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# Psychological distress among refugees in Germany – A representative study on individual and contextual risk factors and the potential consequences of poor mental health for integration in the host country

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# Psychological distress among refugees in Germany–

# A representative study on individual and contextual risk factors and the potential consequences of poor mental health for integration in the host country

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**ABSTRACT**

**Background:** Responding to the mental health needs of refugees remains a pressing challenge worldwide. We estimated the prevalence of psychological distress in a large refugee population in Germany and assessed its association with host country factors amenable to policy intervention and integration indicators.

**Method:** We analysed the second wave of the IAB-BAMF-SOEP, a representative Germany-wide survey of 2,639 adult refugees who arrived between 2013 and 2016, which included the Refugee Health Screener.

**Results:** Almost half of the population surveyed (41.3%[95%-CI:37.9%-44.6%]) was affected by psychological distress. 10.9%(8.3%-13.4%) of the population screened positive for severe distress. Risk of distress was particularly high for women (53%[47.1%-58.9%]), older refugees (aged ≥55:70.4% [58.5%-82.2%]), Afghan nationals (61.2%[53.2%-69.2%]), individuals under threat of deportation (RR:1.54[1.13-2.1]), single males (1.41[1.09-1.82]), and those in collective housing (1.2[1.02-1.42]). Distressed males had a lower likelihood of employment (0.66[0.51-0.84]) and reduced participation in integration courses (0.9[0.81-1.01]). Affected females were less often in education (0.43[0.18-1.04]).

**Conclusions:** The finding that a large minority of refugees in Germany exhibits distress calls for an expansion of mental health services for this population. Service providers and policy-makers should consider the increased risk among female, older and Afghan refugees, as well as among single men, residents in collective housing and those under threat of deportation. The associations between mental health and integration processes like labour market, educational program and integration course participation also warrant consideration.

## INTRODUCTION

The development of public health policies and programs that address the needs of refugees is a pressing challenge for host societies worldwide. This group has repeatedly been found to be at a particular risk of mental ill health.[1-4] Meta-analyses indicate that depression and anxiety are at least as common as PTSD[5, 6] and suggest that one or a combination of these conditions affects at least one in three refugees.[6, 7]

However, a considerable heterogeneity of prevalence rates is reported.[4-6] Reasons for this heterogeneity likely include methodological differences, such as the use of different scales (with varying levels of cultural sensitivity) and sampling procedures, or methodological short-comings such as small and non-representative samples.[7] There are also substantive differences between the refugee populations studied – such as their cultural and national origins, their living conditions in their host countries and varying lengths of stay since arrival.

These complications underscore the need for host country-specific, duration of stay-specific, large-scale and representative epidemiological studies, not just to estimate prevalence rates, but also to investigate how mental health relates to other factors. So far, to our knowledge, only a few such studies exist, including one from Sweden[8] and one from Australia.[9] The present study estimates the prevalence of psychological distress indicative of mental ill health using a large-scale, representative survey of refugees who arrived in Germany between 2013 and 2016, and identifies sociodemographic characteristics and postmigratory factors that put members of this population at risk. Importantly, we also examine the relationship between psychological distress and integration, which has received limited attention in empirical research.[10, 11]

## METHODS

**Sample.** The data analyzed in this study comes mostly from the second wave (Socio-Economic Panel (SOEP)[12], data for years 1984-2017, version 34, SOEP, 2019,doi: 10.5684/soep.v34; partly from the first wave also contained in v.34) of the IAB-BAMF-SOEP refugee survey, a representative total of adults who arrived in Germany between January 1, 2013 and January 31, 2016 and applied for asylum by June 30, 2016 and adult members of their household. As explained in detail elsewhere,[13, 14] these central respondents were drawn from the German Central Register of Foreign Nationals (AZR),

| Sociodemographic Characteristic (Sample N) | Proportion in % (95%-CI) |
|---|---|
| Gender | |
| Male (1630) | 74.6 (72.1-77.2) |
| Female (939) | 25.4 (22.8-27.9) |
| Age | |
| Ages 18-24 (434) | 28.1 (24.9-31.3) |
| Ages 25-34 (890) | 39.7 (36.6-42.9) |
| Ages 35-44 (792) | 20 (17.5-22.4) |
| Ages 45-54 (347) | 7.9 (6.5-9.2) |
| Over 55 years old (105) | 4.3 (3-5.6) |
| Nationality | |
| Syrian (1372) | 44.2 (41.1-47.3) |
| Afghan (323) | 13.6 (11.4-15.9) |
| Iraqi (311) | 8.5 (7-9.9) |
| Eritrean (167) | 6.2 (4.9-7.5) |
| Other (396) | 27.5 (24.1-31) |
| Level of education | |
| Low level of education (1434) | 58.8 (55.5-62.1) |
| Medium level of education (503) | 23 (20.1-25.9) |
| High level of education (466) | 18.2 (15.9-20.6) |

**Table 1: Population Sociodemographic Characteristics** 95% Confidence Intervals (CIs) in parentheses. Proportions and CIs were pooled from ten multiply imputed datasets and weighted.

with different sampling probabilities applied based on factors such as country of origin, age, gender and legal status to ensure the representation of different individual characteristics. Weights are provided with the survey to adjust for over- and underrepresentations.[13, 14] The first wave of the survey comprised 4,527 adults; the response rate was 48.7%. From the total second wave sample of N = 2,639, we retained the 2,569 participants who arrived in Germany from 2013.

Respondents completed the questionnaire in computer-assisted face-to-face interviews with professional interviewers aided by audio files in seven different languages: English, German, Arabic, Farsi, Pashtu, Urdu and Kurmanji.

The main sociodemographic characteristics of the sample (absolute values) and the population (percentages) under study are summarised in Table 1.

**Mental health measure.** We measured psychological distress encompassing symptoms of depression, anxiety and post-traumatic stress disorder using the 13-item version of the Refugee Health Screener (RHS).[15, 16] Its reliability and validity in a sample representative of the refugees who arrived in Germany at the end of 2015 or the beginning of 2016 were confirmed in recent studies.[17] The binary version of the scale has its cut-off at 11 or more points in total,[16] but also includes cut-offs for moderate and severe symptom levels (18 and 25 points).[18]

**Sociodemographic characteristics.** We analyzed gender, age, nationality and level of education as potential risk factors for psychological distress based on the current literature. We categorised age as 10-year bins, with all those aged 55 or older grouped into a single category due to the limited number of older respondents. Out of the 51 nationalities represented among respondents, only nationalities represented by at least 100 respondents were included individually in the analysis; the remaining nationalities were grouped into an ‘Other’ category. Level of education was ascertained based on the International Standard Classification of Education of 2011, grouped into ‘low’, ‘middle’ and ‘high’.

**Post-migration factors.** We focused on three aspects of post-migration: legal status, family constellation in Germany and housing situation. We chose these factors for their potential to inform integration policy. Legal status was divided into ‘Protected since 2016’ and ‘Protected since 2017’. The remaining categories of the legal status categories are ‘Applicant’, ‘Suspension of Deportation’ and ‘Other’. We created a 3-category family constellation variable from first wave data (the location of children was

not ascertained again in 2017) with the following levels: all minor children and partner are in Germany; at least one partner or minor child overseas; unattached (no partner or minor children). In order to contrast residency in large collective accommodations with residency in private accommodation, we included a bivariate housing variable.

**Integration measures.** We chose employment and participation in education programs and integration courses as measures of integration, as they are essential indicators of functional integration into the host society.[19] Our employment status variable includes any form of employment reported. Educational programs include any form of in-person education. Course participation is assessed as a binary of having participated in at least one language or integration course.

**Statistical analysis.** All analyses were carried out in R (version 3.5.1). We applied survey weights multiplied by a longitudinal weight provided with the survey data[14] in all calculations to account for informative non-response and stratification as well as dropout between survey waves in the random sample. Due to a small percentage of missing responses in our primary outcome variable and some independent variables, we imputed our data using multivariate imputation using chained equations[20] (for details of our imputation and missing proportion per variable, see the Methods and Table 1 in the Supplementary Materials). All analyses were pooled across our ten imputed datasets using Rubin's Rule.[21]

In addition to the bivariate calculation of risk of psychological distress (and 95%-CIs), we estimated risk ratios and Wald-type confidence intervals from gender-stratified multivariable Poisson regression models, predicting the binary RHS score at the 11-point cut-off from each of the host country contextual factors outlined above, adjusting for sociodemographic characteristics and year of arrival. Finally, we estimated the risk ratios of psychological distress (binary RHS score category at the 11-point cut-off ) as a predictor of current employment status (yes = 1 or no = 0), participation in education programs (yes = 1 or no = 0) and participation in integration courses (yes = 1 or no = 0) from gender-stratified Poisson regression models, adjusting for sociodemographic characteristics and year of arrival. All regression estimates were log-transformed to produce risk ratios (RRs). Statistical significance in the regression models was assessed at a 0.05 P-value threshold. Please see Tables 6-11 in the Supplementary Materials for regression results tables. The Supplementary Materials also includes the

proportions of the population that falls under each variable subcategory (Table 2) and positive RHS screening prevalences per variable subcategory (Table 3).

## RESULTS

**Outcome variable scale reliability.** The RHS-13 exhibits excellent internal reliability in our sample (Cronbach's alpha = 0.91). Our parallel analysis suggests a one-factor solution for the RHS-13.

| | None | Mild | Moderate | Severe |
|---|---|---|---|---|
| Overall | 58.7 (55.4-62.1) | 19.7 (17-22.4) | 10.7 (8.6-12.8) | 10.9 (8.3-13.4) |
| Gender | | | | |
| Female | 47 (41.1-52.9) | 22.6 (17.5-27.6) | 13.2 (9.3-17.1) | 17.2 (11.6-22.9) |
| Male | 62.7 (58.7-66.7) | 18.7 (15.5-21.9) | 9.9 (7.4-12.3) | 8.7 (6-11.4) |
| Age | | | | |
| Ages 18-24 | 62.3 (54.9-69.7) | 19 (13.2-24.7) | 8.4 (4.7-12) | 10.4 (4.5-16.3) |
| Ages 25-34 | 64.8 (59.9-69.7) | 17.8 (13.7-21.8) | 11.3 (7.7-14.9) | 6.2 (3.8-8.5) |
| Ages 35-44 | 53 (46.1-59.9) | 21.5 (15.6-27.4) | 9.6 (5.2-14) | 15.9 (9.2-22.7) |
| Ages 45-54 | 45.8 (37.5-54.2) | 18.9 (12.8-25) | 12.6 (7.9-17.2) | 22.7 (14.8-30.6) |
| Over 55 years old | 29.6 (17.8-41.5) | 35.1 (18.8-51.4) | 23 (9.1-36.8) | 12.3 (0-24.7) |
| Nationality | | | | |
| Syrian | 64.8 (60.8-68.8) | 19.2 (16-22.4) | 9.5 (6.9-12.1) | 6.6 (4.5-8.6) |
| Afghan | 38.8 (30.8-46.8) | 22.5 (15.4-29.6) | 19.2 (11.5-26.9) | 19.6 (11.3-27.9) |
| Iraqi | 64.8 (56.8-72.7) | 16.5 (10.2-22.8) | 8.2 (4.2-12.2) | 10.5 (5.3-15.7) |
| Eritrean | 75.1 (66.2-83.9) | 16.5 (8.5-24.5) | 6 (1.7-10.2) | 2.5 (-0.1-5) |
| Other | 53.5 (45.1-61.9) | 20.8 (13.9-27.7) | 10.3 (5.6-15) | 15.5 (8.5-22.4) |
| Level of Education | | | | |
| Low level of education | 56.7 (52.3-61.2) | 20 (16.2-23.8) | 11.4 (8.6-14.2) | 11.9 (8.5-15.2) |
| Medium level of education | 61.3 (53.7-68.8) | 19.2 (13.4-25) | 8.2 (4-12.4) | 11.3 (5.8-16.9) |
| High level of education | 62 (55.1-68.9) | 19.3 (13.9-24.7) | 11.7 (6.8-16.6) | 7 (1.6-12.3) |

**Table 2: Prevalence of Different Levels of Psychological Distress by Sociodemographic Characteristic in Percent** 95% Confidence Intervals (CIs) in parentheses. Prevalences and CIs were pooled from ten multiply imputed datasets and weighted. Prevalences are unadjusted. Refugee Health Screener-13 cut-off scores of 11 ('Mild'), 18 ('Moderate'), and 25 ('Severe') were used.

**Prevalence of different levels of psychological distress.** As shown in Table 2, overall 19.7% (17%-22.4%) of refugees who arrived in Germany between 2013 and 2016 exhibit mild psychological distress indicative of a need for further assessment, 10.7% (8.6%-12.8%) exhibit moderate levels of psychological distress indicative of a need for treatment, and 10.9% (8.3%-13.4%) are estimated to be severely distressed, indicative of an acute need for advanced care. In total, 41.3% (37.9%-44.6%) screen positive for psychological distress, comprising symptoms of depression, anxiety and PTSD according to the original 11-point scale cut-off for the RHS-13.

Table 2 shows that females experience more distress than males and more often require acute and advanced care for severe levels of distress (17.2% [11.6%–22.9%]). Those aged 35 or older are far more likely than younger refugees to exhibit severe psychological distress (in 35-44 category: 47% [40.1%–53.9%] no distress). A distinction by nationality shows that Afghans experience the most distress. While mild distress is, broadly speaking, equally present between nationality categories, moderate and severe distress appear to be more prevalent among Afghans, with a noteworthy 19.6% (11.3%–27.9%) prevalence of severe distress, and in the combined category of other nations. See the Supplementary Materials (Table 5) for a regression analysis showing that the prevalence of distress among Afghans is not due to legal status concerns alone: this analysis was stratified to include only those fully recognised as refugees, and Afghan nationality is still a risk factor. There also seems to be a trend of lower levels of moderate and severe distress among Eritreans, with a relatively high proportion of Eritreans in the no-distress category (75.1% [66.2%-83.9%]). The levels of distress are equally represented among refugees of different levels of education. Table 4 of the Supplementary Materials shows the RRs of these sociodemographic factors adjusted for one another.

**Post-migration risk factors for psychological distress.** Figure 1 shows the RRs of legal status, family constellation and accommodation on psychological distress. A highly uncertain legal status, namely, suspension of deportation, is related to an elevated risk of psychological distress (RR = 1.5 [1.13-2.1]). For males, having been granted protection status more recently is also linked to greater distress (1.42 [1.1-1.83]).

Furthermore, males who are unattached are at an approximately 1.4 times higher risk of psychological distress than those refugees who have their complete nuclear family in Germany ([1.1-1.8]). Living in collective accommodation is also associated with an increase in psychological distress (1.2

[1.02-1.42]). It is noteworthy that all sizeable post-migration factors are stronger for men than for women, especially for the differences in legal status.

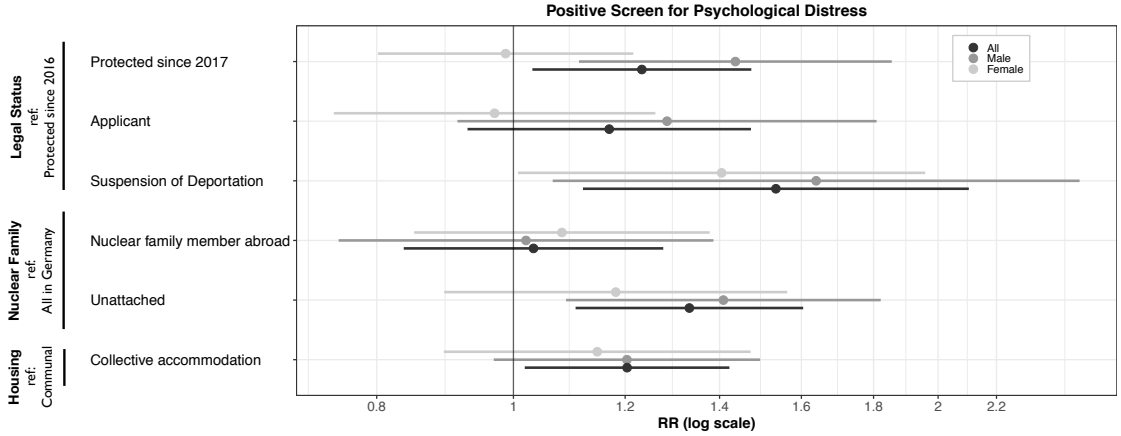


**Figure 1: The Association Between Post-migration Factors and Psychological Distress.** Risk ratio (RR) estimates and 95%-Confidence Intervals from three separate Poisson regression models predicting positive screens for psychological distress (cut-off used: 11 points on the Refugee Health Screener-13) from legal status (reference category: "Protected since 2016"), nuclear family situation (reference category: "All nuclear family members in Germany"; data from 2016, since there was no information on children in second wave), and accommodation type (reference category: "Private accommodation"), respectively, stratified and non-stratified by gender, adjusted for age, nationality, level of education and year of arrival in Germany. For the legal status regression, we omitted the non-significant results for the "Other" category, whose legal meaning is unknown, for the sake of clarity. Results are pooled from ten multiply imputed datasets and weighted. For complete regression results, please see Tables 6-8 in the Supplementary Materials.

**Psychological distress and integration.** Figure 2 shows the RRs for those who screened positive on the RHS for three indicators of integration. Values below 1 indicate that psychological distress is associated with reduced chances of integration in the different dimensions. Psychological distress is asso-

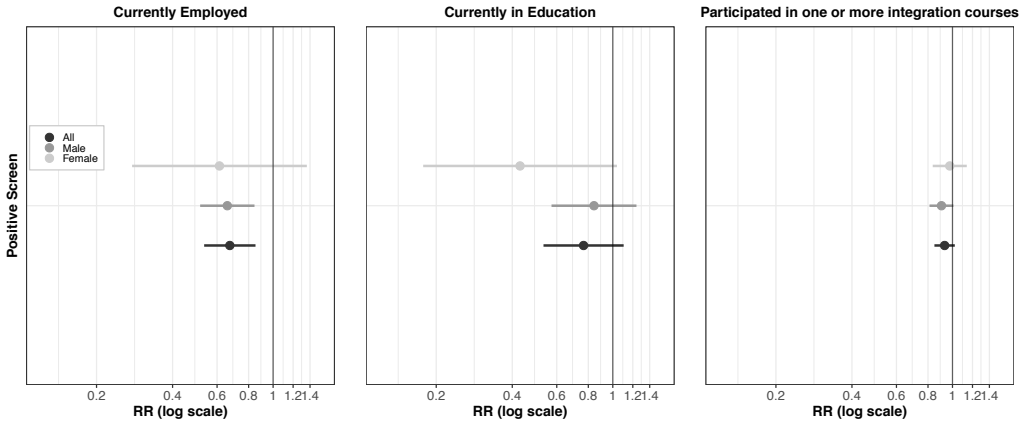


**Figure 2: The Association Between Psychological Distress and Indicators of Integration.** Risk ratio (RR) estimates and 95%-Confidence Intervals from three separate Poisson regression models predicting current employment (binary), currently being in education (binary) and course participation (binary) from psychological distress screening status (reference category: "Negative screen", cut-off used: 11 points on the Refugee Health Screener-13), stratified and non-stratified by gender, adjusted for age, nationality, level of education and year of arrival in Germany. Results are pooled from ten multiply imputed datasets and weighted. For complete regression results, please see Tables 9-11 in the Supplementary Materials.

ciated with a strongly reduced probability of being in employment in men (0.66 [0.5-0.84]). Reduc-

tions in probability in being in the educational system can also be found, especially for women (0.43 [0.18-1.04]), although the statistical uncertainty is high in this case. The participation in integration courses is only associated with psychological distress to a lesser degree; we find no effect for women and just a small, non-significant association for men (0.9 [0.8-1.01]).

## DISCUSSION

Our results provide policy makers with representative estimates of the prevalence of psychological distress related to depression, anxiety and PTSD among refugees who arrived in Germany between 2013 and 2016. Almost half (41.3%) of the population is affected by psychological distress. More than every tenth refugee (10.9%) exhibits severe levels of distress indicative of a need for advanced care. Our study also identifies a risk pattern including risk factors such as female gender, older age and Afghan nationality. We further find that post-migration factors such as insecure legal status, residing in Germany without partner and children and living in collective accommodation are associated with psychological distress. Finally, we show that those male refugees who are distressed are less likely to be employed, participate in integration courses and in the education system.

Our findings indicate a disease burden similar to that established by the only comparable European representative study on Syrian refugees in Sweden[8] that reports prevalences of depression and PTSD of 40.2% and 29.9% , respectively. This burden is slightly higher than previously expected by German experts, who predicted that 30% are affected by symptoms of PTSD,[22] and slightly higher than a recent meta-analysis estimating the prevalence of depression and PTSD at between 32% and 35% each among refugees,[7] Our estimates of the prevalence of the different levels of psychological distress defined by Bjärtå and colleagues[18] suggest that the following treatment capacities have to be provided by the German health care system: Every tenth refugee is likely in need of acute and advanced care, slightly more than one in ten further refugees is likely to require standard care, and one in five have lower levels of distress that might best be remedied through lower threshold psychosocial interventions.[22, 23]

Our findings additionally provide information for a useful stratification of interventions, e.g. towards gender-sensitive intervention: females are more often affected by mental health problems than males, particularly by severe levels of distress. This result corroborates many previous studies on refugee[1,2] as well as non-migrant populations.[24] In the case of refugees, gender-based violence before or during flight and changing gender roles in the host society are likely to contribute to distress.[25] In addi-

tion, the likelihood of becoming a refugee in the country of origin also varies by gender and could be related to higher ex-ante vulnerability among women.

The role of age in refugee mental health is a twofold story in the literature. Some studies, like ours, find older age to be a risk factor.[8] Many previous studies may not have had a sufficiently large sample size to detect the risk in this minority within most refugee populations. Beyond usual risk factors for older populations, such as physical health problems, elevated acculturation stress due to a reduced ability to adapt to a new environment[35] might explain these age effects. On the other hand, the literature emphasises the particular vulnerabilities of (unaccompanied) underage refugees,[10] which could not be examined in our adult sample.

The particular risk of poor mental health among Afghan refugees, especially of moderate and severe levels of distress, is likely related at least in part to the uncertainty Afghans have faced in Germany since Afghanistan was classified as a safe country of origin by the German government. However, our post-hoc analysis including only those granted full refugee status reveals that Afghans with secure statuses are still particularly at risk of distress, indicating that struggles for legal recognition may not be the only explanation. Previous studies have highlighted the prevalence of traumatic experiences among Afghan refugees, having come from a country in severe unrest for over three decades.[26, 27]

Looking at post-migration contextual factors, our finding that an insecure legal status is linked to poorer mental health is in keeping with the literature. Several studies report that the process of seeking asylum could even lead to retraumatization or hinder the process of overcoming flight-related trauma.[28, 29] In addition to the stress of uncertainty, the reduced access to services and institutions that comes with less secure statuses might underlie this association.[30] Importantly, we find that men who received a protection status more recently exhibit greater distress than those who reported protection in 2016, in the first survey wave. This might be due to longer exposure to uncertainty, but perhaps also to stressors associated with the transition into a more permanent residence in the host country. Many with insecure statuses will remain in the host society for long periods of time, so the psychological burden of insecure legal statuses should be carefully considered.[31]

Surprisingly, we did not find a relationship between having a nuclear family member overseas in 2016 and the psychological distress screening score in 2017. A previous study using the first wave of the IAB-BAMF-SOEP survey did identify family separation as a stressor.[32] We do not know whether there are some individual cases in which family members have moved to Germany between 2016 and 2017. A process of adjustment to family separation may also have occurred. Our finding that male refugees without partners or children exhibit increased distress resonates with studies identifying social isolation as a major risk factor.[29]

We also find an association between greater distress and living in collective accommodation, as has been previously shown.[28] Collective accommodation often means living in crowded quarters with limited privacy, restricted autonomy and isolation from the local community. It may also come with safety concerns in light of the frequency of attacks on refugee accommodation in many host countries.[33]

Finally, the associations we find between a positive screen for psychological distress and employment and, to a lesser degree, participation in education and integration courses lend support to the putative deleterious effects of poor mental health on integration.[11] The association between unemployment and poor mental health has been reported previously for refugees.[34] Khoo and colleagues[35] have already argued that this association underscores the shortsightedness of failing to prioritise mental health in immigrant and refugee communities. The potential of a vicious cycle between postmigratory stressors, poor mental health and difficulties in integration should be taken seriously.[10, 36]

Our data do not allow us to explain why most of the associations we find between mental health and other factors are only present for male refugees. In some cases, the statistical power is lower for women due to the smaller number of observations, but in many cases the effect size for women is smaller and even close to zero. Gender role expectations may render certain circumstances, such as unemployment, more stressful for men.[37] Finally, differences in the experience of pre-migratory traumatic experiences may also relate to differences in the impacts of stressors and functional impairments.

**Limitations**

This study's primary limitation is its correlational nature. Due to the survey design, we are unable to draw conclusions about causality or direction of effects. Another caveat is that our mental health measure is a diagnostic proxy, not a diagnostic tool, and does not allow for distinctions between the conditions whose symptoms it comprises. Furthermore, the RHS also has not been validated in all nationalities represented in our sample. While Kaltenbach and colleagues[17] validated the instrument in a general refugee sample, their study did not examine different major refugee groups independently. A selection bias favouring those with better mental health is likely to have been at work in the IAB-BAMF-SOEP survey sampling procedure, as is generally to be expected in population-based surveys.[38] Finally, whether our findings hold for other host countries and other refugee populations is unclear, considering the vast differences in circumstances even between Western European countries. However, Germany is a highly relevant case because it has adopted the largest number of refugees in the European Union.

## STATEMENTS

### Competing Interests

None declared.


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### Data Availability

The authors have on-going full access to the IAB-BAMF-SOEP refugee survey wave v.34., DOI: 10.5684/soep.v34. Anyone looking to use this data for research purposes only can apply for access by contacting the Research Data Center of the Socioeconomic Panel at the German Economic Research Institute.

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# Supplementary Materials: Psychological distress among refugees in Germany – A representative study on individual and contextual risk factors and the potential consequences of poor mental health for integration in the host country

Contents

## Methods

**Imputation Details**. We imputed missing data in all of the variables used for analysis through multi- variate imputation using chained equations using the mice R package (ten imputed datasets created, ten iterations, seed = 41).[1]

All of our analysis variables were included in the imputation. To improve its accuracy, we used several auxiliary variables selected for their theoretical relatedness to the to-be-imputed variables. Only those variables that had a minimum correlation of r = 0.1 with to-be-imputed variables were used in the imputation of these variables.[2] Our auxiliary variables included: all items from the 4-item Personal Health Questionnaire from Wave 1 (two depression symptoms, two anxiety symptoms, measured on a frequency scale of 0-4), a single-item global life satisfaction scale (measured on a scale of 1-10), eight items asking respondent to what extent they worry about different things (financial situation, health, xenophobia, outcome of asylum process, having to leave Germany, not being able to return home, having to return, losing their job, measured on a scale of 1-3), self-rated German language ability (an average of self-rated German reading, writing, and speaking ability, measured on a scale of 1-5), and negative experiences during flight (any? yes/no). The sampling weights were not used as imputers.

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| | Percent missing |
|---|---|
| RHS screening score | 5.37 |
| RHS four-cut-offs scores | 8.56 |
| Gender | 0.00 |
| Age | 0.04 |
| Nationality | 0.00 |
| Level of Education | 6.46 |
| Year of arrival in Germany | 0.43 |
| Legal Status | 1.32 |
| Family constellation | 1.40 |
| Housing | 0.00 |
| Employment | 0.00 |
| Currently in education | 0.31 |
| Course participation | 5.22 |

**Table 1: Percent Missing Values per Variable.** ‘RHS’ stands for ‘Refugee Health Screener’.

| | All | Women | Men |
|---|---|---|---|
| **Variable Subcategory (Sample N)** | **Proportion in % (95% - CI)** | **Proportion in % (95% - CI)** | **Proportion in % (95% - CI)** |
| Protected since 2016 (1371) | 43.4 ( 40.4 - 46.5 ) | 38 ( 32.9 - 43 ) | 45.3 ( 41.5 - 49 ) |
| Protected since 2017 (553) | 24.2 ( 21.2 - 27.3 ) | 31.5 ( 25.7 - 37.3 ) | 21.7 ( 18.2 - 25.3 ) |
| Applicant (390) | 21.8 ( 18.8 - 24.8 ) | 21.3 ( 16.2 - 26.5 ) | 22 ( 18.4 - 25.6 ) |
| Suspension of Deportation (115) | 6.2 ( 4.4 - 8.1 ) | 4.8 ( 2.1 - 7.5 ) | 6.7 ( 4.4 - 9 ) |
| Other (106) | 4.3 ( 3.1 - 5.5 ) | 4.4 ( 2.5 - 6.3 ) | 4.2 ( 2.7 - 5.7 ) |
| Private accommodation (2064) | 67.1 ( 63.8 - 70.5 ) | 80.1 ( 74.6 - 85.6 ) | 62.7 ( 58.7 - 66.7 ) |
| Collective accommodation (505) | 32.9 ( 29.5 - 36.2 ) | 19.9 ( 14.4 - 25.4 ) | 37.3 ( 33.3 - 41.3 ) |
| All in Germany (1614) | 36.1 ( 33.3 - 38.9 ) | 68.2 ( 62.3 - 74.2 ) | 25.2 ( 22.5 - 27.9 ) |
| Someone abroad (296) | 16.9 ( 14.4 - 19.4 ) | 14 ( 9.9 - 18.1 ) | 17.9 ( 14.9 - 20.9 ) |
| Unattached (629) | 47 ( 43.7 - 50.3 ) | 17.7 ( 12.2 - 23.3 ) | 56.9 ( 53.2 - 60.6 ) |
| Unemployed (2001) | 72.6 ( 69.6 - 75.5 ) | 92.1 ( 89.4 - 94.7 ) | 66 ( 62.2 - 69.7 ) |
| Employed (568) | 27.4 ( 24.5 - 30.4 ) | 7.9 ( 5.3 - 10.6 ) | 34 ( 30.3 - 37.8 ) |
| Currently not in education (2343) | 88.7 ( 86.6 - 90.7 ) | 93.9 ( 91.4 - 96.4 ) | 86.9 ( 84.3 - 89.5 ) |
| Currently in education (218) | 11.3 ( 9.3 - 13.4 ) | 6.1 ( 3.6 - 8.6 ) | 13.1 ( 10.5 - 15.7 ) |
| No course participation (594) | 25.6 ( 22.5 - 28.7 ) | 35.5 ( 29.5 - 41.4 ) | 22.3 ( 18.7 - 25.9 ) |
| At least one course attended (1841) | 74.4 ( 71.3 - 77.5 ) | 64.5 ( 58.6 - 70.5 ) | 77.7 ( 74.1 - 81.3 ) |

**Table 2: Proportion of Population per Variable Subcategory.** Proportions and 95%-Confidence Intervals (CIs) calculated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. Proportions are unadjusted.

| | All | Women | Men |
|---|---|---|---|
| **Variable Subcategory (Sample N)** | **Prevalence in % (95% - CI)** | **Female Prevalence in % (95% - CI)** | **Male Prevalence in % (95% - CI)** |
| Protected since 2016 (1371) | 33.2 ( 29.5 - 36.9 ) | 50.6 ( 43.5 - 57.8 ) | 28.3 ( 24.2 - 32.3 ) |
| Protected since 2017 (553) | 47.9 ( 40.2 - 55.6 ) | 52.4 ( 39.8 - 65 ) | 45.7 ( 35.8 - 55.5 ) |
| Applicant (390) | 46 ( 37.8 - 54.2 ) | 54.2 ( 40.6 - 67.8 ) | 43.3 ( 33.6 - 53 ) |
| Suspension of Deportation (115) | 57.1 ( 42 - 72.2 ) | 76 ( 56.7 - 95.2 ) | 52.5 ( 34.9 - 70.2 ) |
| Other (106) | 38.1 ( 23.3 - 52.9 ) | 46.6 ( 24.9 - 68.3 ) | 35.1 ( 16.9 - 53.2 ) |
| Private accommodation (2064) | 38.5 ( 35 - 42 ) | 49.8 ( 43.9 - 55.6 ) | 33.6 ( 29.4 - 37.8 ) |
| Collective accommodation (505) | 47 ( 39.8 - 54.1 ) | 65.9 ( 48.4 - 83.4 ) | 43.5 ( 35.8 - 51.2 ) |
| All in Germany (1614) | 42.5 ( 38.2 - 46.8 ) | 49 ( 42.2 - 55.8 ) | 36.4 ( 31.2 - 41.7 ) |
| Someone abroad (296) | 39.8 ( 31.6 - 48.1 ) | 65.3 ( 52.1 - 78.5 ) | 33.1 ( 23.9 - 42.3 ) |
| Unattached (629) | 40.8 ( 35.2 - 46.4 ) | 58.4 ( 42.1 - 74.7 ) | 39 ( 33.1 - 44.8 ) |
| Unemployed (2001) | 46.5 ( 42.6 - 50.3 ) | 53.7 ( 47.5 - 59.9 ) | 43 ( 38.1 - 47.9 ) |
| Employed (568) | 27.5 ( 21.6 - 33.4 ) | 44.1 ( 26.3 - 62 ) | 26.2 ( 20 - 32.3 ) |
| Currently not in education (2343) | 42.7 ( 39.1 - 46.3 ) | 54.3 ( 48.2 - 60.5 ) | 38.4 ( 34.1 - 42.7 ) |
| Currently in education (218) | 30.2 ( 21.7 - 38.7 ) | 31.7 ( 13.5 - 49.9 ) | 30 ( 20.6 - 39.4 ) |
| No course participation (594) | 50.3 ( 42.6 - 57.9 ) | 54.1 ( 44.1 - 64.2 ) | 54.1 ( 44.1 - 64.2 ) |
| At least one course attended (1841) | 38.1 ( 34.5 - 41.8 ) | 52.3 ( 45.1 - 59.5 ) | 52.3 ( 45.1 - 59.5 ) |

**Table 3: Positive Screening Prevalences per Variable Subcategory.** Prevalences and 95%-Confidence Intervals (CIs) calculated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. Prevalences are unadjusted.

| | Women | | Men | |
|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.339 ( 0.198 - 0.582 ) | < 0.0001 | 0.269 ( 0.17 - 0.427 ) | < 0.0001 |
| Ref: Ages 18-24 | | | | |
| Ages 25-34 | 1.047 ( 0.664 - 1.651 ) | 0.841 | 0.95 ( 0.733 - 1.232 ) | 0.699 |
| Ages 35-44 | 1.399 ( 0.865 - 2.264 ) | 0.163 | 1.183 ( 0.906 - 1.543 ) | 0.217 |
| Ages 45-54 | 1.875 ( 1.197 - 2.936 ) | 0.005 | 1.358 ( 1.001 - 1.841 ) | 0.049 |
| Over 55 years old | 2.093 ( 1.302 - 3.367 ) | 0.002 | 1.718 ( 1.16 - 2.545 ) | 0.007 |
| Ref: Syrian | | | | |
| Afghan | 1.527 ( 1.188 - 1.964 ) | 0.001 | 1.874 ( 1.488 - 2.361 ) | < 0.0001 |
| Iraqi | 1.007 ( 0.731 - 1.387 ) | 0.966 | 1.007 ( 0.712 - 1.423 ) | 0.970 |
| Eritrean | 1.162 ( 0.755 - 1.787 ) | 0.495 | 0.683 ( 0.394 - 1.185 ) | 0.175 |
| Other | 1.431 ( 1.099 - 1.862 ) | 0.007 | 1.325 ( 1.001 - 1.753 ) | 0.049 |
| Ref: Medium level of education | | | | |
| Low level of education | 1.033 ( 0.805 - 1.326 ) | 0.800 | 0.864 ( 0.647 - 1.153 ) | 0.318 |
| High level of education | 0.994 ( 0.746 - 1.323 ) | 0.965 | 0.921 ( 0.71 - 1.194 ) | 0.534 |
| Ref: Arrived in 2013 | | | | |
| Arrived in 2014 | 0.911 ( 0.652 - 1.273 ) | 0.586 | 1.106 ( 0.716 - 1.707 ) | 0.650 |
| Arrived in 2015 | 0.982 ( 0.696 - 1.385 ) | 0.916 | 1.149 ( 0.763 - 1.731 ) | 0.506 |
| Arrived in 2016 | 1.164 ( 0.743 - 1.823 ) | 0.507 | 1.488 ( 0.877 - 2.524 ) | 0.141 |

**Table 4: Gender-stratified Poisson Regressions Predicting RHS Screening Score from Sociodemographic Factors and Year of Arrival in Germany.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | RR estimates (95%-CI) | P-values |
|---|---|---|
| Intercept | 0.182 ( 0.106 - 0.31 ) | < 0.0001 |
| Ref: Male | | |
| Female | 1.414 ( 1.163 - 1.718 ) | 0.001 |
| Ref: Ages 18-24 | | |
| Ages 25-34 | 0.987 ( 0.708 - 1.375 ) | 0.937 |
| Ages 35-44 | 1.267 ( 0.911 - 1.762 ) | 0.158 |
| Ages 45-54 | 1.857 ( 1.366 - 2.526 ) | < 0.0001 |
| Over 55 years old | 2.125 ( 1.512 - 2.985 ) | < 0.0001 |
| Ref: Syrian | | |
| Afghan | 1.751 ( 1.321 - 2.32 ) | 0.0001 |
| Iraqi | 0.903 ( 0.638 - 1.279 ) | 0.566 |
| Eritrean | 0.668 ( 0.405 - 1.103 ) | 0.114 |
| Other | 1.332 ( 0.96 - 1.847 ) | 0.085 |
| Ref: Medium level of education | | |
| Low level of education | 1.11 ( 0.866 - 1.422 ) | 0.411 |
| High level of education | 1.067 ( 0.849 - 1.342 ) | 0.578 |
| Ref: Arrived in 2013 | | |
| Arrived in 2014 | 1.137 ( 0.66 - 1.958 ) | 0.644 |
| Arrived in 2015 | 1.396 ( 0.851 - 2.291 ) | 0.187 |
| Arrived in 2016 | 1.64 ( 0.878 - 3.064 ) | 0.120 |

**Table 5: Legal status-stratified Poisson Regressions Predicting RHS Screening Score from Sociodemographic Factors and Year of Arrival in Germany - Those with Refugee Status Only.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | All | | Women | | Men | |
|---|---|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.257 ( 0.181 - 0.365 ) | < 0.0001 | 0.326 ( 0.187 - 0.57 ) | < 0.0001 | 0.249 ( 0.155 - 0.399 ) | < 0.0001 |
| Female | 1.304 ( 1.128 - 1.507 ) | 0.0003 | | | | |
| Ages 25-34 | 0.969 ( 0.773 - 1.213 ) | 0.781 | 1.043 ( 0.666 - 1.633 ) | 0.853 | 0.956 ( 0.739 - 1.237 ) | 0.733 |
| Ages 35-44 | 1.273 ( 1.01 - 1.605 ) | 0.040 | 1.429 ( 0.888 - 2.301 ) | 0.133 | 1.188 ( 0.911 - 1.549 ) | 0.203 |
| Ages 45-54 | 1.498 ( 1.176 - 1.908 ) | 0.001 | 1.848 ( 1.184 - 2.886 ) | 0.006 | 1.848 ( 1.184 - 2.886 ) | 0.045 |
| Over 55 years old | 1.846 ( 1.435 - 2.374 ) | < 0.0001 | 2.127 ( 1.324 - 3.416 ) | 0.001 | 1.675 ( 1.171 - 2.395 ) | 0.005 |
| Afghan | 1.602 ( 1.309 - 1.96 ) | < 0.0001 | 1.552 ( 1.202 - 2.005 ) | 0.001 | 1.57 ( 1.169 - 2.108 ) | 0.003 |
| Iraqi | 0.93 ( 0.718 - 1.204 ) | 0.581 | 1.009 ( 0.733 - 1.388 ) | 0.965 | 0.881 ( 0.62 - 1.252 ) | 0.481 |
| Eritrean | 0.783 ( 0.529 - 1.157 ) | 0.219 | 1.171 ( 0.762 - 1.799 ) | 0.471 | 0.63 ( 0.361 - 1.098 ) | 0.103 |
| Other | 1.194 ( 0.939 - 1.52 ) | 0.148 | 1.39 ( 1.054 - 1.832 ) | 0.019 | 1.074 ( 0.76 - 1.519 ) | 0.685 |
| Low level of education | 0.922 ( 0.751 - 1.132 ) | 0.438 | 1.032 ( 0.804 - 1.325 ) | 0.802 | 0.894 ( 0.669 - 1.193 ) | 0.444 |
| High level of education | 0.956 ( 0.785 - 1.164 ) | 0.651 | 1.003 ( 0.753 - 1.337 ) | 0.981 | 0.951 ( 0.737 - 1.228 ) | 0.701 |
| Arrived in 2014 | 1.021 ( 0.753 - 1.384 ) | 0.896 | 0.937 ( 0.668 - 1.315 ) | 0.707 | 1.095 ( 0.707 - 1.696 ) | 0.684 |
| Arrived in 2015 | 1.074 ( 0.801 - 1.44 ) | 0.633 | 1.021 ( 0.718 - 1.452 ) | 0.907 | 1.117 ( 0.737 - 1.695 ) | 0.601 |
| Arrived in 2016 | 1.294 ( 0.875 - 1.915 ) | 0.196 | 1.247 ( 0.787 - 1.974 ) | 0.348 | 1.376 ( 0.815 - 2.324 ) | 0.233 |
| Protected since 2017 | 1.233 ( 1.031 - 1.474 ) | 0.022 | 0.987 ( 0.802 - 1.216 ) | 0.905 | 1.437 ( 1.113 - 1.854 ) | 0.005 |
| Applicant | 1.169 ( 0.928 - 1.474 ) | 0.185 | 0.97 ( 0.746 - 1.261 ) | 0.818 | 1.285 ( 0.913 - 1.809 ) | 0.151 |
| Suspension of Deportation | 1.535 ( 1.12 - 2.103 ) | 0.008 | 1.405 ( 1.008 - 1.958 ) | 0.045 | 1.639 ( 1.066 - 2.52 ) | 0.024 |
| Other status | 1.001 ( 0.693 - 1.447 ) | 0.994 | 0.833 ( 0.516 - 1.344 ) | 0.452 | 1.131 ( 0.688 - 1.858 ) | 0.627 |

**Table 6: Non-gender-stratified and Gender-stratified Poisson Regressions Predicting RHS Screening Score from Legal Status Adjusting for Sociodemographic Factors and Year of Arrival in Germany.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | All | | Women | | Men | |
|---|---|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.22 ( 0.152 - 0.317 ) | < 0.0001 | 0.328 ( 0.189 - 0.568 ) | < 0.0001 | 0.198 ( 0.119 - 0.332 ) | < 0.0001 |
| Ref: Male | | | | | | |
| Female | 1.417 ( 1.234 - 1.627 ) | < 0.0001 | | | | |
| Ref: Ages 18-24 | | | | | | |
| Ages 25-34 | 1.061 ( 0.834 - 1.35 ) | 0.627 | 1.093 ( 0.674 - 1.772 ) | 0.714 | 1.074 ( 0.816 - 1.415 ) | 0.610 |
| Ages 35-44 | 1.444 ( 1.116 - 1.867 ) | 0.005 | 1.425 ( 0.874 - 2.326 ) | 0.147 | 1.486 ( 1.08 - 2.044 ) | 0.015 |
| Ages 45-54 | 1.808 ( 1.366 - 2.392 ) | 0.0003 | 1.902 ( 1.209 - 2.99 ) | 0.005 | 1.856 ( 1.261 - 2.732 ) | 0.002 |
| Over 55 years old | 2.069 ( 1.566 - 2.733 ) | < 0.0001 | 2.106 ( 1.308 - 3.39 ) | 0.002 | 2.188 ( 1.444 - 3.316 ) | 0.0002 |
| Ref: Syrian | | | | | | |
| Afghan | 1.756 ( 1.464 - 2.106 ) | < 0.0001 | 1.504 ( 1.17 - 1.932 ) | 0.001 | 1.89 ( 1.496 - 2.389 ) | < 0.0001 |
| Iraqi | 0.977 ( 0.757 - 1.261 ) | 0.860 | 0.972 ( 0.703 - 1.343 ) | 0.864 | 0.994 ( 0.711 - 1.392 ) | 0.974 |
| Eritrean | 0.773 ( 0.525 - 1.14 ) | 0.194 | 1.11 ( 0.727 - 1.695 ) | 0.628 | 0.666 ( 0.383 - 1.156 ) | 0.148 |
| Other | 1.318 ( 1.068 - 1.627 ) | 0.010 | 1.401 ( 1.06 - 1.851 ) | 0.017 | 1.278 ( 0.962 - 1.696 ) | 0.090 |
| Ref: Medium level of education | | | | | | |
| Low level of education | 0.897 ( 0.733 - 1.098 ) | 0.291 | 1.019 ( 0.794 - 1.309 ) | 0.880 | 0.851 ( 0.642 - 1.127 ) | 0.259 |
| High level of education | 0.915 ( 0.755 - 1.11 ) | 0.369 | 0.968 ( 0.739 - 1.267 ) | 0.810 | 0.908 ( 0.699 - 1.18 ) | 0.472 |
| Ref: Arrived in 2013 | | | | | | |
| Arrived in 2014 | 1.009 ( 0.744 - 1.368 ) | 0.953 | 0.904 ( 0.651 - 1.255 ) | 0.546 | 1.088 ( 0.703 - 1.683 ) | 0.706 |
| Arrived in 2015 | 1.073 ( 0.803 - 1.435 ) | 0.633 | 0.972 ( 0.693 - 1.363 ) | 0.869 | 1.15 ( 0.761 - 1.738 ) | 0.506 |
| Arrived in 2016 | 1.313 ( 0.899 - 1.919 ) | 0.159 | 1.153 ( 0.737 - 1.804 ) | 0.534 | 1.424 ( 0.847 - 2.395 ) | 0.182 |
| Ref: All in Germany | | | | | | |
| Someone abroad | 1.033 ( 0.836 - 1.277 ) | 0.762 | 1.082 ( 0.85 - 1.378 ) | 0.519 | 1.021 ( 0.752 - 1.386 ) | 0.895 |
| Unattached | 1.333 ( 1.107 - 1.605 ) | 0.002 | 1.182 ( 0.893 - 1.564 ) | 0.241 | 1.409 ( 1.09 - 1.821 ) | 0.009 |

**Table 7: Non-gender-stratified and Gender-stratified Poisson Regressions Predicting RHS Screening Score from Family Situation Adjusting for Sociodemographic Factors and Year of Arrival.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | All | | Women | | Men | |
|---|---|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.27 ( 0.193 - 0.377 ) | < 0.0001 | 0.334 ( 0.197 - 0.566 ) | < 0.0001 | 0.267 ( 0.17 - 0.419 ) | < 0.0001 |
| Ref: Male | | | | | | |
| Female | 1.347 ( 1.161 - 1.561 ) | < 0.0001 | | | | |
| Ref: Ages 18-24 | | | | | | |
| Ages 25-34 | 0.975 ( 0.778 - 1.222 ) | 0.827 | 1.069 ( 0.691 - 1.653 ) | 0.761 | 0.963 ( 0.742 - 1.251 ) | 0.779 |
| Ages 35-44 | 1.274 ( 1.016 - 1.596 ) | 0.035 | 1.398 ( 0.867 - 2.254 ) | 0.161 | 1.219 ( 0.935 - 1.589 ) | 0.144 |
| Ages 45-54 | 1.519 ( 1.189 - 1.94 ) | 0.001 | 1.871 ( 1.197 - 2.925 ) | 0.005 | 1.405 ( 1.022 - 1.93 ) | 0.036 |
| Over 55 years old | 1.819 ( 1.4 - 2.364 ) | < 0.0001 | 2.073 ( 1.279 - 3.361 ) | 0.003 | 1.786 ( 1.184 - 2.693 ) | 0.006 |
| Ref: Syrian | | | | | | |
| Afghan | 1.686 ( 1.399 - 2.032 ) | < 0.0001 | 1.505 ( 1.161 - 1.951 ) | 0.002 | 1.768 ( 1.389 - 2.25 ) | 0.000 |
| Iraqi | 0.982 ( 0.758 - 1.274 ) | 0.893 | 1.003 ( 0.728 - 1.382 ) | 0.985 | 0.977 ( 0.689 - 1.386 ) | 0.896 |
| Eritrean | 0.752 ( 0.508 - 1.114 ) | 0.155 | 1.129 ( 0.722 - 1.767 ) | 0.595 | 0.636 ( 0.365 - 1.109 ) | 0.110 |
| Other | 1.27 ( 1.034 - 1.561 ) | 0.023 | 1.383 ( 1.074 - 1.781 ) | 0.012 | 1.222 ( 0.919 - 1.624 ) | 0.168 |
| Ref: Medium level of education | | | | | | |
| Low level of education | 0.928 ( 0.755 - 1.14 ) | 0.476 | 1.036 ( 0.809 - 1.327 ) | 0.777 | 0.882 ( 0.66 - 1.178 ) | 0.393 |
| High level of education | 0.969 ( 0.794 - 1.182 ) | 0.755 | 1.023 ( 0.772 - 1.356 ) | 0.875 | 0.948 ( 0.731 - 1.23 ) | 0.689 |
| Arrived in 2014 | 0.992 ( 0.739 - 1.33 ) | 0.955 | 0.897 ( 0.644 - 1.251 ) | 0.523 | 1.064 ( 0.696 - 1.627 ) | 0.774 |
| Arrived in 2015 | 1.029 ( 0.777 - 1.364 ) | 0.841 | 0.969 ( 0.691 - 1.36 ) | 0.856 | 1.082 ( 0.722 - 1.621 ) | 0.702 |
| Arrived in 2016 | 1.265 ( 0.863 - 1.855 ) | 0.229 | 1.147 ( 0.732 - 1.8 ) | 0.549 | 1.388 ( 0.824 - 2.337 ) | 0.218 |
| Ref: Private accommodation | | | | | | |
| Collective accommodation | 1.204 ( 1.019 - 1.423 ) | 0.029 | 1.147 ( 0.893 - 1.473 ) | 0.277 | 1.204 ( 0.968 - 1.496 ) | 0.095 |

**Table 8: Non-gender-stratified and Gender-stratified Poisson Regressions Predicting RHS Screening Score from Housing Situation Adjusting for Sociodemographic Factors and Year of Arrival in Germany.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | All | | Women | | Men | |
|---|---|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.508 ( 0.342 - 0.753 ) | 0.001 | 0.078 ( 0.022 - 0.274 ) | < 0.0001 | 0.504 ( 0.332 - 0.766 ) | 0.001 |
| Ref: Male | | | | | | |
| Female | 0.276 ( 0.196 - 0.387 ) | < 0.0001 | | | | |
| Ref: Ages 18-24 | | | | | | |
| Ages 25-34 | 1.005 ( 0.799 - 1.265 ) | 0.964 | 1.847 ( 0.743 - 4.589 ) | 0.187 | 1.005 ( 0.794 - 1.273 ) | 0.964 |
| Ages 35-44 | 0.646 ( 0.485 - 0.861 ) | 0.003 | 2.331 ( 0.833 - 6.529 ) | 0.107 | 0.573 ( 0.429 - 0.767 ) | 0.0002 |
| Ages 45-54 | 0.409 ( 0.269 - 0.623 ) | < 0.0001 | 2.076 ( 0.656 - 6.572 ) | 0.214 | 0.349 ( 0.219 - 0.558 ) | < 0.0001 |
| Over 55 years old | 0.141 ( 0.054 - 0.372 ) | < 0.0001 | 1.875 ( 0.479 - 7.342 ) | 0.367 | 0.022 ( 0.005 - 0.102 ) | < 0.0001 |
| Ref: Syrian | | | | | | |
| Afghan | 1.041 ( 0.754 - 1.437 ) | 0.807 | 0.2 ( 0.064 - 0.62 ) | 0.005 | 1.115 ( 0.803 - 1.547 ) | 0.517 |
| Iraqi | 0.806 ( 0.557 - 1.165 ) | 0.251 | 0.523 ( 0.203 - 1.35 ) | 0.181 | 0.824 ( 0.563 - 1.206 ) | 0.320 |
| Eritrean | 0.984 ( 0.727 - 1.332 ) | 0.916 | 1.53 ( 0.584 - 4.007 ) | 0.387 | 0.955 ( 0.695 - 1.311 ) | 0.775 |
| Other | 1.176 ( 0.911 - 1.518 ) | 0.215 | 1.495 ( 0.697 - 3.206 ) | 0.301 | 1.135 ( 0.866 - 1.487 ) | 0.360 |
| Ref: Medium level of education | | | | | | |
| Low level of education | 1.372 ( 1.088 - 1.729 ) | 0.007 | 1.323 ( 0.549 - 3.191 ) | 0.533 | 1.372 ( 1.081 - 1.74 ) | 0.009 |
| High level of education | 1.127 ( 0.869 - 1.462 ) | 0.366 | 1.239 ( 0.481 - 3.186 ) | 0.656 | 1.106 ( 0.844 - 1.449 ) | 0.465 |
| Ref: Arrived in 2013 | | | | | | |
| Arrived in 2014 | 1.01 ( 0.729 - 1.4 ) | 0.953 | 0.889 ( 0.444 - 1.782 ) | 0.741 | 1.045 ( 0.73 - 1.496 ) | 0.811 |
| Arrived in 2015 | 0.699 ( 0.498 - 0.981 ) | 0.038 | 0.475 ( 0.204 - 1.104 ) | 0.084 | 0.735 ( 0.508 - 1.064 ) | 0.103 |
| Arrived in 2016 | 0.301 ( 0.134 - 0.673 ) | 0.004 | 0.117 ( 0.014 - 0.977 ) | 0.048 | 0.34 ( 0.147 - 0.787 ) | 0.012 |
| Ref: Not employed | | | | | | |
| Employed | 0.674 ( 0.533 - 0.852 ) | 0.001 | 0.613 ( 0.277 - 1.36 ) | 0.229 | 0.659 ( 0.514 - 0.844 ) | 0.001 |

**Table 9: Non-gender-stratified and Gender-stratified Poisson Regressions Predicting RHS Screening Score from Employment Situation Adjusting for Sociodemographic Factors and Year of Arrival in Germany.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | All | | Women | | Men | |
|---|---|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.505 ( 0.259 - 0.987 ) | 0.046 | 0.029 ( 0.003 - 0.261 ) | 0.002 | 0.514 ( 0.255 - 1.034 ) | 0.062 |
| Ref: Male | | | | | | |
| Female | 0.645 ( 0.422 - 0.985 ) | 0.043 | | | | |
| Ref: Ages 18-24 | | | | | | |
| Ages 25-34 | 0.325 ( 0.222 - 0.476 ) | < 0.0001 | 0.215 ( 0.088 - 0.526 ) | 0.001 | 0.342 ( 0.227 - 0.515 ) | < 0.0001 |
| Ages 35-44 | 0.214 ( 0.129 - 0.352 ) | < 0.0001 | 0.39 ( 0.149 - 1.023 ) | 0.056 | 0.19 ( 0.108 - 0.337 ) | < 0.0001 |
| Ages 45-54 | 0.082 ( 0.039 - 0.173 ) | < 0.0001 | 0.237 ( 0.077 - 0.733 ) | 0.013 | 0.054 ( 0.019 - 0.158 ) | < 0.0001 |
| Over 55 years old | 0.091 ( 0.013 - 0.656 ) | 0.017 | 0.393 ( 0.043 - 3.545 ) | 0.405 | 0 ( 0 - 0 ) | < 0.0001 |
| Ref: Syrian | | | | | | |
| Afghan | 0.975 ( 0.592 - 1.606 ) | 0.921 | 0.894 ( 0.297 - 2.691 ) | 0.842 | 1.064 ( 0.607 - 1.865 ) | 0.830 |
| Iraqi | 0.318 ( 0.153 - 0.659 ) | 0.002 | 0.168 ( 0.048 - 0.591 ) | 0.006 | 0.352 ( 0.159 - 0.777 ) | 0.010 |
| Eritrean | 0.566 ( 0.284 - 1.127 ) | 0.105 | 0.105 ( 0.013 - 0.812 ) | 0.031 | 0.676 ( 0.335 - 1.363 ) | 0.274 |
| Other | 0.712 ( 0.444 - 1.142 ) | 0.159 | 0.623 ( 0.199 - 1.954 ) | 0.417 | 0.77 ( 0.457 - 1.296 ) | 0.325 |
| Ref: Medium level of education | | | | | | |
| Low level of education | 1.531 ( 1.006 - 2.329 ) | 0.047 | 1.046 ( 0.462 - 2.371 ) | 0.914 | 1.608 ( 1.012 - 2.557 ) | 0.045 |
| High level of education | 1.828 ( 1.2 - 2.783 ) | 0.005 | 0.856 ( 0.338 - 2.17 ) | 0.743 | 2.058 ( 1.279 - 3.309 ) | 0.003 |
| Ref: Arrived in 2013 | | | | | | |
| Arrived in 2014 | 0.678 ( 0.359 - 1.279 ) | 0.230 | 8.362 ( 1.068 - 65.485 ) | 0.043 | 0.621 ( 0.325 - 1.187 ) | 0.150 |
| Arrived in 2015 | 0.505 ( 0.278 - 0.915 ) | 0.024 | 9.076 ( 1.154 - 71.392 ) | 0.036 | 0.447 ( 0.244 - 0.822 ) | 0.010 |
| Arrived in 2016 | 0.237 ( 0.063 - 0.89 ) | 0.033 | 14.722 ( 1.404 - 154.363 ) | 0.025 | 0 ( 0 - 0.002 ) | 0.0002 |
| Ref: Not in education | | | | | | |
| In education | 0.766 ( 0.532 - 1.104 ) | 0.153 | 0.429 ( 0.178 - 1.038 ) | 0.060 | 0.842 ( 0.572 - 1.241 ) | 0.386 |

**Table 10: Non-gender-stratified and Gender-stratified Poisson Regressions Predicting RHS Screening Score from Current Education Situation Adjusting for Sociodemographic Factors and Year of Arrival in Germany.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.

| | All | | Women | | Men | |
|---|---|---|---|---|---|---|
| | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** | **RR estimates (95%-CI)** | **P-values** |
| Intercept | 0.786 ( 0.636 - 0.972 ) | 0.026 | 0.586 ( 0.385 - 0.891 ) | 0.011 | 0.789 ( 0.611 - 1.018 ) | 0.069 |
| Ref: Male | | | | | | |
| Female | 0.85 ( 0.767 - 0.941 ) | 0.002 | | | | |
| Ref: Ages 18-24 | | | | | | |
| Ages 25-34 | 0.993 ( 0.893 - 1.105 ) | 0.900 | 1.059 ( 0.745 - 1.506 ) | 0.745 | 0.995 ( 0.892 - 1.11 ) | 0.928 |
| Ages 35-44 | 1.041 ( 0.92 - 1.178 ) | 0.523 | 1.34 ( 0.935 - 1.92 ) | 0.104 | 0.96 ( 0.841 - 1.096 ) | 0.548 |
| Ages 45-54 | 1.08 ( 0.952 - 1.225 ) | 0.231 | 1.372 ( 0.961 - 1.959 ) | 0.078 | 1.016 ( 0.885 - 1.167 ) | 0.819 |
| Over 55 years old | 0.79 ( 0.58 - 1.076 ) | 0.134 | 1.12 ( 0.641 - 1.956 ) | 0.689 | 0.668 ( 0.445 - 1.004 ) | 0.051 |
| Ref: Syrian | | | | | | |
| Afghan | 0.885 ( 0.777 - 1.008 ) | 0.067 | 0.832 ( 0.616 - 1.125 ) | 0.232 | 0.906 ( 0.785 - 1.046 ) | 0.179 |
| Iraqi | 0.999 ( 0.915 - 1.09 ) | 0.974 | 1.027 ( 0.829 - 1.272 ) | 0.810 | 0.993 ( 0.901 - 1.095 ) | 0.891 |
| Eritrean | 1.127 ( 1.033 - 1.229 ) | 0.007 | 1.217 ( 0.931 - 1.592 ) | 0.147 | 1.105 ( 1.013 - 1.205 ) | 0.023 |
| Other | 0.794 ( 0.69 - 0.913 ) | 0.001 | 0.821 ( 0.63 - 1.071 ) | 0.144 | 0.774 ( 0.659 - 0.908 ) | 0.002 |
| Ref: Medium level of education | | | | | | |
| Low level of education | 1.066 ( 0.949 - 1.197 ) | 0.277 | 1.208 ( 0.977 - 1.494 ) | 0.080 | 1.027 ( 0.905 - 1.166 ) | 0.675 |
| High level of education | 1.158 ( 1.06 - 1.265 ) | 0.001 | 1.285 ( 1.041 - 1.585 ) | 0.019 | 1.121 ( 1.023 - 1.228 ) | 0.015 |
| Ref: Arrived in 2013 | | | | | | |
| Arrived in 2014 | 1.033 ( 0.862 - 1.239 ) | 0.722 | 0.984 ( 0.767 - 1.263 ) | 0.899 | 1.073 ( 0.848 - 1.356 ) | 0.559 |
| Arrived in 2015 | 1.026 ( 0.856 - 1.23 ) | 0.783 | 0.9 ( 0.694 - 1.166 ) | 0.423 | 1.083 ( 0.859 - 1.365 ) | 0.500 |
| Arrived in 2016 | 1.116 ( 0.868 - 1.436 ) | 0.393 | 0.989 ( 0.708 - 1.382 ) | 0.950 | 1.202 ( 0.88 - 1.641 ) | 0.247 |
| Ref: Did not attend course(s) | | | | | | |
| Attended integration course(s) | 0.931 ( 0.848 - 1.021 ) | 0.130 | 0.975 ( 0.835 - 1.139 ) | 0.752 | 0.904 ( 0.811 - 1.009 ) | 0.070 |

**Table 11: Non-gender-stratified and Gender-stratified Poisson Regressions Predicting RHS Screening Score from Integration Course Participation Adjusting for Sociodemographic Factors and Year of Arrival in Germany.** Risk ratios (RR), 95%-Confidence Intervals (CIs), and P-values estimated from ten multiply imputed datasets pooled using Rubin's Rules. Weighted. 'Ref.' stands for 'Reference Category'.