) | 7,027 |
| ISCED: lower secondary | 0.18 | (0.38) | 0.20 | (0.40) | 0.22 | (0.42) | 7,027 |
| ISCED: upper secondary or post-secondary | 0.29 | (0.45) | 0.28 | (0.45) | 0.25 | (0.43) | 7,027 |
| ISCED: Bachelor level or above | 0.12 | (0.33) | 0.14 | (0.34) | 0.10 | (0.30) | 7,027 |
| ISCED: missing | 0.08 | (0.27) | 0.07 | (0.26) | 0.06 | (0.23) | 7,027 |
| Years of work experience before arrival | 7.26 | (8.68) | 7.32 | (8.75) | 6.42 | (8.71) | 7,027 |
| Health satisfaction before migration | 8.25 | (2.30) | 8.25 | (2.30) | 8.44 | (2.30) | 6,710 |
| Non-reporting on sensitive questions | 0.31 | (0.46) | 0.27 | (0.44) | 0.46 | (0.50) | 7,027 |
| With traumatic experience | 0.58 | (0.49) | 0.60 | (0.49) | 0.49 | (0.50) | 4,675 |
| Worries about staying perspective | 0.14 | (1.03) | 0.05 | (1.00) | 0.32 | (0.99) | 7,000 |
| (Very) good German language proficiency | 0.19 | (0.39) | 0.45 | (0.50) | 0.24 | (0.43) | 7,027 |

Variation in the sample size (column 4) is due to differences in missing data across variables. In the multivariate models, we control for missing values in the variables. For illustration purposes, we aggregated citizenship into 12 groups. SD = standard deviation.

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017 (weighted).

Table C2: Descriptive statistics on health indicators

| | | Respondent type, survey year | | |
|--------|--------|------------------------------|------------------------|----------------------|
| | | New respondent, 2016 | Panel respondent, 2017 | New respondent, 2017 |
| PCS | Mean | 55.01 | | 55.05 |
| | Median | 58.01 | | 58.08 |
| | N | 3,122 | | 1,961 |
| MCS | Mean | 46.70 | | 47.29 |
| | Median | 47.57 | | 47.51 |
| | N | 3,122 | | 1,961 |
| PHQ-4 | Mean | 3.41 | | |
| | Median | 3.00 | | |
| | N | 3,086 | | |
| RHS-13 | Mean | | 10.26 | |
| | Median | | 8.00 | |
| | N | | 1,797 | |

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017 (weighted).

Table C3: Health outcomes by eligibility to eHC, statistical test of differences

| | Group comparison (Wald test) | | | | | |
|--------|------------------------------|-----------|-----------|-----------|-----------|-----------|
| | 1 vs. 2 | 1 vs. 3 | 1 vs. 4 | 2 vs. 3 | 2 vs. 4 | 3 vs. 4 |
| PCS | p = 0.048 | p = 0.053 | p = 0.238 | p = 0.958 | p = 0.688 | p = 0.674 |
| MCS | p = 0.014 | p = 0.359 | p = 0.213 | p = 0.032 | p = 0.000 | p = 0.027 |
| PHQ4 | p = 0.010 | p = 0.530 | p = 0.129 | p = 0.025 | p = 0.000 | p = 0.026 |
| RHS-13 | p = 0.997 | p = 0.046 | - | p = 0.000 | - | - |

Group 1 refers to asylum-seekers eligible to the eHC via policy change; Group 2 refers to asylum-seekers eligible to the eHC via status approval; Group 3 refers to asylum-seekers eligible to the eHC via duration of stay; Group 4 refers to asylum-seekers non-eligible to the eHC.

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017 (weighted).

Table C4: Multivariate Regressions of PCS, MCS, PHQ-4 and RHS-13: controls omitted from Table 3

| | Ln(PCS) | | Ln(MCS) | | Ln(PHQ-4) | | Ln(RHS-13) | |
|--|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| | M 1.1 | M 1.2 | M 2.1 | M 2.2 | M 3.1 | M 3.2 | M 4.1 | M 4.2 |
| | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) | Coef. (SE) |
| <i>Wave 2</i> | 0.00 (0.01) | 0.00 (0.01) | 0.00 (0.01) | 0.02 (0.01) | | | - | - |
| <i>Type of the respondent (Ref. Participated only in wave 1)</i> | | | | | | | | |
| Participated only in wave 2 | -0.00 (0.01) | -0.00 (0.01) | 0.04** (0.02) | 0.05** (0.02) | | | | |
| Participated in both waves | 0.00 (0.01) | 0.00 (0.01) | 0.02* (0.01) | 0.02* (0.01) | -0.03 (0.03) | -0.02 (0.03) | 0.00 (.) | 0.00 (.) |
| Refreshment sample in wave 2 | 0.00 (.) | 0.00 (.) | 0.00 (.) | 0.00 (.) | | | | |
| <i>Months since arrival</i> | 0.00 (0.00) | 0.00 (0.00) | -0.01** (0.00) | -0.00** (0.00) | 0.00 (0.01) | -0.00 (0.01) | -0.00 (0.02) | -0.00 (0.02) |
| <i>Months since arrival squared</i> | -0.00 (0.00) | -0.00 (0.00) | 0.00* (0.00) | 0.00 (0.00) | -0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| <i>ISCED educational attainment (Ref. primary or less)</i> | | | | | | | | |
| Lower secondary | 0.01 (0.01) | 0.01 (0.01) | 0.02 (0.01) | 0.02 (0.01) | -0.07* (0.04) | -0.07* (0.04) | -0.14* (0.08) | -0.14* (0.08) |
| Upper secondary or post-secondary | 0.02** (0.01) | 0.02*** (0.01) | 0.01 (0.01) | 0.01 (0.01) | -0.04 (0.04) | -0.03 (0.04) | -0.12 (0.07) | -0.10 (0.07) |
| Bachelor level or above | 0.04*** (0.01) | 0.04*** (0.01) | -0.02 (0.02) | -0.02 (0.01) | 0.03 (0.05) | 0.04 (0.05) | 0.11 (0.08) | 0.11 (0.08) |
| <i>Age</i> | -0.00*** (0.00) | -0.00*** (0.00) | -0.00 (0.00) | -0.00 (0.00) | 0.00 (0.01) | 0.00 (0.01) | 0.01 (0.01) | 0.01 (0.01) |
| <i>Age squared</i> | -0.00** (0.00) | -0.00** (0.00) | -0.00 (0.00) | -0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) | 0.00 (0.00) |
| <i>Female</i> | -0.06*** (0.01) | -0.06*** (0.01) | -0.07*** (0.01) | -0.08*** (0.01) | 0.15*** (0.03) | 0.15*** (0.03) | 0.33*** (0.06) | 0.33*** (0.06) |
| <i>Working experience (in years)</i> | 0.00*** (0.00) | 0.00*** (0.00) | 0.00 (0.00) | 0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) | -0.00 (0.00) |
| <i>Residence in shared accommodation</i> | -0.01* (0.01) | -0.01* (0.01) | 0.05*** (0.01) | 0.05*** (0.01) | -0.14*** (0.04) | -0.12*** (0.04) | -0.08 (0.07) | -0.07 (0.07) |
| <i>Residence place of partner (Ref. No partner)</i> | | | | | | | | |
| Partner lives in household | -0.01 (0.01) | -0.01 (0.01) | 0.04*** (0.01) | 0.04*** (0.01) | -0.08** (0.04) | -0.08** (0.04) | -0.29*** (0.06) | -0.29*** (0.06) |
| Partner lives outside the household in Germany | -0.00 (0.01) | -0.00 (0.01) | 0.02 (0.03) | 0.02 (0.03) | -0.01 (0.07) | -0.03 (0.07) | 0.01 (0.11) | 0.03 (0.10) |
| Partner lives outside Germany | 0.00 (0.01) | 0.00 (0.01) | -0.05*** (0.02) | -0.04** (0.02) | 0.20*** (0.06) | 0.19*** (0.05) | 0.05 (0.11) | 0.05 (0.10) |
| <i>(Very) good German language proficiency</i> | 0.00 (0.01) | 0.00 (0.01) | 0.03** (0.01) | 0.02** (0.01) | -0.07* (0.04) | -0.05 (0.04) | -0.19*** (0.06) | -0.17*** (0.06) |
| <i>Health satisfaction before migration</i> | 0.02*** (0.00) | 0.02*** (0.00) | 0.01*** (0.00) | 0.01*** (0.00) | -0.03*** (0.01) | -0.04*** (0.01) | -0.05*** (0.01) | -0.04*** (0.01) |
| <i>Traumatic experience (Ref. No traumatic experience)</i> | | | | | | | | |
| With traumatic experience | -0.02*** (0.01) | -0.02*** (0.01) | -0.04*** (0.01) | -0.04*** (0.01) | 0.14*** (0.03) | 0.11*** (0.03) | 0.19*** (0.06) | 0.16*** (0.06) |
| Non-reporting on sensitive questions | -0.02** (0.01) | -0.02** (0.01) | 0.00 (0.01) | 0.01 (0.01) | 0.02 (0.04) | 0.01 (0.04) | 0.00 (0.07) | -0.01 (0.07) |

* p < 0.10, ** p < 0.05, *** p < 0.01

PCS = physical component summary scale; MCS = mental component summary scale; PHQ-4 = symptoms of depressive illness and anxiety; RHS-13 = refugee health screener (emotional distress). For all models, linear regressions with robust standard errors are estimated. Models further control for missing values in residence, in education level, shared accommodation, residence place of partner, German language proficiency.

Source: IAB-BAMF-SOEP Survey of Refugees 2016, 2017.

Appendix D: References for Table A1

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