Effects of COVID-19-related life changes on mental health in Syrian refugees in Turkey

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Background

Mental disorders are currently the greatest global health burden. The coronavirus disease 2019 (COVID-19) pandemic is having an adverse impact on people’s mental health, particularly in vulnerable populations, such as refugees.

Aims

The present study was designed to examine the association between COVID-19 and changes in mental health in Syrian refugees in Turkey.

Method

We conducted a two-wave panel survey of a representative sample of 302 of the estimated 500 000 Syrian refugees (ages 18 and older) living under humanitarian support in Istanbul (first wave between 9 and 15 July 2020 and the follow-up between 11 and 14 September 2020). We administered seven items from the CoRonavirus Health Impact Survey in addition to one-context specific item about life changes because of COVID-19, and measures of depression (10-item Center for Epidemiologic Study Depression Scale, CESD-10), anxiety (6-item State-Trait Anxiety Inventory, STA-6) and perceived stress (Perceived Stress Scale, PSS-4).

Results

A factor analysis yielded three COVID-19 factors, labelled ‘social relationships’, ‘stress’ and ‘hope’. We conducted a series of cross-lag panel analyses to test associations between the COVID-19 factors and mental health. We found associations between all COVID-19 factors and CESD-10, between COVID-19 ‘stress’ and STA-4, and between COVID-19 ‘stress’ and COVID-19 ‘hope’ and PSS-4.

Conclusions

Our measures of life changes because of the COVID-19 pandemic are associated with changes in the mental health of Syrian refugees living in Istanbul. It is therefore important that they are provided with services to reduce what may be particularly debilitating consequences of COVID-19.

Keywords

Depressive disorders; anxiety disorders; post-traumatic stress disorder; stigma and discrimination; low- and middle-income countries.

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Turkey, Sweden, Germany and the USA and have investigated the effect of pre-migration, migration and post-migration factors, we know much less about how the COVID-19 pandemic is contributing to a worsening of mental health in refugees. The present study is the first, to our knowledge, to analyse the effect of the COVID-19 pandemic on the mental health of Syrian refugees in Istanbul.

Aims

Our goal is to use our two-wave Syrian Refugee Mental Health Panel Study to examine the association between COVID-19 factors and mental health. Given recent findings of a bidirectional relationship between COVID-19 and psychiatric disorders, it is important to study not only whether the pandemic is associated with mental health deterioration but also whether the latter may act as a susceptibility or vulnerability factor for maintenance of pandemic-related stressors. That is, the pandemic may have negatively affected Syrian refugees’ mental health, which may in turn have sustained or increased their worries about their social context, financial situation, and employment status and about antipandemic restrictions.

We set out to conduct a series of cross-lag models assessing the relationship among symptoms of depression, anxiety and perceived stress to test whether life changes because of COVID-19 are associated with changes in the mental health of Syrian refugees living in Istanbul. Given the consistent findings of gender differences in depression, it is important to study not only whether the pandemic is associated with mental health deterioration but also whether the latter may act as a susceptibility or vulnerability factor for maintenance of pandemic-related stressors. That is, the pandemic may have negatively affected Syrian refugees’ mental health, which may in turn have sustained or increased their worries about their social context, financial situation, and employment status and about antipandemic restrictions.

We used seven items from the CRISIS questionnaire section on ‘Life changes due to Coronavirus/COVID-19 crisis in the last two weeks’ integrated by one context-specific item about the quality of relationships with the Turkish community (see Appendix).

The CRISIS questionnaire asks about respondents’ feelings concerning a number of COVID-19-related changes in their daily life, including stress about restrictions of leaving home, change in the quality of social relationships, concerns about the financial situation and feelings of hope towards the end of the pandemic. The rationale of the item selection meets three criteria: budget constraints, survey timing and context. As our surveys were conducted in the middle of the pandemic and not at the beginning and as some of those items were US-specific, our team has selected a subset of items capturing COVID-19 stressors that could be used in later phases of the pandemic and outside the USA. The Appendix reports the full list of COVID-19 questions used in this research along with their response options and scoring range. In the analyses, responses for questions on the quality of the relationships and hopefulness for the end of the pandemic were reversed so that higher values denote more negative or problematic responses.

We used three validated measures of symptoms of mental disorders to assess Syrian refugees’ mental health. All measures were coded so that higher values reflect higher symptoms. In Supplementary Appendix A available at https://doi.org/10.1192/bjo.2021.1009 we present the full question wordings and response options of these questionnaires. For symptoms of depression we used the 10-item Center for Epidemiologic Study Depression Scale (CES-D-10). The depression scale is a shorter 10-item form of the CES-D. Respondents were asked to indicate how often or how consistently they have felt or behaved this way during the past 2 weeks: I was bothered by things that usually don’t bother me; I had trouble keeping my mind on what I was doing; depressed; I felt that everything I did was an effort; I felt hopeful about the future; I felt fearful; My sleep was restless; I was happy; I felt lonely; I could not get ‘going’. Response options were: 0, rarely or none of the time (less than 1 day); 1, some or a little of the time (1–2 days); 2, occasionally or a moderate amount of time (3–4 days); 3, most or all of the time (5–7 days).
For symptoms of anxiety, we used the 6-item State-Trait Anxiety Inventory (STAI-6). Respondents were asked to state how they have been feeling in the past 2 weeks on the following items: I have been feeling calm; I have been feeling tense; I have been feeling relaxed; I have been feeling upset; I have been feeling content; I have been feeling worried. Response options were: 0, never; 1, sometimes; 2, often; 3, almost always.

For symptoms of stress, we used the 4-item Perceived Stress Scale (PSS-4). Respondents were asked about their feelings and thoughts in the past 2 weeks: How often have you felt that you were unable to control the important things in your life? How often have you felt confident about your ability to handle your personal problems? How often have you felt that things were going your way? How often have you felt difficulties were piling up so high that you could not overcome them? Response options were: 0, never; 1, almost never; 2, sometimes; 3, fairly often; 4, very often.

In the analyses we included a number of pre-migration and post-migration factors for which we asked for information in our surveys: gender, age, education, employment status, total monthly household income, number of years living in Istanbul, whether experienced discrimination, perception of Turkish society’s negative attitude towards Syrian refugees, and concern about stability of residential status in Turkey. Descriptive statistics for all variables are presented in Supplementary Appendix B. To maximise comparability of questions across Syrian refugee surveys, we asked many of the above questions in the same way as they were asked in the Syrian Refugee Panel Study, which examines the integration of Syrian refugees into host European societies.

Statistical analysis

We first conducted a principal components factor analysis with varimax orthogonal rotation to derive COVID-19 factor scores. Rotation is a common procedure in that, by forcing factors to be uncorrelated, it reduces ambiguity about which item belongs to which factor. Next, we took advantage of the longitudinal nature of our data and conducted a series of cross-lagged panel analyses based on linear regression models with maximum likelihood random-effects estimator to explore the causal relationship between COVID-19 factors and mental health.

Thus, in the models that estimate the effect of COVID-19 factors on measures of mental health at time (t - 1), we include levels of COVID-19 factors and mental health at time (t). An example of such models is presented in Equation (1), where CESD-10 (t) is the dependent variable. We estimate the same model for STAI-6 and PSS-4:

\[
\text{CESD-10}(t) = a + \text{CESD-10}(t-1) + \text{COVID-19 Social Relationships}(t) + \text{COVID-19 Social Relationships}(t-1) + \text{COVID-19 Stress}(t) + \text{COVID-19 Stress}(t-1) + \text{COVID-19 Hope}(t) + \text{COVID-19 Hope}(t-1) + \epsilon
\]

Thus, Equation (1) models depressive symptoms at time (t) as a function of depressive symptoms at time (t - 1), and COVID-19 factors (i.e. social relationships, stress and hope) at both time (t) and (t - 1), where a is the intercept and \( \epsilon \) the error term.

Similarly, in the models that estimate the effects of mental health on COVID-19 factors at time (t - 1), we include COVID-19 factors along with mental health at time (t). Thus, in these analyses COVID-19 factors are the dependent variables and we estimate these models separately for each of our three COVID-19 factors. In these analyses, we also control for the other two COVID-19 factors at both time (t) and (t - 1). An example of such models is presented in Equation (2), where COVID-19 social relationships (t) is the dependent variable:

\[
\text{COVID-19 Social Relationships}(t) = a + \text{COVID-19 Social Relationships}(t-1) + \text{COVID-19 Stress}(t) + \text{COVID-19 Stress}(t-1) + \text{COVID-19 Hope}(t) + \text{COVID-19 Hope}(t-1)
\]

Thus, Equation (2) models COVID-19 social relationships at time (t) as a function of COVID-19 social relationships at time (t - 1), the other two COVID-19 factors at both time (t) and (t - 1), and our three mental health measures at both time (t) and (t - 1). For simplicity, the basic models reported in Equations (1) and (2) omit all sociodemographic variables included in the analyses.

The longitudinal nature of our data allowed us to examine the bidirectional nature of the association between COVID-19 factors and symptoms of mental illness. That is, COVID-19 factors could adversely affect mental health, and poorer mental health could sustain or increase pandemic-related worries and stresses. Akaïke’s Information Criterion (AIC) is a goodness of fit measure that can be used to examine this question by comparing alternative models. The model with the smallest AIC value fits the data better and, therefore, represents the best balance of goodness of fit and complexity. Finally, in supplementary analyses we test for an interaction between gender and COVID-19 factors to see whether the pandemic has affected Syrian refugees’ mental health differently for males and females.

Results

Before moving to the results from our regression analyses, we report the findings from our rotated factor analysis used to derive our COVID-19 factors. Both the rotated factor analysis and the scree plot of the eigenvalues indicate that the COVID-19 items load on three factors: items assessing changes in social relationships loaded on a factor labelled ‘COVID-19 social relationships’ (Factor 1); items assessing stress and concerns because of COVID-19 loaded on a factor labelled ‘COVID-19 stress’ (Factor 2); and the single item assessing hope about the end of the pandemic constituted its own factor, labelled ‘COVID-19 hope’ (Factor 3). We report the full procedure used to derive our COVID-19 factor scores in Supplementary Appendix C. Our three COVID-19 factors were rescaled between 0 and 1 to make interpreting coefficients easier across models (COVID-19 social relationships: mean, 0.51, s.d. = 0.16; COVID-19 stress: mean 0.55, s.d. = 0.19; COVID-19 hope: mean 0.45; s.d. = 0.20).

Scores on the CESD-10 range from 0 to 30 (mean 13.07 and s.d. = 6.22), on the STAI-6 from 0 to 18 (mean 8.73 and s.d. = 4.59) and on the PSS-4 from 0 to 16 (mean 7.30 and s.d. = 2.69). The effects were substantive in size: a negative change in 0.1 point on a scale of 0 to 1 (unit of measurement) related to an increase (decrease) of more than one standard deviation in depression (stress) symptoms.

Table 1 presents the effects of COVID-19 factors on mental health. COVID-19 social relationships (t) was positively associated with depression symptoms at time (t) (\( P < 0.05 \)) and negatively associated with perceived stress at time (t) (\( P < 0.05 \)). The effects were substantive in size: a negative change in 0.1 point in COVID-19 social relationships measured on a 0 to 1 scale was related to an increase (decrease) of more than one standard deviation in depression (stress) symptoms.
Concerns about restrictions, living situation and financial problems because of COVID-19, i.e. COVID-19 stress (t), was positively related to all three mental health measures ($P < 0.01$). The effects ranged from $+0.24$ to $+0.41$ and were substantive in size. For instance, a negative change of 0.1 point in COVID-19 stress was related to an increase of about one and a half standard deviations in stress and anxiety symptoms.

Feelings of hopelessness about the end of the pandemic, i.e. COVID-19 hope (t) was positively associated with both symptoms of depression at time (t) ($+0.21, P < 0.05$) and perceived stress at time (t) ($+0.14, P < 0.10$). Except for a negative effect of previous changes in the quality of social relationships on stress symptoms, we found no evidence that COVID-19 factors at time (t−1) influence scores on the CESD-10, STAI-6 and PSS-4 at time (t).

Estimates for some sociodemographic variables reported meaningful effects on mental health. In particular, higher perception of Turkish society’s negative attitude towards Syrian refugees was positively associated with stress symptoms, longer time spent in Istanbul was positively associated with depression symptoms and greater concern about stability of residential status was positively associated with both anxiety and stress symptoms.

Unlike previous research mentioned above, our data do not show any statistically significant association between gender (or other basic sociodemographics such as age and education) and mental health. However, given gender differences in depression, in supplementary analyses we tested for an interaction effect between COVID-19 factors – at both time (t) and (t − 1) – and female gender. We fully report these additional analyses in Supplementary Appendix D because in all instances but one the interaction is statistically insignificant. The only exception is given by the interaction with COVID-19 hope (t − 1) which is positive and significant at least at $P < 0.05$ in all three models, suggesting that higher feelings of hopelessness about the end of the pandemic in the previous wave are associated with higher symptoms of CESD-10, STAI-6 and PSS-4 in the current wave among women.

**Table 1** The effect of coronavirus disease 2019 (COVID-19) factors on mental healtha

| Mental health (t − 1) | CESD-10 model, coefficient (s.e.) | STAI-6 model, coefficient (s.e.) | PSS-4 model, coefficient (s.e.) |
|-----------------------|----------------------------------|---------------------------------|---------------------------------|
| ($n = 156$)           | ($n = 162$)                       | ($n = 155$)                      |
| Mental health (t − 1) | 0.20*** (0.08)                    | 0.26*** (0.08)                   | 0.26*** (0.09)                   |
| COVID-19 social relationships (t) | 0.23** (0.11)                     | 0.075 (0.13)                     | −0.18* (0.09)                    |
| COVID-19 social relationships social (t − 1) | 0.12 (0.10)                       | 0.20 (0.13)                      | −0.17* (0.08)                    |
| COVID-19 stress (t) | 0.27** (0.08)                      | 0.41*** (0.10)                   | 0.24*** (0.08)                   |
| COVID-19 stress (t − 1) | −0.03 (0.08)                      | −0.06 (0.10)                     | −0.04 (0.07)                     |
| COVID-19 hope (t) | 0.21** (0.09)                      | 0.14 (0.10)                      | 0.14* (0.07)                     |
| COVID-19 hope (t − 1) | 0.01 (0.09)                       | 0.01 (0.10)                      | −0.00 (0.07)                     |
| Gender (Reference: Male) | −0.01 (0.03)                      | −0.01 (0.04)                     | 0.02 (0.03)                      |
| Age | 0.00 (0.00)                       | −0.00 (0.00)                     | −0.00 (0.00)                     |
| Highest education (Reference: Primary school) | | | |
| Middle school | −0.00 (0.03)                     | 0.05 (0.04)                      | −0.02 (0.03)                     |
| High school | −0.02 (0.04)                     | 0.01 (0.05)                      | −0.04 (0.04)                     |
| Master/Doctorate | −0.09 (0.07)                     | −0.06 (0.08)                     | −0.02 (0.05)                     |
| Experienced discrimination (Reference: Yes) | −0.05 (0.04)                     | −0.04 (0.05)                     | −0.02 (0.03)                     |
| Perceived negative attitude towards Syrian refugees | −0.01 (0.01)                     | −0.00 (0.01)                     | 0.01*** (0.00)                   |
| Unemployed | −0.05 (0.04)                     | −0.17*** (0.03)                  | 0.04 (0.03)                      |
| Total household income per month | −0.00 (0.00)                     | −0.00 (0.00)                     | −0.00 (0.00)                     |
| Years living in Istanbul | 0.01* (0.01)                     | 0.01 (0.01)                      | 0.01 (0.01)                      |
| Concern about residential status | 0.02 (0.02)                     | 0.05** (0.02)                    | 0.03** (0.02)                    |
| Constant | −0.13 (0.14)                     | −0.13 (0.17)                     | 0.19 (0.135)                     |

All values have been rounded to two decimal places. CESD-10, 10-item Center for Epidemiologic Study Depression Scale; STAI-6, 6-item State-Trait Anxiety Inventory; PSS-4, 4-item Perceived Stress Scale.

a. The models are estimated by using the 'xtreg' command in Stata with maximum likelihood random-effects estimator. Mental health and COVID-19 factors have been rescaled from 0 to 1.

**Table 2** The effect of mental health on coronavirus disease 2019 (COVID-19) factorsa

| COVID-19 Social models, coefficient (s.e.) | COVID-19 Stress models, coefficient (s.e.) | COVID-19 Hope models, coefficient (s.e.) |
|-------------------------------------------|---------------------------------------------|-------------------------------------------|
| ($n = 162$)                               | ($n = 155$)                                  | ($n = 155$)                                |
| CESD-10 (t)                               | 0.12** (0.06)                               | 0.25*** (0.07)                             | 0.18** (0.07)                             |
| CESD-10 (t − 1)                           | 0.09 (0.05)                                 | −0.06 (0.07)                               | −0.04 (0.07)                              |
| STAI-6 (t)                                | 0.03 (0.05)                                 | 0.22*** (0.05)                             | 0.08 (0.06)                               |
| STAI-6 (t − 1)                            | 0.06 (0.05)                                 | 0.11* (0.06)                               | −0.03 (0.07)                              |
| PSS-4 (t)                                 | −0.13** (0.07)                              | 0.23** (0.08)                              | 0.16* (0.09)                              |
| PSS-4 (t − 1)                             | 0.03 (0.08)                                 | 0.12 (0.09)                                | −0.03 (0.10)                              |

CESD-10, 10-item Center for Epidemiologic Study Depression Scale; STAI-6, 6-item State-Trait Anxiety Inventory; PSS-4, 4-item Perceived Stress Scale.

a. The models are estimated by using the 'xtreg' command in Stata with maximum likelihood random-effects estimator. CESD-10 (t) coefficients come from nine models (three models for each COVID-19 factor), one per mental health factor, $n = 156$ for models with CESD-10, $n = 155$ for models with STAI-6, $n = 155$ for models with PSS-4. Mental health and COVID-19 factors have been rescaled from 0 to 1. The analyses include: gender, age, education, employment status, total monthly household income, years living in Istanbul, experienced discrimination, perception of Turkish society’s negative attitude towards Syrian refugees, concern about stability of residential status in Turkey, and previous levels of COVID-19 factors as well as alternative COVID-19 factors’ current and previous levels. Models with sociodemographic factors displayed are reported in Supplementary Appendix E.

**Table 2** The effect of mental health on coronavirus disease 2019 (COVID-19) factorsa
Interpretation of our findings

The results of our study highlight important issues that merit further discussion. The first point involves the Syrian refugees’ concerns about restrictions on leaving home, their living situation and financial problems because of COVID-19, and their resultant levels of anxiety. As noted earlier, Syrians access to the Turkish labour market has been limited, confining refugees to informal employment. At the same time, the pandemic has inflicted disproportionate health and economic risks on those employed in informal jobs and has exacerbated their vulnerabilities. Many informal jobs provide essential services that involve interaction with other people, where it is more difficult to effectively implement social distancing measures, putting informal workers at high risk of contracting COVID-19. In addition, informal jobs are often excluded from the government’s wage subsidy schemes and are not covered by the mitigation policies. Finally, the measures adopted to contain the economic effect of the pandemic place informal workers at higher risk of losing their jobs. For informal workers, job and income insecurity, coupled with a higher risk of contracting COVID-19, are likely to increase the refugees’ vulnerability and adversely affect their mental health.

Financial stress is particularly important because of its links to the related housing problems of refugees in Turkey. Adequate housing is an issue of finding not only a physical shelter, but also a place that protects privacy, contributes to physical and psychological well-being and supports the development and social integration of its inhabitants. Thus, having adequate housing is considered an important social determinant of mental health by the WHO. Unable to afford adequate housing, however, many refugees in Turkey live in poor and overcrowded flats. Financial problems add further stress to the refugees’ housing problems. Insecurity of tenure and the risk of losing their housing increases their vulnerability and adds to their anxiety.

Another point that warrants discussion concerns the negative impact of the government’s COVID-19 restriction measures on the quality of the refugees’ social relationships with family, friends and with Turkish society. This is an important issue not only because it affects refugees’ integration into Turkish society, but also because of its links with mental health. Concepts such as integration, harmonisation, social cohesion and adaptation by refugees have been central to discussions about Syrians in Turkey. In the absence of a universal definition, integration is generally accepted as a dynamic and two-way process that requires participation of both the host society and immigrants/refugees. Researchers often emphasise strengthening of social relations, interactions and ties as important aspects of social cohesion and integration.

COVID-19 measures have taken away opportunities where the two communities met including schools, universities and non-governmental organisations (NGOs). Given the further social distance between the two groups necessitated by these measures, this will have adverse effects on refugees’ participation in the social, cultural and economic life of their community. As earlier studies showed, lack of social integration can lead to increased stress and poor psychological well-being, aggravating refugees’ mental health problems.

The third point involves the implications of our findings for the trauma and life challenges experienced by Syrian refugees prior to the pandemic. The high levels of psychiatric symptoms among refugees are well documented in the literature. Wars and conflicts are often a life-changing trauma for those who are displaced. Researchers have found declines in mental well-being and, in particular, a rise in depression even in post-traumatic periods. Indeed, investigators have reported that one-quarter to one-half of refugee adults have clinically significant levels of depression.
Studies focusing on refugees in Turkey also confirm this statistic: Syrian refugees in camps and schools have been found to exhibit high levels of anxiety and depression.46,47 In Turkey, most refugees live outside of the camps, and some scholars posit that better mental health of refugees living in cities is the result of them having more job opportunities, alternative accommodation and additional societal support.46 Our findings are consistent with this, showing increased anxiety and depression as job opportunities decrease and living standards deteriorate with the pandemic. The present study is also consistent with earlier research linking working and living conditions to mental well-being.

Limitations
We should note four limitations of this study. First, our panel dataset includes only two waves that were collected within a 2-month interval. Thus, although we can examine short-term effects of the pandemic on mental health, we do not yet understand the longer-term effects. Second, because we received funding for our project after COVID-19 had begun, we can only compare the effects on Syrian refugees’ mental health between two periods within the first COVID-19 wave, but not before the pandemic. Third, our analyses are based on a representative sample of Syrian refugees living outside of camps; thus, we do not know whether our conclusions generalise to refugees housed in camps. Nevertheless, we can speculate that because refugees living outside of camps have easier access to the labour market, the effects of the outcomes of COVID-19 restrictions might be greater for this group. Finally, given space constraints, we could not include in our survey questions concerning worry about illness or death, experience of loss, worry about family members in the home country, or PTSD, all of which might be relevant to our study.

Implications
Despite these limitations, the present study is important in demonstrating that, consistent with recent research on the effects of COVID-19 on mental health in unselected samples, the pandemic is having an adverse effect on levels of depression, anxiety and stress in Syrian refugees, and it will be important that they are provided with services to reduce what may be particularly debilitating consequences of COVID-19.

In this regard, our findings have important implications for the support provided for Syrian refugees in Turkey. First, the Turkish government continues to receive huge sums to meet the needs of the Syrian refugees it hosts. The European Union is considering giving 3.5 billion euros for refugee funding to Turkey in addition to the 6 billion euros it has already committed to.48 However, there is a need for more support directed towards refugees’ mental health. In addition, although Syrian refugees have access to health services in Turkey, lack of information and accessibility may prevent them from making use of mental health services. Therefore, the national government should work with local actors to improve information sharing and accessibility of mental health services, and develop tailored psychosocial health interventions by increasing the number of adequately trained staff, which might help reduce stigma.49-51 This requires the government to prioritise mental health in their refugee-related policies and funding programmes.

Second, local and international civil society actors have been working with and for Syrian refugees living in camps and cities.50 Over the years, their activities have facilitated refugees’ access to healthcare, education, the labour market and, more recently, have supported intercommunal dialogue with NGOs conducting projects on refugees’ mental well-being. M’hah and colleagues suggest that the provision of mental health services in non-medical settings may help reduce stigma.20 Therefore, NGOs could integrate a mental health component into their ongoing and upcoming projects as an immediate response to alleviate the mental health impact of the pandemic.

NGOs have stepped in with basic needs support for those refugees exposed to job and income losses prompted by the pandemic. This support should continue until the debilitating effects of the pandemic are over. At the same time, however, the uncertain life situation of refugees should be resolved and the process for entering formal employment should be eased to eliminate refugees’ constant insecurity and fear of the future. The uncertainty keeps refugees from having a normal life and will continue to adversely affect their mental health.

Supplementary material
Supplementary material is available online at https://doi.org/10.1192/bjo.2021.1009

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Data availability
The data that support the findings of this study are available on request from the corresponding author, L.B. The data are not publicly available yet because of restrictions related to publication commitments of the project’s research outputs.

Author contributions
The study was designed by L.B. and I.H.G. L.B. has written the manuscript, analysed the data and constructed the Supplementary Appendices. O.Z. has written the Discussion section. I.H.G. has edited the manuscript and provided feedback.

Declaration of interest
None.

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