Socio-economic disadvantage and schizophrenia in migrants under mental health detention orders

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Abstract

Background: Migrants with mental hospital orders according section 63 of the German criminal code are overrepresented in relation to their numbers in the general population. Subgroups originating from certain world regions are diagnosed with schizophrenia at a much higher rate than others. The present literature there has strong evidence for a substantial correlation between migration, social disadvantage, and the prevalence of schizophrenia.

Aims: This study investigates the relationship between countries of origin, the risk of becoming a forensic patient, and the proportion of schizophrenia spectrum disorders.

Method: Data from a comprehensive evaluation tool of forensic inpatients in the German federal state of Baden-Württemberg (FoDoBa) were compared with population statistics and correlated with the Human Development (HDI) and Multidimensional Poverty Indices (MPI).

Results: For residents with migration background, the risk ratio to receive a mental hospital order is 1.3 in comparison to non-migrants. There was a highly significant correlation between the HDI of the country of origin and the risk ratio for detention in a forensic psychiatric hospital. The proportion of schizophrenia diagnoses also correlated significantly with the HDI. In contrast, the MPI country rankings were not associated with schizophrenia diagnoses.

Conclusion: Two lines of explanations are discussed: First, higher prevalence of schizophrenia in migrants originating from low income countries, and second, a specific bias in court rulings with regard to involuntary forensic treatment orders for these migrant groups.

Keywords

Migration, Forensic Psychiatry, Epidemiology, Schizophrenia
Public Mental Health
Introduction

Research has consistently shown elevated rates of psychotic illness in ethnic minorities, and there is a significant and independent variation of incidence of schizophrenia in terms of sex, age, ethnicity, and place. A comprehensive meta-analysis conducted by Cantor-Graae & Selten (2005) suggested a strong and consistent association between migration and schizophrenia. In their data-set, the overall risk ration (RR) for developing schizophrenia associated with migration was 2.9. This risk is greater than most single risk factors associated with schizophrenia, except family history of psychosis. The association of migration and schizophrenia was especially high in second-generation immigrants (RR 4.5), and in immigrants from countries where most people have black skin colour (RR 4.8). High schizophrenia rates in migrants and their offspring are apparently not related to elevated risk in the countries they emigrated from. There is growing body of research suggesting that the countries of origin, or sending countries, have normal incidence rates of schizophrenia (Cantor-Graae and Selten, 2005; Bhugra et al., 1996; Mahy et al., 1999). In the UK, findings from the AESOP study have confirmed that the African-Caribbean and Black African populations in the UK are at increased risk of schizophrenia and other psychoses, compared with the White British population. Various forms of early childhood and adult adversity, and neighbourhood characteristics may be particularly important in contributing to increased risk in these populations. Thus, indicators of social inequality are associated with increased risk of adult-onset schizophrenia, suggesting that environmental factors are important determinants of schizophrenic disorders (Kirkbride et al., 2006; Fearon et al., 2006). In addition to genetic transmission of risk (family risk), common risk factors for schizophrenia are migration, urban upbringing, low IQ, childhood trauma, and illicit drug use. It has been hypothesized, that social defeat, or social exclusion, are common denominators of these major schizophrenia risk factors (Selten et al., 2013). Social defeat and social exclusion refer to the same type of exposure to a family of risk factors, namely the experience of being excluded from the majority group. It is now sufficiently clear that social disadvantage through the lifespan is a major risk factor. Social disadvantage, however, has many facets, comprising the social status of the parents at the time of birth (Werner et al., 2007), adverse childhood experiences or rearing conditions (Ajnajika et al., 2016; Matheson et al., 2013; Varese et al., 2012) or the life situation prior to the first psychotic episode (Fisher et al., 2014; Morgan et al., 2014). Living in deprived neighbourhoods is also related to a higher risk for psychosis (Kirkbride et al., 2007; Kirkbride et al., 2014; van Os et al., 2000; O’Donoghue et al., 2015). Adding on the general notion of social deprivation and defeat in relation to schizophrenic disorders (Fearon et al., 2006; Selten et al., 2007), the subjective experience of social discrimination, namely the experience of being excluded from the majority group, proved to be an independent risk factor for schizophrenia in migrants (Keys et al., 2015; Veling et al., 2007; Morgan and Hutchinson, 2010). The relationship between schizophrenia and indicators of social inequality at birth, e.g. social class, and area of residence, was also shown by Harrison et al (Harrison et al., 2001). Subjects whose fathers were low social class or were born in deprived areas in the Nottingham region were at increased risk of schizophrenia (OR 2.1) and risk was higher with both of these variables (OR 2.7). A meta-analysis showed that the increased risk persists into the
second generation, but seems to be mediated by both the ethnic group and their social context in the host country (Bourque et al., 2011).

In line with the findings outlined above, migrants in Germany are at higher risk than their native counterparts to experience psychiatric symptoms. Findings suggest that depression, anxiety and other psychological and psychiatric symptoms in migrants exceed the rate of symptoms reported by individuals who have not experienced migration (Wittig et al., 2008; Haasen et al., 1998). Epidemiological studies on the German general population suggest a prevalence for psychiatric disorders at least twice as high in migrant groups as compared with non-migrant individuals (Bermejo et al., 2010; Glaessmer et al., 2009).

Migrants seem to be underrepresented in some German psychiatric mental health services, in others not (Koch et al., 2008). In outpatient services, however, the picture is clear; migrants were treated more frequently than other patients for neurotic, stress-related and somatoform disorders (Schouler Ocak et al., 2010).

Forensic psychiatric treatment, migration, and schizophrenia spectrum disorders

Psychotic disorders may be overrepresented in migrant groups treated in forensic psychiatric facilities, but specific risk ratios for schizophrenic diagnoses between subgroups have not been reported. The few existing studies focusing on mentally ill migrants who committed a serious crime have indicated a greater likelihood for them to receive a mental health treatment order than mentally ill and violent individuals who do not count as migrants. Gabrielsen & Kramp (2009) reported that immigrants to Denmark were at higher risk of detention as forensic patients than native Danes; they also were at higher risk of being diagnosed with a schizophrenia spectrum disorder. Compared to their percentage in the general Danish population, migrants of Eastern European, North African and Iranian decent were overrepresented, as opposed to individuals who had immigrated from Western Europe, or the United States.

As opposed to Denmark, Germany has no central or state wide registration system providing detailed information about forensic psychiatric patients. Instead, treatment is provided under a broad spectrum of different federal laws. Therefore, the figures provided may be representative for the Federal State where forensic treatment takes place, at best. Some of the best data available suggest that since the 1990s, the proportion of migrants in German forensic psychiatric clinics has doubled (Hoffmann, 2006). One of the most comprehensive forensic psychiatric data sets to date is provided by Baden-Württemberg, representing roughly 15% of the German population. There, migrants in forensic psychiatric treatment are clearly overrepresented compared to their quota in the general population (2015: 35.6% of the Baden-Württemberg forensic inpatients were migrants; general population 27.1%) (Statistisches Landesamt Baden-Württemberg, 2016). In an own study on this data set, we found that Northern African and patients from the Near East including the Iran, and Sub-Sahara African states were largely overrepresented with respect to their proportion in the general population. 1.5% of the residents in Baden-Württemberg report a Sub-Sahara-African origin, 2.6% come from Orient states; in turn, 7.5% of the state´s forensic patient population specified Subsahara States as country of origin, and 3.3% the Orient. Of these, more than 90% were
diagnosed with schizophrenia spectrum disorders (mean 78.5%) (Bulla et al., under review).

Based on the literature outlined above and our own analyses, the present study aims to clarify the relation between origin from socioeconomically disadvantaged countries and the risk to become detained as forensic patient.

Hypotheses

1. Migrants in BW are at higher risk than natives to receive a secure mental hospital order.
2. Among individuals with a secure mental hospital order in BW, those originally coming from socioeconomically disadvantaged countries are overrepresented.
3. The greater the social disadvantage of a patient’s country of origin, the larger the risk of being diagnosed with a schizophrenia spectrum disorder in a BW forensic psychiatric facility.

Method

Forensic Psychiatric Data

The Forensic Basic Documentation System Baden-Württemberg (FoDoBa) covers biographical, socio-economic, criminological, and clinical data on every forensic-psychiatric patient treated in the federal state of Baden-Württemberg. Clinicians and researchers are provided with comprehensive data on individual treatment processes and outcomes, and policy-makers with the information they need to supervise and guide the work of forensic psychiatric services. A Likert-type response format is used throughout the documentation sheet. The documentation tool contains 140 entries for 34 variables, including migration status and country of origin.

Human Development Index (HDI) and Inequality Adjusted Human Development Index (IHDI) Rankings

The HDI is a composite statistic of life expectancy, education, and per capita income indicators, which are used to rank countries into four main groups of human development. High HDI is associated with high lifespan, high education level, high GDP per capita, low fertility rate, and low inflation rate. Annual reports are published by the United Nations Development Programme. While the HDI describes the average achievements of a country in health, education and income the Inequality adjusted Human Development Index (IHDI) considers their distribution among the residents.

Multidimensional Poverty Index (MPI) Ranking

The MPI is a statistic published by the Oxford Poverty and Human Development Initiative (OPHI) and the United Nations Development Programme. It is a measure of acute poverty covering over 100 developing countries. It complements traditional
income-based poverty measures with indicators of education (e.g. years of schooling, school attendance), health (child mortality, nutrition) and living standards (electricity, sanitation, drinking water etc.). Thus, the MPI assesses poverty at the individual level. If someone is deprived in a third or more of ten (weighted) indicators, the global index identifies them as ‘MPI poor’, and the extent – or intensity – of their poverty is measured by the number of deprivations they are experiencing.

Complementing the HDI, the MPI is sensitive to the measurement of acute deprivation of health, education, and standard of living. As outlined above, these dimensions are likely to be associated with the onset of schizophrenic disorders in migrants.

**Study population**

The sample was drawn from the FoDoBa. In step one, N = 1419 subjects, who, according to section 63 of the German legal code (unlimited detention), had been referred to forensic psychiatric treatment in a German secure hospital, were selected. The dataset for this subgroup is complete and comprehensive, e.g. it comprises all patients referred to forensic psychiatric treatment in the German federal state of Baden- Württemberg between 2009 and 2015. In this dataset, n = 524 subjects with a migration status were identified (step two).

**Statistical Analysis**

For analysis Excel 2010, SPSS 21 and R 3.2.0 were used.

In order to test hypothesis 1 risk ratios were calculated with “any migration status” as “risk factor” for a secure mental hospital order. The risk ratio (RR) is a measure of relative risk, i.e. the ratio of the probability of an event occurring in an exposed group (here: per cent of migrants in the sample) to the probability of the event occurring in a comparison, non-exposed group (here: per cent of migrants in the general population).

RR were also computed for certain countries or regions of origin. The decision whether a country formed a separate category or was aggregated to a region was guided by two points: First the quantitative importance in the sample, second the availability of data in the German population statistics. In the latter detailed information regarding the countries of origin is only delivered for quantitatively important migrants groups. As neither RR nor the indices show a normal distribution correlation was calculated by the Kendall Tau b-test. Confidence Intervals were computed by bias corrected and accelerated bootstrap (Fields et al., 2012).

With regard to hypothesis 3 a binary variable was built whether a schizophrenia spectrum disorder was diagnosed or not. Then point-biserial correlations with the three indices were conducted.

**Results**

Table 1 shows the distribution between residents of the greater general population of Baden-Württemberg and forensic inpatients with respect to migration status. Residents
with a migration status according to the show a 1.32 [CI 1.23 -1.41] fold relative risk to receive a mental hospital order in comparison to residents of Baden-Württemberg without a migration status. Hypothesis 1 is confirmed.

[Please insert Table 1]

The RR*s for migrant groups from different countries and regions of origin, their proportion of schizophrenia spectrum disorders, and their position on three rankings can be found in table 2. HDI was significantly correlated with the RR to receive a mental hospital order \( (r = -.434** [-.784, -.099]) \), as was IHDI \( (r = -.512** [-.819, -.208]) \), both \( p < 0.01 \). Second generation migrants born in Germany had a RR of 0.19 (HDI 0.916). In relation to these, migrants from the Orient (HDI 0.651) appear to have a two-fold, Subsahara African migrants a six-fold RR for developing schizophrenia spectrum disorders (HDI 0.508). Migrants from Kazakhstan also had a higher than expected RR based on their HDI reference data. Other than HDI, MPI did not correlate significantly with RR \( (p = .101) \). The correlation between IHDI and RR is plotted in figure 1. Hypothesis 2 is partly confirmed.

[Please insert Table 2 and Figure 1]

The proportion of schizophrenia diagnoses among all diagnoses were significantly associated with the HDI \( (rp = -.152*** [-1.000, -.081]) \) and the IHDI \( (rp = -.157*** [-1.000, -.085]) \) of the country of origin \( (both \ p < .001) \), but not with the MPI index \( (p = 0.470) \). For most countries and regions a quasi-linear relationship between the ratio of schizophrenia diagnoses and the IHDI indices was observed. There are, however, a few exceptions. Based on IHDI reference data, patients from Russia, Romania, Italy, and the Near and Far East had lower, and patients from the United States, several Balkan and some non-EU-European countries higher than expected RRs for schizophrenia spectrum disorders. Hypothesis 3 is partly confirmed. [Please insert Figure 2]

**Discussion**

**Mental hospital treatment orders, schizophrenia, and human development**

Migrants living in the German Federal State of Baden-Württemberg have a 30% higher risk than non-migrants to receive a mental hospital treatment order. This is in accordance with the results from Gabrielsen and Kramp (2009) who found an elevated risk for migrants in comparison to native Danes. Comparing our results with the Danish study, we find that migrants from Eastern Europe had a relative risk below 1.0 compared to migrants from other European Union members. The risk of migrants originating from the United States was slightly elevated in our study, and individuals with Northern African ancestry had a much higher risk in the Danish than in our study. Overall, the results point to the same direction, and some diverging findings might be explained away by methodological differences of the studies, and the definitions for migration used. For example, in Germany a large share of migrants from Eastern European has the legal status of late repatriates, which is a definition rather peculiar to
Germany, because it cannot be found elsewhere. By claiming German ancestry, late repatriates are being granted German citizenship immediately after immigration (Bulla et al., 2016). Therefore, they might be more privileged in everyday life than Eastern European migrants in Denmark, which might in turn affect their likelihood to develop schizophrenia.

Referring to the substantial literature on social disadvantage and the prevalence of mental disorders, the socioeconomic status of the country of origin was assessed by the three indices HDI, IHDI and MPI. The correlation between the Human Development Index (HDI) and the relative risk for detention (RRD) had a medium effect size; the effect size was slightly stronger for IHDI. MPI, representing poorly developed countries only, was not associated with the risk for schizophrenics to be detained in a Baden-Württemberg forensic psychiatric unit. There is one remarkable finding associated with MPI. Only two regions of origin defined in our study were ranked above 0.1 on MPI: Subsahara Africa with .268 and Far-East-Asia with .137. Subsahara Africa is far above average (RRD 6.1; see figure 1). However, Kazakhstan, which is being classified as a high human development country also ranks clearly above average (RRD of 4.1).

Finally, the correlations between HDI and IHDI and the ratio of schizophrenia spectrum disorders show a small but significant effect. In Germany, the proportion of forensic inpatients diagnosed with schizophrenia is generally rising (Habermeyer et al., 2010). In our study, the proportion of schizophrenia diagnoses relative to all psychiatric diagnoses found in forensic psychiatric units ranges from .6 to 1.0 (see figure 2).

From a criminological and mental health service point of view, there are different explanations for this outcome. Certain migrant groups tend to run higher risks to develop mental disorders associated with a higher likelihood for violent behaviour (i.e. schizophrenia). The literature on that fact is compelling. It is likely that these differences between migrants and non-migrants in prevalence for severe mental disorders can also be found in the German general population. Unfortunately, no German data exists, but international data suggest that this might be the case. High prevalence of schizophrenia in our sample may be associated with high risk for mental disorders in migrants living in the German community. It is not easy to put this assumption to the test because different migrant groups may systematically differ in use of mental health treatment for a comprehensive range of disorders over time (Manseau and Case, 2014), thus resulting in misleading population estimates for schizophrenia in specific migrant groups. Whatever the real picture, it is clear that the rate of schizophrenia spectrum disorders in migrants is high, once general psychiatric inpatient treatment is started. In a study based on German general psychiatric inpatient data, schizophrenia spectrum disorders figured as the leading diagnoses in patients with a migration history (36.1%), followed by substance abuse (30.3%) and affective disorders (12.4%; Koch et al., 2008).

But there are other explanations. For example, we cannot rule out a selection bias by the courts in favour of forensic mental health care for certain migrant groups who have committed severe crimes, but not for others. Unfortunately, there is no hard data supporting the validity of this assumption. Statistical accounts on sentencing do not differentiate between Germans and Non-Germans, or migrants and German residents with no foreign ancestry. In fact, German statistical data on convictions do not consider migration at all. Therefore, no evidence-based statement can be made on whether some
migrant groups receive mental hospital orders more easily than others, i.e. in comparison to other migrant-groups, and non-migrants (Bulla et al., 2015; Bulla et al., under review).

Social disadvantage and social discrimination

Social discrimination has shown to be a risk factor independent from social disadvantage (Morgan and Hutchinson, 2010). In societies with white majority populations individuals with dark skin tend to be at higher risk than others to develop schizophrenia. From a social psychology point of view, dark skin may be conceived of a salient sign that this person is not part of the majority; a foreigner, a stranger; these people are always at risk for social discrimination (Cantor-Graae and Selten, 2005; Bourque et al., 2011). The high risk ratio for Subsahara African migrants in our study may thus be explained by their ongoing experience of social disadvantage and their likely experience of social discrimination in both in the countries they emigrated from, and in Germany. By the same token, there are good reasons to assume that people with Subsahara African origin are prone to experiencing high levels of social disadvantage and social discrimination. In 2005, Cantor-Graae and Selten (2005) stated that the region of birth in economically disadvantaged countries was correlated with risk of schizophrenia. In the past years, a series of factors related to social disadvantage and prevalence of schizophrenia were identified. From the risk factors outlined above parental loss and/or separation from parents stand out. In the AESOP study, separation from one or both parents before the age of 16 had an odds-ratio of 1.6 which was partially mediated by disadvantage in adulthood. This relationship was explained to a large extent by poor academic achievement (Morgan et al., 2014). In low-income countries, a large number of children suffer parental separation or loss for three major reasons: work migration, orphanhood, and civil wars or other types of armed civil conflicts. Millions of children are “left behind” by at least one parent working abroad. They have become a subject of intensive research in the past years, including South-East-Asian countries (Hoang et al., 2015) and China (Huang et al., 2016). There is extensive evidence about detrimental effects on the physical and mental health of left behind children (Viet Nguyen, 2016); and there is a particularly high prevalence of orphanhood in Sub-Saharan Africa and an extraordinarily high prevalence of HIV infections. In Southern and Eastern African Countries most hit by the AIDS epidemic, 10 to 17% of the children have lost both parents (Bicego et al., 2003). The harmful effects on the mental health of those affected children are well documented (Sharp et al., 2015). Ansell (2016) criticized the concept of identifying AIDS-orphanhood and disadvantage and reminded not to forget about the wider context of structural poverty and social inequality. Overall, our findings are well in line with the notion described here. African countries, especially those with high rates of HIV infections (Sub-Sahara Africa), come with the highest risks for both schizophrenic disorders (figure 2), and detention in Baden-Württemberg forensic psychiatric facilities (figure 1).

The high relative risk for migrants from Kazakhstan to be detained in Baden-Württemberg forensic psychiatric units is puzzling (figure 1). These migrants usually hold the legal status of late repatriates, which comes with clear privileges in comparison to migrants with another legal status. Socioeconomic indices are quite similar to the Russian Federation which is another source of origin for late repatriates in Germany.
These countries may be roughly equal in socio-economical terms, but socially, there are clear differences. Kazakhs and Russians are different ethnic groups, and the former were subdued for many decades by the latter. Therefore, it may be that in terms of social disadvantage and social discrimination Kazakhs living in the Russian dominated Soviet Union were far worse off than the Russians themselves.

Drawing on the Penrose Law (Hartvig and Kjelsberg, 2009), which states an inverse relationship between the number of mental hospital beds and the number of prisoners, it has been argued that the quality of non-forensic in- and outpatient psychiatric treatment may inversely be related to the number of forensic inpatients. It will be worth taking a closer look at how different German mental health services meet the special needs of various migrant groups. Systematic studies on outpatient mental health visits and the use of mental health treatment of migrants in the general German population may help to clarify the relationship between migration, mental disorders, and violent criminal behavior.

Limitations

Methodological issues: Migrants were sorted by their countries of origin; data on ethnicity was not available. Modern African countries were founded on the basis of post-colonial territories which comprised many different ethnic groups with different languages, traditions, and religious faiths. Thus, patients from different (Sub-Saharan) countries may in fact belong to the same ethnic group, and vice versa; and ethnic groups may either represent the majority population of a country or some more or less important minority; they can be part of the ruling population group, or victims of persecution.

The aggregation of single countries to regions has only partly been guided by reasons inherent to the data or research issues. In some points it was determined by the data published in the German population statistics. This results in quite heterogeneous residual categories. For example, European countries not specified in the population statistics had to be allocated by their present membership to the European Union, not on socio-economical characteristics. Data on asylum seekers are not available, because they are not mentioned in the statistics. Reliable socio-economic data on some countries, such as Somalia or North Korea, do not exist.

Finally, there are limitations owing to the lack of appropriate population based mental health research data in the field of general psychiatry.

Conclusion

The results of this study underline some of the known effects of social inequality on mental health (Wilkinson and Pickett, 2009). Clinical professionals should pay more attention to migrant groups at risk for developing schizophrenia and detention in forensic mental hospitals.

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Findings: From the 3-Center ÆSOP Study. Archives of general psychiatry 63: 250–258.


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<th>Detainees according to Section 63</th>
<th>General Population (not in detention acc. sec. 63)</th>
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<tr>
<td>Migrants</td>
<td>524</td>
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<tr>
<td>Non-Migrants</td>
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<td>Σ</td>
<td>1419</td>
<td>10.765 Mill</td>
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<tr>
<td>Country/Region of Origin</td>
<td>% population</td>
<td>% migrants</td>
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<tr>
<td>Germany (SGM)</td>
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<td>Turkey</td>
<td>4.5%</td>
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<td>Region</td>
<td>% Population</td>
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<tr>
<td>Middle &amp; South America</td>
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<tr>
<td>Far East Asia</td>
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<td>4.0%</td>
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% population: Proportion in the general population, % migrants: proportion in the subpopulation with migration experience, % F2: proportion of schizophrenia diagnoses among all diagnoses RR: Risk ratio, HDI: Human Development Index, IDHI: Inequality Adjusted Human Development Index, MPI Multiple Poverty Index, SGM: Second generation migrants.

1 Million, 2 Austria, Bulgaria, France, Netherlands, Portugal, Spain 3 Ukraine, Albania, Macedonia 4 Egypt, Algeria, Libya, Tunisia 5 Algeria (for methodological reasons), Angola, Benin, Democratic Republic of the Congo, Cameroon, Eritrea, Ethiopia, Ghana, Gambia, Kenya, Nigeria, Senegal, Sierra, Leone, Somalia, Swaziland, South Africa, Togo, Uganda, Zimbabwe 6 Bolivia, Brasilia, Colombia, Cuba, Peru 7 Afghanistan, Iran, Iraq, Kyrgyzstan, Lebanon, Kazakhstan, Pakistan, Syria, Uzbekistan 8 Bangladesh, India, North Korea, Sri Lanka, Thailand, Vietnam.