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Development of Mental Distress of Refugees in Austria During their Economic and Social Integration in 2017-2022

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Abstract

Refugees are more likely to develop mental diseases as most of them have been exposed to potentially traumatic events and fundamental stressors in their home countries, during migration and after resettling in the host countries. This diminishes their prospects for social and economic integration, which also may have detrimental effects on their mental health. We examine the prevalence of mental disorders in the refugee population from Afghanistan, Iraq, Iran and Syria who arrived in Austria recently, drawing on data from four waves of the FIMAS refugee survey project. Interviews were conducted between December 2017 and April 2022 in Austria, with a specific focus on Vienna, Salzburg, Graz, Linz and Innsbruck. We found a high share of refugees (31% in 2017/2018, declining to 26% in 2022) who showed moderate or severe levels of mental distress. Women were found to have a significantly higher risk of mental illness. We also investigate the effects of mediators on mental health, applying pooled and panel regression model. A positive association was found, for example, in the cases of discrimination experienced in Austria and obviously potentially traumatic events experienced during migration. Negative correlations were detected for certain mitigating factors that foster resilience, such as proficiency in the German language, living in the same household with one's partner and children, being employed, having more supportive relationships, and being more satisfied with the housing situation.

Keywords: refugees, mental health, social integration, labour market integration, longitudinal study

JEL classifications: I10, J15, F22

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1. Introduction

Refugees in high-income host countries show considerably higher prevalence rates of mental health problems than the non-refugee population, including non-humanitarian migrants (Henkelmann et al., 2020). Meanwhile, a substantial gap in the labour market integration of refugees can be observed in comparison to the rest of the population in those countries in general, which is also true for Austria (Jestl et al., 2022). Thus, we assume the elevated levels of distress to be not only a mental health impairment for the individual refugee, but also to constitute a serious problem for the host countries, as it acts as a barrier to the social and economic integration of immigrants (Aroian et al., 1998). Refugees, in particular those who arrived in Austria (and Europe in general) in recent years from Middle East countries, had in many cases already been exposed to various risk factors for mental health problems in their home countries and during their journeys to safer places. Many of them experienced war, violence (or at least the fear of persecution), and had to face economic hardships including having their basic needs not met. Separation from family members and from support networks are risk factors. The stress of acculturation is in general rather high for people who have experienced forced migration, who resettle in societies where norms and language are unfamiliar. Unsecure asylum status, close family members left behind in the country of origin, lack of good relationships and a social network in the host country, and a loss of status arising from missing adequate employment opportunities are among other post-migration risk factors for mental diseases (see Aroian et al., 1998; Priebe et al., 2016; Giacco and Priebe, 2018).

Austria has been an important recipient of asylum seekers in Europe in recent years. In the period 2011-2021, some 314,000 asylum applications were filed in Austria (Eurostat, 2019; 2023a) and roughly 265,000 positive first decisions on asylum applications (including subsidiary protection and protection on humanitarian grounds) were reported by the Austrian authorities (Eurostat, 2023b).

In this paper, we examine the level of mental distress and thus the likelihood of mental disorders of adult refugees, particularly from Afghanistan, Iraq, Iran and Syria who arrived in Austria in the years 2011 to 2022. We draw on primary data from four waves of the FIMAS refugee survey project. Interviews were conducted between December 2017 and April 2022 in Austria, with a specific focus on Vienna, Salzburg, Graz, Linz and Innsbruck. We describe the level of mental distress perceived and examine the moderating effects of stressors and supportive factors for resilience by applying multivariate pooled and panel regression analysis.

In a previous paper (Leitner et al., 2019), we analysed data of the second wave of the survey. We detected a considerable level of clinically relevant mental distress among the refugees interviewed between December 2017 and April 2018. Moreover, we found that specific subgroups of refugees (such as younger age cohorts) tend to show higher levels of mental distress. Several associations between pre- and post-migration stressors and mediators and mental health were found to be robust. Four years later, we have the possibility of using data from four waves of the FIMAS survey project, allowing us to provide a broader picture with pooled regression but also to follow over time those who arrived early on, with panel regressions. Moreover, weights were made available for the survey, which makes the results more representative for the refugee population.

2. Literature review

The analysis of prevalence of mental health disorders among refugees shows that rates vary considerably (Fazel et al., 2005; Lindert et al., 2009; Bogic et al., 2015; Priebe et al., 2016) on investigation of the common disorders: PTSD, anxiety disorders and depression. In a systematic review of long-term mental health of war refugees, Bogic et al. (2015) state a range of prevalence rates of 4-86% for PTSD, 20-88% for anxiety disorders and 2-80% for depression. This is because the refugee population in general is very heterogeneous in respect to countries of origin, the personal living situation before migration and experienced traumas in the countries of origin. After migration, living conditions of refugees also can vary considerably, depending on the provisions of the host country and, for example, the actual legal status of the humanitarian migrant. Moreover, many of the studies on refugees' mental health rely on small samples and non-random sampling methods. Differences in sample selection and methodological approaches result in strong variations in prevalence rates. Studies using convenience sampling tend to result in higher prevalence rates in comparison to research applying more representative sampling methodology (Bozorgmehr et al., 2016). In a recent systematic review with meta-analysis, Henkelmann et al. (2020) find that, based on the literature, we can assume that about a third of the refugees who have resettled in high-income countries show diagnosable PTSD or depression, or both. The prevalence of clinically relevant anxiety disorder is estimated at 10-20% of the refugee population.

A further important finding substantiated in Henkelmann et al. (2020) was that the prevalence rates for refugees remained high over time. This underlines that not only are refugees more likely to have or develop mental disorders in comparison to the non-refugee population in the host countries (including non-humanitarian migrants), but they remain highly vulnerable even years after arriving and resettling in a safe high-income country. This highlights the need for adequate treatment for the affected population, and also the importance of post-migration factors and living conditions that can alleviate, but also aggravate, trauma-related symptoms.

The literature on pre- and post-migration factors of mental health finds that refugees who experience a traumatic event show significantly higher risk levels for developing PTSD or other mental health problems in the host country thereafter (Cooper et al., 2019). Multiple incidences and types of traumatic events further increase the risk of mental illness. This is the case both for events that happened in the refugee's home country and during the migration towards their host countries.

Concerning post-migration circumstances, the actual resident status of forced migrants was found to be significantly associated with mental distress levels in studies on Syrian refugees in Germany (Borho et al., 2020; Georgiadou et al., 2018; Nutsch and Bozorgmehr, 2020). Because recognised refugees with permanent residence status attain access to the labour market, language courses and many other resources, this finding comes as no surprise.

Acquiring language skills is one of the factors not only associated with lower levels of mental distress at the individual level, but one that reduces psychological strain causally (Kartal et al., 2019). In addition, weak

social and community networks as well as perceived discrimination are relevant to an aggravation of symptoms. Among those refugees who have not achieved family reunification (yet), mental disease symptoms are more prevalent. Migrating permanently from the country of origin to a safe but unfamiliar host country can result in acculturation stress as the societal norms of the new country are in many cases unknown to the refugee. It takes time to find one's place in the host communities and countries (Nowak et al., 2023). Experiencing a strong downward mobility in social status in the host country compared with the home country results in a difficult mental burden for many refugees (Costa et al., 2020).

Housing conditions are another important mediator for mental distress. Refugees living in institutional accommodation (Porter and Haslam, 2005) are found to show higher prevalence rates of mental diseases, while the change to private accommodation and housing satisfaction in general are associated with higher levels of mental well-being (Walther et al., 2020a; Nutsch and Bozorgmehr, 2020).

Having restricted economic opportunities and financial resources is a risk for mental health of migrants in general. However, in a study based on longitudinal data on refugees in Australia, Jiang et al. (2023) show that, particularly for men, the association between paid employment and mental well-being is significant after a longer time in the host country. Dang et al. (2023) apply an instrumental variable model and find, based on the same Australian longitudinal data (the 'Building a New Life in Australia' survey), that higher mental distress results in lower employment probability and lower income. Moreover, they and Bryant et al. (2018) find evidence for negative impacts of refugees' mental illness on their children's mental health and education performance.

3. Data and methodology

The analysis presented in this paper is based on data of the FIMAS survey project, which was launched in 2016. Within the framework of the FIMAS project, asylum seekers and refugees were interviewed annually to biennially on topics of integration. One of the overarching objectives of the FIMAS project is to establish pooled and longitudinal data to analyse not only the current situation of recently arrived refugees, but also to track their economic and social integration in Austria.

The series of FIMAS surveys[1] was realised by the International Centre for Migration Policy Development (ICMPD) together with the University of Graz and the Vienna Institute for International Economic Studies (wiiw). In this paper, we use data from wave 2 (FIMAS+INTEGRATION: interviews conducted between December 2017 and April 2018), wave 3 (FIMAS+INTEGRATION2: March to May 2019), wave 4 (FIMAS-YOUTH: October to December 2020) and wave 5 (FIMAS-Women: February to April 2022). In wave 2 of the survey (FIMAS+INTEGRATION), there were different modes of data collection. Computer-assisted self-administered and personal interviews (CASI or CAPI) were carried out at various relevant establishments (public employment services, counselling and training centres for migrants, etc.) in Vienna, Salzburg, Graz, Linz and Innsbruck (i.e., in Austria's capital and other Austrian cities). Refugees were also invited to participate via mail or e-mail in order to expand the coverage of the survey. Therefore, an invitation to the online version of the survey (CAWI: computer-assisted web interview) was sent to addresses provided by the Austrian public employment service (the AMS). This second part of the survey was based on a stratified random sample of refugees registered in the AMS database. In wave 3 (FIMAS+INTEGRATION2), the CASI/CAPI modes were applied for only about 10% of the interviews (25% in wave 2); the rest were again web-based (CAWI). In wave 4 (FIMAS+YOUTH) and wave 5 (FIMAS+Women), only the CAWI data collection mode was applied, partly because of COVID-19 restrictions. Assistance was offered if needed from Farsi- and Arabic-speaking interviewers via telephone (CATI: computer-assisted telephone interview).

The FIMAS questionnaire focuses, apart from demographic and household characteristics, specifically on labour market issues and additionally covers various spheres of life of the refugees. From these, we selected those that are associated with mental health, migration experiences such as social and cultural integration, education and well-being, and housing. A number of possible stressors and resilience factors that could influence the level of mental strain of refugees were also captured in the survey. Demographic characteristics comprise gender, age (we reduced our sample to those aged between 15 and 65) and detailed information on the household structure. Thus, we know not only whether a person lives in a partnership and also the number of children, but also if the latter lived in the same household at the time of the interview.

[1] More detailed information on the methodology and the sample of individual surveys is provided in the following publications of ICMPD: on FIMAS+INTEGRATION: Hosner and Palinkas (2020), FIMAS+INTEGRATION2: Baumgartner, et al. (2020), FIMAS+YOUTH: Baumgartner, et al. (2021) and on FIMAS+Women: Baumgartner, et al. (2023).

Information on physical health and health problems, in particular the level of physical pain experienced in the past four weeks before the interview, would be available in the FIMAS survey data. Somatisation symptoms (medically unexplained physical symptoms) were also found to be prevalent in the refugee population, including pain – for example, in the back, the heart and muscles – and feelings of physical weakness (Morina et al., 2018). The literature highlights that somatisation symptoms are not only common among refugees but accompany mental disorders such as PTSD, etc. (Liedl and Knaevelsrud, 2008, Priebe et al., 2016; Lolk et al., 2016). Thus, owing to the endogeneity problem, we decided against using information on physical health issues.

In order to examine the effect of the migration experience on respondents' mental health, they were asked about different potentially traumatic events[2] during migration. Once refugees have resettled in the host country, we would expect stress levels to decrease. Thus, we calculated the years passed since arriving in Austria.

In the majority of cases, the interviewed refugees had been granted asylum according to the Geneva Convention or subsidiary protection. However, some were still in the asylum application procedure, which was captured by a dummy variable. In most recent years, a declining number of asylum seekers received a positive decision on their asylum application (Eurostat, 2023b). We thus expect the asylum application procedure to be a particularly straining period for refugees, especially when it lasts not only for months, but years.

The FIMAS survey also covers data on stressors associated with the acculturation process of refugees. On the one hand, experienced discrimination was measured on a five-item Likert scale from 'never' to 'very often'. On the other hand, information on the ability to communicate in the host country's language, which assists refugees in finding their way in society, was also reported. We used the mean value of information on understanding and speaking German. In each case, a five-item Likert scale from 'not at all' to 'like my mother tongue' was applied. No information on the ability of reading or writing German was used.

Having familiar relationships with friends and relatives can help people not only to increase their well-being in general, but also to cope with stressful episodes in their lives and stabilise mentally thereafter. Refugees were asked if they knew someone in Austria with whom they could talk about personal problems. This information has been used as a dummy variable.

In many studies, social support was significantly associated with a decreased risk in reporting depressive, anxiety and PTSD symptoms. Moreover, social support seems to be a mediator between social hardship and mental health problems (Nowak et al., 2023). Getting into contact with people outside the inner circle is likely to foster the integration of individuals into communities. Refugees were asked: 'How many people do you know in Austria whom you feel close to?' in order to assess the extent of their social network. A cut-off point of 50 persons was imposed on this variable. For Germany, Walther et al. (2020a) found that for refugees more time spent with natives was significantly associated with lower risk of experiencing mental distress, but this was not true in the case of more time spent with people from the same countries of origin. In order to analyse this association for the refugees

[2] The following types of potentially traumatising events were covered in the questionnaire: economic fraud or economic exploitation, sexual harassment, physical assault, shipwreck, robbery, extortion, imprisonment.

interviewed in the FIMAS survey, we differentiate in the case of the network variable between persons from the same country of origin and those from other countries (including persons from Austria).

Information on the highest educational attainment level acquired was classified according to ISCED 2011. However, if the highest level was not acquired in Austria but in the home country, the information was originally supplied according to the national schooling system in the country of origin and then converted into the ISCED classification.

Economic as well as social integration into the society of the host country is attained and strengthened by finding employment opportunities. We included a dummy variable if the respondent was working, irrespective of whether they were engaged in paid employment or voluntary work. Housing quality has been assessed by using information from a question on subjective satisfaction with the housing situation; an 11-item Likert scale from ‘very unsatisfied‘ (0) to ‘very satisfied‘ (10) was applied in the FIMAS questionnaire.

3.1. MEASURING MENTAL DISTRESS

In all four waves of the FIMAS survey (i.e. waves 2-5), the questionnaire contained the same instrument, the Kessler 10 scale (K10) was applied to measure the level of mental distress. The K10 scale is a simple measure of non-specific psychological distress and therefore does not focus on a specific mental health diagnosis like anxiety disorder, depression or PTSD (Kessler et al., 2002). Instead, it measures the likelihood of having a mental disorder in general. The Kessler scale has been used in the US National Health Interview Survey, the Australian National Health Survey and the longitudinal refugee survey ‘Building a New Life in Australia’. The Kessler scale was tested and found to be culturally equivalent in translated or culturally adapted versions – i.e. in these contexts, it is ensured that the original scales’ validity and reliability are maintained (Stolk et al., 2014). In order to test the validity of the K10 scale in our context, we nevertheless calculated Cronbach’s alpha for our FIMAS data. The resulting value of 0.935 substantiates the excellent applicability of the scale for measuring mental distress in the context of our refugee population.

The K10 scale comprises 10 questions about mental distress symptoms experienced during the previous four weeks, e.g. ‘In the past four weeks, about how often did you feel so nervous that nothing could calm you down?’ or ‘…about how often did you feel that everything was an effort?’. Answers are based on a five-item Likert scale from ‘none of the time’ (1) to ‘all of the time’ (5). Scores of the 10 items are then summed up, yielding a minimum total score of 10 and a maximum score of 50. A score of 20-24 is interpreted as being at risk of a mild form of mental distress, 25-29 as a risk of having a moderate mental health problem, and 30 and above as a risk of a severe mental health problem at the time of the interview. The distinction between moderate and severe mental health problems follows the Global Assessment of Functioning (GAF) Scale (American Psychiatric Association, 2010). Moderate forms of mental health problems are likely when persons show symptoms such as occasional panic attacks, flat affect (strong reduction in emotional expressiveness) or circumstantial speech. Severe mental health problems are apparent when serious symptoms (e.g. suicidal ideation, severe obsessional rituals) or any serious impairment in social or occupational functioning (e.g. no friends, unable to keep a job) are evident.

3.2. MULTIVARIATE ESTIMATION APPROACH

In order to exploit the full information of the four waves of the survey, we will study the determinants of mental distress by estimating specifications based on the pooled cross-sectional data as well as on the longitudinal data. In the case of the pooled data, the following specification will be applied:

$$y_{it} = \beta_0 + \beta x_{it} + \gamma_t + \epsilon_{it}. \quad (1)$$

We provide models with two different dependent variables, a linear and a dichotomous one. Thus, y_{it} is the value on the Kessler scale ranging from 10 to 50 in the linear estimation model – later, we move to a Poisson and a negative binomial regression model. In order to rule out effects of heteroscedasticity, we estimate applying robust standard errors. In the dichotomous regression model, y_{it} is a dummy variable that indicates whether individuals experience levels of distress that suggest moderate or severe mental health problems (K10: 25-50). In those cases, psychotherapeutic treatment is recommended or necessary. x_{it} is the vector of explanatory variables and ϵ_{it} the error term. In order to control for differences in the labour market situation at the different times of the survey (to take just one example), we include year (i.e. survey wave) fixed effects γ_t in our specification.

Our set of explanatory variables includes gender, age groups and highest level of educational attainment, time of stay in Austria in years, dummies to indicate whether the respondent experienced one or more potentially traumatising events during the migration to Austria, is a recognised refugee, lives with a partner in a household or with his or her children, whether he/she has a partner left behind in the home country or another foreign country, if the children are not living in the same household, or if the refugees experienced perceived discrimination. Further dummies indicate if the respondent has someone to talk to about personal problems or if he/she is working (paid or unpaid/voluntary work). Social integration is approximated by applying information on the extent of the personal network of respondents (differentiating between persons of the same nationality and others). We used information on proficiency in the German language (average of speaking and listening comprehension) which was measured by five-level Likert scales. Housing satisfaction was measured by an 11-level Likert scale. In addition, country of origin, province of residence in Austria and the mode of the interview were used as control variables.

In a number of explanatory variables, such as whether the refugee is working or has language proficiency, an endogeneity bias is likely to exist, owing to reverse causality or omitted characteristics of respondents. Thus, we make use of the longitudinal structure of the FIMAS survey panel data. In the latter case, the following econometric model specification will be applied:

$$y_{it} = \beta_{0t} + \beta x_{it} + \gamma_t + \mu_i + \epsilon_{it}. \quad (2)$$

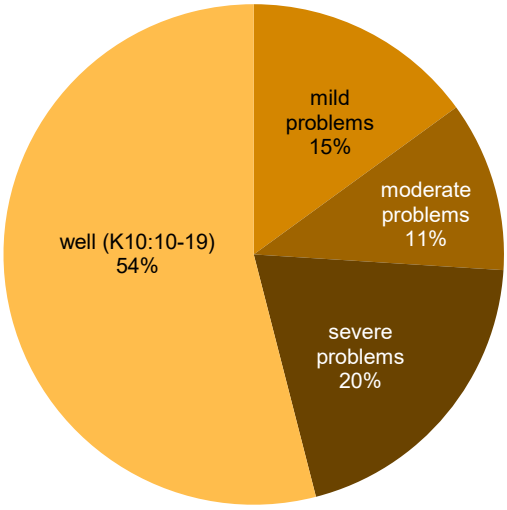
Again, as in specification (1) above, we provide models with two different dependent variables, applying a negative binomial and a dichotomous regression model. y_{it} is again either the value on the Kessler scale, describing the level of mental distress, or a dummy variable that indicates whether individuals experience levels of distress that suggest moderate or severe mental health problems and x_{it} is the vector of explanatory variables. To account for time-specific and individual-specific effects, we include year fixed effects γ_t and individual fixed effects μ_i. Finally, ϵ_{it} is the remaining error term. We cluster standard errors by individuals to allow for correlation across time.

4. Empirical results

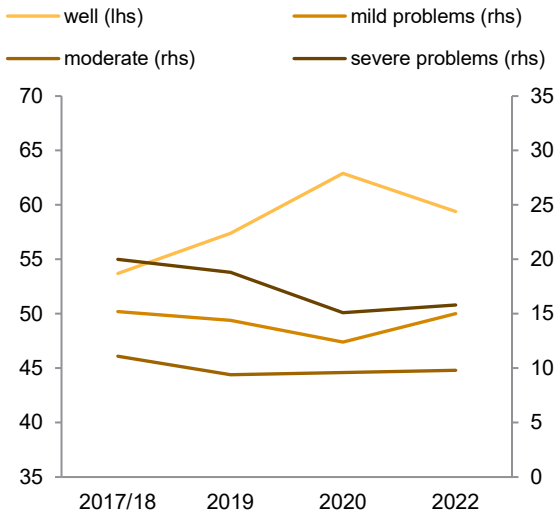
In the FIMAS surveys (waves 2-5), 10,522 persons were interviewed. In order to have a more homogeneous population, we reduced the pooled sample for our analysis to those respondents who arrived in Austria in 2011 or thereafter. Finally, 8,364 of these remaining refugees provided enough information to calculate a composite score applying the K10 scale. In this remaining sample, 62.7% of the respondents are men (see Table 1 below). Younger age groups between 15 and 34 years dominate. About 57% of the refugees are from Syria, 21% from Afghanistan, a further 13.1% from Iraq and only 8.8% from Iran. Those who arrived in 2015 account for almost 48% of the sample; the rest is divided rather equally between the pre-2014, 2014, 2016 and 2017-2021 arrival cohorts.

Figure 1 / Indication of mental health problems in the surveyed refugee population

1a / FIMAS+INTEGRATION: 2017/18



1b / FIMAS waves 2-5



Note: Shares calculated applying probability weights, based on Kessler 10 scale for measuring mental distress.
Source: FIMAS surveys (Interview year): FIMAS+INTEGRATION (2017/18), FIMAS+INTEGRATION2 (2019), FIMAS+YOUTH (2020), FIMAS+Women (2022); own calculations.

Descriptive results (applying survey weights) show that in the case of the FIMAS+INTEGRATION survey (refugees were interviewed in the period December 2017 to April 2018), 20% of the respondents stated a level of mental distress that suggests a severe mental health problem at the time of the interview (see Figure 1a). A further 11% are likely to have moderate mental health problems, while another 15% are slightly stressed. The remaining refugees, i.e. about 54% of the respondents, state no or only negligible symptoms of mental distress and can be counted as unstressed. These results were already reported in Leitner et al. (2019) and did not change, although in this paper we applied survey weights. The results concerning the mean value of the K10 score and the share of moderate or severe mental health problems (K10: 25-50) for population subgroups are slightly different in this analysis, however, owing to the use of weights (see Table 1). In general, women are on average more at risk (34.7% in 2017/18) of

having moderate or severe (i.e. clinically relevant) problems, compared with men (29.4%). Also, in the general population in Austria and other European countries, women display a significantly higher risk than men for certain mental health diseases (Kerkenaar et al., 2013).

Table 1 / Descriptive results of the FIMAS survey waves 2-5, respondents arrived 2011-2021

		FIMAS waves – Interview year				FIMAS waves – Interview year			
		2017/18	2019	2020	2022	2017/18	2019	2020	2022
Sample observations									
Total	9,949	1,534	2,236	3,459	2,720	1,534	2,236	3,459	2,720
With K10 score	8,364	1,412	2,084	2,667	2,201	1,412	2,084	2,667	2,201
	Subgroups, in % (without weights)	**K10 score, mean value (survey weights applied)**				**K10: moderate or severe mental health problems, in % (survey weights applied)**			
Total population		20.9	20.5	19.1	19.7	31.1	28.2	24.7	25.6
Gender									
Men	62.7	20.3	19.8	17.9	19.0	29.4	25.8	19.3	23.9
Women	37.3	22.3	21.7	21.1	20.9	34.7	32.7	33.6	28.6
Age group									
15-24	29.4	21.6	21.8	19.9	19.9	34.4	34.1	27.9	27.0
25-34	35.4	20.6	20.7	18.1	19.7	31.2	28.2	20.4	25.8
35-44	25.0	20.0	18.4	19.0	19.7	27.1	21.6	24.3	24.4
45-65	10.2	21.4	20.2	20.0	18.9	26.3	25.7	29.7	23.6
Male									
15-24	27.3	21.1	21.4	18.5	19.2	32.2	31.0	22.3	26.2
25-34	38.4	20.2	20.2	17.6	19.1	30.6	26.7	17.6	23.8
35-44	23.9	18.8	17.6	17.0	19.6	21.4	19.1	16.1	24.4
45-65	10.5	20.2	18.5	18.8	17.1	26.4	21.4	24.8	17.0
Female									
15-24	33.0	22.6	22.6	21.8	21.0	38.9	39.8	35.6	28.1
25-34	30.5	21.2	21.8	19.1	21.0	32.5	31.4	26.1	30.5
35-44	26.9	22.2	19.9	22.5	20.0	37.3	25.7	38.3	24.5
45-65	9.7	23.4	22.9	21.5	22.1	26.3	32.3	36.4	35.1
Country of origin									
Afghanistan	21.0	20.7	21.2	18.9	20.2	28.3	28.5	23.1	26.0
Iraq	8.8	22.9	22.0	20.1	18.6	39.6	34.7	32.3	21.6
Syria	56.9	20.8	19.6	18.9	19.3	31.4	26.4	24.7	25.9
Iran	13.1	23.1	21.4	19.6	21.0	42.9	31.0	24.5	25.5
Year of arrival									
2011-2013	10.3	20.8	20.3	19.6	22.1	28.1	27.5	26.6	33.7
2014	13.6	20.2	18.7	17.7	19.6	29.2	24.7	20.7	27.2
2015	47.6	20.9	21.1	18.8	19.5	32.1	29.2	23.0	24.2
2016	13.2	20.8	21.0	20.1	19.1	30.8	29.7	28.8	23.8
2017	6.2	20.8	17.6	19.4	18.3	29.5	19.7	25.8	20.4
2018-2021	9.0	23.9	22.9	19.9	19.9	38.2	42.8	29.2	27.5

Source: FIMAS surveys – ICMPD (Interview year): FIMAS+INTEGRATION (2017/18), FIMAS+INTEGRATION2 (2019), FIMAS+YOUTH (2020), FIMAS+Women (2022); own calculations applying survey weights.

Younger age groups (15-24 years: 34.4%; 25-34 years: 31.2%) show significantly higher risk levels than middle-aged and older refugees (35-44 years: 27.1%; 45-65 years: 26.3%). In our sample, refugees from Iran are the group most affected by moderate or severe problems (42.9%), followed by refugees from Iraq (39.6%), Syria (31.4%) and Afghanistan (28.3%).

Refugees who immigrated in 2015 show a higher level of mental distress than those who arrived in the years before or shortly afterwards, while those who arrived shortly before the interview (i.e. in 2018-2021) also stated rather high levels of mental distress in the first two waves of FIMAS surveys (see Table 1).

Following the results over time (i.e. the data of waves 2-5), we can see that the share of respondents that stated medium or severe mental distress decreased until 2020, but in 2022 the level measured by the K10 scale increased again (Figure 1b). Similar to the Austrian resident population in general, refugees are likely to have been affected negatively by the restrictions put into effect in the years 2020-2022 as a consequence of the COVID-19 pandemic. The development over time is rather similar for all population subgroups (Table 1). Only in the case of women in the age groups 15-24 and 35+ and men in the age group 45+ as well as refugees who arrived after 2015 and those who came from Iraq, do we find a decline in the share of moderate or severe mental health problems in the survey year 2022.

The observed shares of refugees with mental health problems may seem high but are in line with the results of refugee surveys conducted recently in other countries. In the case of Australia (where the Kessler index was also applied), moderate to severe psychological distress levels were found for 31% to 48% of the refugee population interviewed in the longitudinal survey ‘Building a New Life in Australia’ in the years 2013-2018. Particularly high prevalence rates were found for refugees from Middle East countries (De Maio et al., 2017; Chen et al., 2017; Nguyen et al., 2023). In the case of Germany, Walther et al. (2020b) also found high prevalence rates for mental diseases among refugees.

4.1. REGRESSION RESULTS

In our analysis, we perform a stepwise procedure to attain our preferred regression model, which can be followed in detail in Table A.1 in the Appendix and in Table 2. First, we apply a linear regression model [A1], using the full sample of all respondents who arrived in Austria in the years 2011-2021. Using the Shapiro-Wilk W test and the Shapiro-Francia W’ test for normality shows that the values of the K10 score are not normally distributed. Thus, we apply a Poisson regression [A2]. However, a goodness of fit test shows that the Poisson regression model is also inappropriate. Thus, we resort to a negative binomial (NEGBIN) regression model [1], which we present in Table 2 below. Here we see that in the multivariate framework, various stressors and protective factors were significantly associated with mental distress. As mentioned above, when interpreting the results, we should be aware of the existence of endogeneity or reverse causality. In the case of a number of variables, strictly speaking, we cannot assume causal effects but just correlations. This is relevant for working, experienced discrimination, German-language proficiency and housing satisfaction. Here we cannot rule out that, for example, refugees who are in a better or improved state of mental health show a higher (increasing) probability to (start) work, instead of integration into the labour market driving a decrease in mental distress levels. In the case of other explanatory variables, such as age group, or children living in the same household, endogeneity/reverse causality is not a problem, or only a negligible one.

The level of mental distress turns out to be higher for refugees in the age group 15-24 than in the reference group aged 35-44 years, but this result is only significant at the 10% level. A very robust result (throughout the analysis) is that women were found to be more mentally distressed than men.

Table 2 / Regression results for pooled data of FIMAS survey waves 2-5

Regression models	**[1]**	**[2]**	**[3]**	**[4]**
Dependent variable	**NEGBIN Kessler 10 score (10-50)**	**NEGBIN Kessler 10 score (10-50)**	**NEGBIN Kessler 10 score (10-50)**	**PROBIT Kessler 10 group: moderate or severe mental health state**
Years of arrival	**2011-2021**	**2011-2021**	**2011-2021**	**2011-2021**
Coefficient output	**raw coefficients**	**raw coefficients**	**raw coefficients**	**marginal effects**
Age groups (reference group: 35-44)				
15-24 years	0.037*	0.010	0.011	0.017
	(0.020)	(0.030)	(0.030)	(0.029)
25-34 years	0.016	-0.015	-0.014	-0.008
	(0.015)	(0.024)	(0.024)	(0.023)
45-65 years	0.024	0.008	0.007	0.000
	(0.019)	(0.030)	(0.030)	(0.031)
Women	0.117***	0.106***	0.107***	0.077***
	(0.012)	(0.016)	(0.016)	(0.016)
Years since arrival in Austria	0.009**	0.008	0.008	0.010*
	(0.004)	(0.006)	(0.006)	(0.006)
Asylum application pending	0.077	0.050	0.049	0.080
	(0.047)	(0.052)	(0.052)	(0.059)
Experienced potentially traumatic events during migration	0.089***	0.085***	0.085***	0.047**
	(0.015)	(0.022)	(0.023)	(0.023)
Living with a partner in same household	-0.062***	-0.050**	-0.051**	-0.052**
	(0.015)	(0.021)	(0.022)	(0.021)
Having a partner, who is living in another household in Austria	0.020	0.007	0.006	0.007
	(0.027)	(0.035)	(0.035)	(0.034)
Having a partner, who is living in home country or other foreign country	0.052**	0.032	0.032	0.013
	(0.026)	(0.036)	(0.036)	(0.036)
Living with children in same household	-0.044***	-0.049**	-0.049**	-0.049**
	(0.016)	(0.022)	(0.022)	(0.022)
Having children, who are not living in the same household	0.018	0.060	0.061	0.029
	(0.030)	(0.055)	(0.055)	(0.045)
Someone to talk to	-0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Social network – same country of origin	-0.005***	-0.002	-0.002	-0.001
	(0.001)	(0.002)	(0.002)	(0.002)
Social network – other countries	-0.003***	-0.003**	-0.003**	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Working	-0.068***	-0.088***	-0.089***	-0.075***
	(0.012)	(0.017)	(0.017)	(0.017)
Language proficiency in German	-0.060***	-0.054***	-0.055***	-0.056***
	(0.008)	(0.011)	(0.011)	(0.011)
Experienced discrimination	0.097***	0.095***	0.094***	0.069***
	(0.005)	(0.006)	(0.006)	(0.006)

contd.

Table 2 / Continued

Regression models	[1]	[2]	[3]	[4]
	NEGBIN	NEGBIN	NEGBIN	PROBIT
Dependent variable	Kessler 10 score (10-50)	Kessler 10 score (10-50)	Kessler 10 score (10-50)	Kessler 10 group: medium or severe mental health state
Years of arrival	2011-2021	2011-2021	2011-2021	2011-2021
Coefficient output	raw coefficients	raw coefficients	raw coefficients	marginal effects
Housing satisfaction	-0.019***	-0.022***	-0.022***	-0.017***
	(0.002)	(0.003)	(0.003)	(0.002)
Education (reference group: ISCED 1)				
ISCED 0	-0.073**	-0.120***	-0.120***	-0.090**
	(0.029)	(0.040)	(0.040)	(0.041)
ISCED 2	-0.019	-0.025	-0.026	-0.005
	(0.016)	(0.022)	(0.022)	(0.022)
ISCED 3-4	-0.007	-0.034	-0.034	-0.030
	(0.021)	(0.028)	(0.028)	(0.029)
ISCED 6-8	-0.021	-0.024	-0.025	-0.023
	(0.016)	(0.024)	(0.024)	(0.024)
Country of origin (reference group: Afghanistan)				
Iraq	0.048**	0.003	0.002	0.025
	(0.024)	(0.030)	(0.030)	(0.029)
Syria	0.014	-0.019	-0.019	0.009
	(0.017)	(0.022)	(0.022)	(0.021)
Iran	0.022	-0.026	-0.026	-0.027
	(0.021)	(0.028)	(0.028)	(0.027)
Panel case			0.012	0.021
			(0.015)	(0.015)
Constant	2.867***	2.871***	2.867***	-1.102***
	(0.070)	(0.085)	(0.086)	(0.309)
Observations	6,314	6,314	6,314	6,314
Pseudo R-squared	0.272	0.030	0.029	0.099
Controls for:				
Austrian provinces	YES	YES	YES	YES
Modes of interview	YES	YES	YES	YES
Individual waves of FIMAS survey	YES	YES	YES	YES
Survey weights applied	NO	YES	YES	YES

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Source: FIMAS survey waves 2-5; own calculations.

One might expect refugees' stress levels to decline after their arrival in Austria. However, our variable on the time passed since arrival in Austria (captured in years) shows a slight, not very significant, increase of distress levels over time. This shows that mental distress does not decline automatically after arrival in the host countries but depends upon an improvement of the living conditions of refugees thereafter, which are described by further explanatory variables in our regression model.

Regarding family context, our results show that being in a partnership or having children and living with them in the same household significantly reduces the level of distress. In contrast, if partners have been left behind in the home or a foreign country, the worry about their safety significantly increases the risk of mental health problems.

In addition to good close relationships, the possibility to interact in the wider social sphere is also expected to reduce stress levels: Our social network variables show that the larger the group of people in Austria refugees feel close to and are appreciated as important to them, the lower their level of mental distress. The extent of the network concerning persons from the same country of origin seems to have an even stronger relieving effect for refugees than a wider network of other people (Austrians or people from further countries of origin). The variable on quality of relationships, i.e. having someone to talk to about personal problems, does not provide an additional significant explanation.

Education is expected to be a protective factor for (mental) health in general, as people with higher education levels might experience higher levels of self-affirmation and might pursue healthier lifestyles (Zajacova and Lawrence, 2018). However, our results are not in line with these conclusions. We find that those without education or who have not finished the first level of education (ISCED 0) show significantly lower levels of mental distress than those who have completed ISCED 1 (which corresponds to elementary school) but have not moved further in education. Porter and Haslam (2005) found a similar result in the literature on mental health of refugees.

One of the aspects of acculturative stress after having arrived in Austria is to be confronted with discrimination. The more frequently that discrimination is experienced, the higher the level of distress for refugees. Having a proper place to live has an important effect on individuals' well-being. Accordingly, the satisfaction with the housing situation is significantly correlated with mental distress levels in our FIMAS data. Similarly, having the opportunity to work is an important way to experience self-efficacy. Those who have a job or do voluntary work experience lower levels of mental distress.

Language proficiency was significantly associated with mental health. The higher the language skills (subjective assessment of speaking and listening comprehension in German), the lower the conditional level of distress of refugees. This shows that acculturative stress can be reduced if getting in contact with the host population is easier.

Finally, we applied controls for country of origin, province of residence, modes of interview and the individual waves of the FIMAS survey. In the case of the first variable, we find that refugees from Iraq state significantly higher levels of distress than those originating from Afghanistan, our reference group. Although not shown in the table, we can report that the controls for the waves of the survey showed no significant differences in the mental distress levels.

Only in the next step do we apply survey weights in our negative binomial regression model [2]. As the weights are stratified with respect to the three variables of age group, gender and country of origin, the coefficients of those explanatory variables are likely to change. Indeed, the significance of differences between age groups and refugees from Iraq vanishes, as does that of a further three variables: months since arrival in Austria, partner living in a foreign country and the extent of the network of people from the same country of origin. In the following steps, we test if the results differ significantly according to whether we include in the sample only panellists (who have been interviewed two to four times) ([A3] in the Appendix) or those who have responded only once or for the first time in the case of panellists (the latter are called refreshers of the panel) ([A4] in the Appendix). The first sample comprises only 2,536 observations. In the case of the regression model [A4], the sample size is 4,867. As we do not see strong differences in the results between [A3], [A4] and model [2], we include in model [3] just a dummy variable for panellists; the respective coefficient turns out to be very small and insignificant.

Table 3 / Regression results for panel component data of FIMAS survey waves 2-5

Regression models	**[P1] NEGBIN**	**[P2] PROBIT**	**[P3] PROBIT**	**[P4] XTREG**
Dependent variable	**Kessler 10 score (10-50)**	**Kessler 10 group: medium or severe mental health state**	**Kessler 10 group: medium or severe mental health state**	**Kessler 10 group: medium or severe mental health state**
Years of arrival	**2011-2019**	**2011-2019**	**2011-2019**	**2011-2019**
Coefficient output	**raw coefficients**	**marginal effects**	**marginal effects**	**raw coefficients**
Years since arrival in Austria	-0.028***	-0.016***	-0.008	0.000
	(0.005)	(0.004)	(0.005)	(0.009)
Living with a partner in same household			-0.050**	
			(0.022)	
Living with children in same household			-0.035	
			(0.022)	
Someone to talk to			-0.047**	
			(0.019)	
Social network – same country of origin			-0.005***	
			(0.002)	
Social network – other countries			0.000	
			(0.001)	
Working			-0.061***	
			(0.018)	
Language proficiency in German			-0.043***	
			(0.013)	
Experienced discrimination			0.071***	
			(0.007)	
Housing satisfaction			-0.012***	
			(0.003)	
First differences of explanatory variables				
d.Social network – same country of origin				-0.004*
				(0.002)
d.Social network – other countries				0.000
				(0.002)
d.Language proficiency in German				0.011
				(0.026)
d.Experienced discrimination				0.047***
				(0.012)
d.Housing satisfaction				-0.001
				(0.004)
Living with a partner in same household (reference group: no change)				
Partner moving out of same household				-0.054
				(0.063)
Partner moving in same household				0.020
				(0.047)
Children living in same household (reference group: no change)				
Children move out of same household				-0.012
				(0.069)
Children move in same household				-0.024
				(0.063)
Someone to talk to (reference group: no change)				
Negative change: not any more				0.013
				(0.041)
Positive change: found someone				-0.060
				(0.042)
Work (reference group: no change)				
Negative change: lost work				-0.046
				(0.051)
Positive change: found work				-0.053*
				(0.032)
Constant	3.495***	-0.727***	-0.107	-0.017
	(0.087)	(0.133)	(0.280)	(0.058)
Observations	2,815	2,935	2,425	1,091
Number of individuals	1,191	1,311	1,209	794

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Source: FIMAS survey waves 2-5; own calculations.

Because we were interested in the robustness of the result that women show a significantly higher level of mental distress than men, we applied a regression model with gender-wave interaction terms [A5]. The coefficient does not differ significantly over time (i.e. the waves), except for wave 4 (2020), where women show an even higher score on average. We conclude this to be an effect of the restrictions from the COVID-19 pandemic and following restrictions during lockdowns, which resulted in women bearing the brunt of care work both in the refugee and non-refugee populations.

As we are particularly interested in the group of refugees that are moderately to severely strained, we also estimated a probit regression model [4] where we distinguish between these individuals and those having stated no or mild levels of symptoms. The results – we report the marginal effects – are rather similar to those of the negative binomial regression model [3]. However, the significance vanishes in the case of the extent of network and becomes significant in the case of years since arrival in Austria, but only at the 10% level. As we report in model [4] average marginal effects, we can interpret the results in the way that all other explanatory variables fixed women have on average a 7.7% higher likelihood of moderate to severe mental health problems. Having experienced at least one traumatic event during migration increases the probability by 4.7%, while having experienced (perceived) discrimination increases it by 6.9%. Living with one's partner in the same household decreases the likelihood by 5.2% and living with one's children by 4.9%, while working is associated with a 7.5% lower probability. Because language proficiency and housing satisfaction are assessed by applying not an ordinal but a Likert scale, no exact interpretation is obviously possible in the case of these explanatory variables. Nevertheless, a one-point higher level on the five-point Likert scale for language proficiency decreases the likelihood of having moderate to severe mental distress symptoms by 5.6%, while a one-point higher level on the 11-point Likert scale for housing satisfaction decreases the probability by 1.7%.

In the following, we make use of the panel component of the FIMAS survey project and apply a negative binomial panel regression model as well as probit models. Applying a Hausman test shows us that fixed effects models are appropriate for our task. Apart from the time fixed effects (in our case, these are the waves of the FIMAS survey), we also apply individual fixed effects and include the panel structure of the survey (because panellists have been interviewed differently, i.e. from two to four times and in different waves).

Obviously, when analysing only panellists, the number of observations shrinks – in the case of model [P1] in Table 3 to 2,815, based on 1,191 individuals. As we control now for all time-invariant differences between individuals, we can in a first step show that mental distress of our respondents declines over time after arriving in Austria. A year of stay in the host country results in a decrease of about 2.8% of the Kessler 10 scale on average. Applying a probit panel regression [P2], we find an annual decrease of 1.6% of the probability that respondents have a moderate or severe mental health problem per year of stay in Austria. In model [P3], we include those relevant explanatory variables that can change over time for individuals. We can see that the coefficient of years since arrival decreases and becomes insignificant. Our interpretation is that it is not the elapsing time per se that results in an improvement of the refugee's mental health situation, but the enhanced living conditions that can make a change. The coefficient of most relevant explanatory variables, such as living with a partner and one's children, having a larger network of people from the same country of origin, working, having a greater proficiency in the German language, feeling less discriminated against and being more satisfied with the housing situation, are significant and show the expected sign. In this regression model we ruled out the influence of omitted characteristics of respondents. However, we cannot rule out reverse causality in the case of some variables. Therefore, we calculated a regression in first differences for the set of explanatory

variables and applied an OLS panel regression model [P4]. In the case of social network with persons from the same country of origin, the results suggest a step forward towards a causal interpretation, i.e. an increase in the extent of the network results in a decrease of mental distress. Furthermore, experienced discrimination results in a worsening of the mental health state on average. In the case of refugees finding work, a significant rise in the probability of being moderately or severely distressed is found. For language proficiency or housing satisfaction, we could not detect such a relationship. We thus assume that dependent (mental distress) and independent variables interact in both directions.

5. Summary and conclusions

In this paper, we analyse the level of mental distress of refugees from Syria, Afghanistan, Iraq and Iran who arrived in the years 2011-2022 in Austria. In order to measure the level of psychological strain, we applied the Kessler 10 scale, a non-specific index for the likelihood of serious mental health problems. Our set of variables covers predominantly post-migration risk factors. However, information on potentially traumatic events during migration was collected.

We find, based on FIMAS survey data from 8,364 individuals, collected in four waves from 2017 to 2022, that in 2017/2018 a high share of refugees (31%) specify symptom intensities that indicate moderate or severe mental health problems. Those individuals are likely to need treatment in the form of psychotherapy, with psychiatric interventions also required. In the later waves of the FIMAS survey, the share of moderate to severe mental distress declines to 25% (2020) and increases only slightly to 26% thereafter (2022).

At first sight, the high incidence of refugees assessed as having moderate to severe levels of psychological strain may be surprising. However, these results are similar to findings in recent systematic reviews and in other countries, where longitudinal refugee surveys were conducted recently. In the case of Australia, moderate to severe psychological distress levels were found for 31% to 48% of the refugee population interviewed in the years 2013-2018. Particularly high prevalence rates were found in the group of refugees from Middle East countries. In the case of Germany, refugees showed high prevalence rates for psychological strain. First screenings for mental health in the Ukraine refugee population that has arrived recently in Germany show similar results. Buchcik et al. (2023) found that 46% of women and 20% of men interviewed between May and August 2023 reported symptoms that suggest severe levels of psychological strain.

The descriptive results show, for those refugees interviewed in 2017/2018, a higher prevalence for younger persons, women, those individuals who arrived in Austria in 2015 or 2018, and refugees from Iran and Iraq (the latter only in the first two to three waves of the survey). In the following years the differences in distress levels between population subgroups decrease in line with the general decline in average K10 scores. In our regression analysis, applying our preferred multivariate pooled model with survey weights, we find that only women show higher risk levels, while country of origin, age groups and length of stay in the host country become insignificant. Investigating the effects of stressors on the mental health situation, we found a positive association with potentially traumatic events during the migration to Austria and experienced discrimination in the host country. On the other hand, the results show a negative correlation for some moderating factors that foster resilience, i.e. living with a partner and one's children in the same household, proficiency in the German language, being employed (including volunteer work), having more supportive relationships and satisfaction with the housing situation.

Applying the panel data component of the FIMAS surveys allows closer analysis of the development of mental health of the surveyed refugees over time and also enables us to rule out omitted characteristics of the respondents. In the case of the FIMAS panellists, we find a decline of mental distress in the years

after arrival in Austria. However, when we include our mediator variables, the coefficient of the variable indicating the time elapsing becomes insignificant. Thus, we assume that psychological strain only declines if stressors subside, and relevant personal living conditions improve. As in the pooled data regressions, the coefficients of most explanatory variables describing relevant circumstances of living that can change after resettling over time are of the expected sign. Significance is found in the case of living with one's partner in the same household, having someone (in addition to close family members) to talk to about personal problems, having a more extensive network of people from the same country of origin, working, language proficiency, perceived discrimination and housing satisfaction. In order to analyse causal relationships for variables, where reverse causality could be a problem, we used first differences for all variables. In the case of social network with persons from the same country of origin, experienced discrimination and working, we could find that positive changes result in a decline of mental distress levels. Although not fundamentally ruling out reverse causality with this approach, these results can be interpreted as one step further in this direction. In the case of language proficiency and housing satisfaction, we would assume that dependent (mental distress) and independent variables interact in both directions.

The high prevalence of mental health problems found in our analysis constitute not only a burden for many individuals but a serious hindrance for the social and economic integration of the refugees into the communities in Austria. Moreover, it can have a detrimental effect on the integration and development of the children of those refugees (Fegert, et al., 2018). Because lack of language competence and knowledge of health services of the host country as well as cultural background can impede access to health care for refugees and migrants in general, it is important to observe and address these barriers (Mangrio and Sjögren Forss, 2017; Kohlenberger et al., 2019). We must acknowledge that in recent years a noticeable expansion in the availability of publicly funded mental health services has taken place in Austria.[3] Facilities and organisations offering more easily accessible psychosocial services, taking into account refugees' specific needs (for example, via mother-tongue therapists and interpreters) are available (from Hemayat, SINTEM Caritas, AFYA and others). The analysis, however, shows that even more is needed, and sustainable funding has to be guaranteed as these services have to be provided on a long-term basis. Moreover, the war in Ukraine has again resulted in considerable numbers of refugees in Austria who have high prevalence rates of mental distress owing to the experienced violence and forced migration.

From the literature and our previous findings in Leitner et al. (2019), we know that refugees in the asylum application procedure show elevated levels of mental distress. Thus, a reduction of the length of the asylum application procedure is in general necessary to reduce the occurrence of mental health problems triggered by long periods of chronic stress, and to enhance the chances for favourable integration afterwards. Early access to the labour market is also effective in reducing psychological strain and foster integration but is currently still highly restricted for asylum seekers from non-European destinations. The uniform lifting of those barriers for refugees from Ukraine in 2022 in the EU obviously has various reasons, however policy makers seem to have acknowledged the above-mentioned findings and insights. Apart from early access to the labour market, the recognition of qualifications and the improvement of skills (via training, etc.) also reduce the loss of human capital, counteracting the feeling of loss of status and encouraging self-efficacy.

[3] A recently updated list of psychosocial programmes and additional support services focused on refugees and migrants is available at: https://www.sozialministerium.at/dam/jcr:161e7583-a197-44f9-b3e3-f4ac3f2dd548/EN_Survey%20of%20psychosoc.programms%20Extended%20Version.pdf, retrieved on 10 June 2023.

Loneliness is in general a risk factor for developing mental diseases. Thus, family reunion is an important relief for refugees and can help to reduce feelings of anxiety, depression and disorientation. The adequacy and quality of housing conditions is important for refugee families to live together well and assists in adjusting to life in the host country. Living in refugee housing facilities instead of private homes and cramped living conditions can be a source of increased psychological distress and thus also family conflicts. Language proficiency in the host-country language has been found in most studies, as in ours, to be an important factor for stress reduction. The financing of sufficiently large numbers of language courses not only in cities, but throughout the country, should be pursued. Better fluency allows easier interaction in everyday life and supports closer contact with the host society. There are a variety of routes to such closer contacts: fostering inclusive housing, leisure activities or training measures.

The literature (for example, Niemi et al., 2019) and our analysis point toward the need for policies to support the participation of asylum seekers and refugees in the social structures in host societies. Social participation reduces feelings of anxiety and distrust between refugees and other individuals residing in Austria. It enhances resilience, helps refugees to develop their social lives and acts as a protective factor against poor mental health outcomes.

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Appendix

Table A.1 / Further regression results

Regression models	[A1]	[A2]	[A3]	[A4]	[A5]
Dependent variable	NEGBIN Kessler 10 score (10-50)	NEGBIN Kessler 10 score (10-50)	NEGBIN Kessler 10 score (10-50)	NEGBIN Kessler 10 score (10-50)	NEGBIN Kessler 10 score (10-50)
Years of arrival	2011-2021	2011-2021	2011-2021	2011-2021	2011-2021
Age groups (reference group: 35-44)					
15-24 years	0.703*	0.037*	0.009	0.065*	0.013
	(0.419)	(0.021)	(0.033)	(0.039)	(0.030)
25-34 years	0.255	0.014	-0.014	-0.020	-0.013
	(0.299)	(0.015)	(0.027)	(0.029)	(0.024)
45-65 years	0.446	0.024	0.006	-0.012	0.006
	(0.382)	(0.020)	(0.034)	(0.038)	(0.030)
Women	2.334***	0.116***	0.105***	0.105***	0.070**
	(0.255)	(0.012)	(0.018)	(0.024)	(0.035)
Years since arrival in Austria	0.178**	0.009**	0.009	0.014	0.008
	(0.086)	(0.004)	(0.006)	(0.009)	(0.006)
Asylum application pending	1.510	0.073	0.062	0.015	0.043
	(0.996)	(0.046)	(0.056)	(0.117)	(0.052)
Experienced potentially traumatic events during migration	1.746***	0.087***	0.078***	0.081***	0.088***
	(0.312)	(0.016)	(0.025)	(0.030)	(0.022)
Living with a partner in same household	-1.167***	-0.060***	-0.052**	-0.029	-0.051**
	(0.291)	(0.015)	(0.024)	(0.029)	(0.022)
Having a partner, who is living in another household in Austria	0.370	0.018	0.003	0.007	0.006
	(0.570)	(0.027)	(0.038)	(0.053)	(0.035)
Having a partner, who is living in home country or other foreign country	0.965*	0.046*	0.008	0.073	0.030
	(0.561)	(0.026)	(0.039)	(0.059)	(0.036)
Living with children in same household	-0.947***	-0.047***	-0.049**	-0.043	-0.048**
	(0.319)	(0.016)	(0.025)	(0.031)	(0.022)
Having children, who are not living in the same household	0.350	0.018	0.061	-0.016	0.063
	(0.623)	(0.030)	(0.058)	(0.058)	(0.055)
Someone to talk to	-0.003	-0.000	0.000	0.000	0.000
	(0.004)	(0.000)	(0.000)	(0.001)	(0.000)
Social network – same country	-0.099***	-0.005***	-0.002	-0.006**	-0.002
	(0.018)	(0.001)	(0.002)	(0.002)	(0.002)
Social network – other countries	-0.053***	-0.003***	-0.004**	-0.001	-0.003**
	(0.018)	(0.001)	(0.002)	(0.002)	(0.001)
Working	-1.356***	-0.068***	-0.088***	-0.057**	-0.086***
	(0.249)	(0.012)	(0.019)	(0.024)	(0.017)
Language proficiency in German	-1.237***	-0.060***	-0.054***	-0.069***	-0.055***
	(0.166)	(0.008)	(0.012)	(0.016)	(0.011)
Experienced discrimination	1.987***	0.096***	0.092***	0.108***	0.094***
	(0.099)	(0.005)	(0.007)	(0.009)	(0.006)
Housing satisfaction	-0.390***	-0.019***	-0.023***	-0.018***	-0.022***
	(0.038)	(0.002)	(0.003)	(0.004)	(0.003)

contd.

Table A.1 / Continued

Regression models	[A1] NEGBIN	[A2] NEGBIN	[A3] NEGBIN	[A4] NEGBIN	[A5] NEGBIN
Dependent variable	Kessler 10 score (10-50)	Kessler 10 score (10-50)	Kessler 10 score (10-50)	Kessler 10 score (10-50)	Kessler 10 score (10-50)
Education (reference group: ISCED 1)					
ISCED 0	-1.438**	-0.075**	-0.111***	-0.139**	-0.121***
	(0.569)	(0.029)	(0.042)	(0.065)	(0.040)
ISCED 2	-0.399	-0.019	-0.028	-0.017	-0.025
	(0.334)	(0.016)	(0.024)	(0.033)	(0.022)
ISCED 3-4	-0.162	-0.007	-0.038	-0.013	-0.034
	(0.428)	(0.022)	(0.031)	(0.040)	(0.028)
ISCED 6-8	-0.502	-0.024	-0.019	-0.030	-0.025
	(0.335)	(0.017)	(0.027)	(0.033)	(0.024)
Country of origin (reference group: Afghanistan)					
Iraq	1.025**	0.049**	-0.017	0.140***	0.002
	(0.496)	(0.024)	(0.034)	(0.041)	(0.029)
Syria	0.278	0.014	-0.027	0.073**	-0.019
	(0.340)	(0.017)	(0.024)	(0.030)	(0.022)
Iran	0.454	0.024	-0.039	0.065	-0.026
	(0.447)	(0.022)	(0.031)	(0.044)	(0.028)
Panel case					0.011
					(0.015)
3.wave	-0.320	-0.018	0.001	-0.005	-0.001
	(0.452)	(0.022)	(0.038)	(0.041)	(0.031)
4.wave	-0.300	-0.016	-0.025	0.005	-0.002
	(0.327)	(0.017)	(0.037)	(0.029)	(0.060)
5.wave					0.034
					(0.061)
Women # 3.wave					0.023
					(0.046)
Women # 4.wave					0.093**
					(0.047)
Women # 5.wave					0.029
					(0.045)
Constant	18.356***	2.874***	2.915***	2.817***	2.880***
	(1.314)	(0.071)	(0.095)	(0.121)	(0.085)
Observations	6,314	6,314	4,867	2,536	6,314
R-squared / Pseudo R-squared*	0.173	0.086*	0.029*	0.035*	0.029*
Controls for:					
Austrian provinces	YES	YES	YES	YES	YES
Modes of interview	YES	YES	YES	YES	YES
Survey weights applied	NO	NO	YES	YES	YES
Population subgroup in sample	all	all	only panellists	only refreshers	all

Notes: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1
Source: FIMAS survey waves 2-5; own calculations.

IMPRESSUM

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