Migration, family dysfunction and psychotic symptoms in children and adolescents

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Summary A cross-sectional study of 3426 referred children and adolescents showed that the presence of both migration history and family dysfunction was associated with a fourfold (95% CI 2–9) higher risk of psychotic symptoms compared with the absence of these factors. The relative risk was 2 (95% CI 1–4) for migration history only. Interaction between migration history and family dysfunction accounted for 58% (95% CI 5–91%) of those with psychotic symptoms. These results suggest a relationship between family dysfunction and migration in the development of psychosis.

Declaration of interest None.

The association between migration history and psychotic disorders has been demonstrated repeatedly, but there has been no satisfactory explanation to date (Cantor-Graae *et al*, 2003). As seen in African–Caribbean immigrants to the UK, the effect of migration may depend on socio-environmental variables (Mallett *et al*, 2002). We investigated whether the relationship between migration history and psychosis is modified by family dysfunction in a sample of children and adolescents referred to a tertiary mental healthcare centre.

METHOD

Between 1982 and 1998, a total of 5253 patients aged 6–18 years were evaluated at the Child and Adolescent Department of the University Medical Center Utrecht, The Netherlands. From these, an unselected sample of 3426 patients were assessed with the Maudsley Child and Adolescent Psychiatric Rating Scale, a semi-structured psychiatric interview (Thorley, 1982).

There were 86 children and adolescents who definitely had hallucinations, delusions, ideas of reference or morbid ideas of persecution. This corresponds to a state of psychosis or probable psychosis. The interviews were performed by trainees in child and adolescent psychiatry who were supervised by board-certified specialists. Patients with symptoms of organic origin were excluded (*n*=4).

Migration history was defined as foreign birth (first generation) or foreign birth of at least one parent (second generation). In total 404 migrants (239 of the first generation) were identified.

Family dysfunction was recorded when at least three of the following seven problems were reported: poor relationship between adults in the household; lack of warmth between parents and child; overt disturbance of father–child relationship; overt disturbance of mother–child relationship; overt disturbance of sibling–child relationship; parental overprotection; and child abuse.

Relative risks of psychotic symptoms for individuals with a history of migration were quantified using logistic regression (Statistical Package for the Social Sciences, version 11.0 for Windows) and were expressed as odds ratios with 95% confidence intervals. Age, gender, psychiatric illness in at least one of the parents and educational level of the breadwinner (usually the father) were considered potential confounding variables. To determine whether the relationship between migration history and psychosis is modified by family dysfunction, the study population was divided according to family dysfunction and the analyses were repeated. Modification was quantified by calculating the interaction between these variables according to Rothman (1986). Corresponding 95% confidence intervals were calculated by boot-strapping as described by Assmann *et al* (1996).

RESULTS

Characteristics of the study population

In those with and without a migration history, the frequencies of family dysfunction were 56% and 52%, the frequencies of psychiatric illness in a parent were 22% and 25%, the proportions of parents that were university graduates were 37% and 28% and the proportions that did not complete formal education were 13% and 8%, respectively.

Migration as a risk factor for psychotic symptoms

Table 1 summarises the results. Overall, migration was associated with an approximately twofold increased risk of psychotic symptoms. When family dysfunction was absent, this increase was substantially lower and no longer statistically significant, indicating a lack of independence of the

Table 1 Association of migration history, family dysfunction and the presence of psychotic symptoms

	Odds ratio for psychotic symptoms	
	Crude (95% CI)	Adjusted[1] (95% CI)
Migration history[2]	1.8 (1.1–3.2)	2.4 (1.3–4.3)
Migration history and no family dysfunction[3]	1.2 (0.5–3.2)	1.5 (0.6–3.9)
Family dysfunction and no migration history[3]	1.5 (0.9–2.5)	1.3 (0.7–2.1)
Migration history and family dysfunction[3]	4.0 (2.0–8.2)	4.1 (1.9–8.5)
AP interaction[4]	0.59 (0.02–0.93)	0.58 (0.05–0.91)

CI, Confidence interval.
1. Adjusted for age, gender, psychiatric illness of a parent and educational level of breadwinner.
2. Reference category is no migration history.
3. Reference category is no migration history and no family dysfunction.
4. Attributable proportion (AP) of cases owing to the interaction of migration history and family dysfunction.

effects of migration and family dysfunction. Adjustment for confounding variables did not substantially change the results.

To quantify the interaction between family dysfunction and migration, relative risks were calculated for exposure to both migration and family dysfunction, to family dysfunction only and to migration only, with no migration and no family dysfunction as the reference. The effect when both variables were present was larger than the sum of their independent effects, indicating causal interaction. The proportion of cases attributable to the interaction between migration history and family dysfunction was 58%.

DISCUSSION

Summary of findings

The relationship between migration and psychotic symptoms was considerably stronger for children and adolescents from dysfunctional families than for those who did not report family dysfunction. The interaction between migration and family dysfunction accounted for the majority of individuals with psychotic symptoms. The relationships were independent of age, gender, the presence of psychiatric illness in the parents and the educational level of the breadwinner.

Interpretation

In the current study, family dysfunction may have acted as a psychosocial stressor upon susceptible individuals (i.e. those with a history of migration), thus precipitating psychotic symptoms. This is in agreement with findings from the Finnish Adoptive Family Study of Schizophrenia (Wahlberg et al, 1997; Tienari et al, 2004), which demonstrate that susceptible individuals, in this study who adopted children born to a biological mother with schizophrenia, are more sensitive to the effects of an adverse family environment. Our results support the hypothesis that the psychosocial environment plays a role in the increased incidence of psychotic disorders in subjects with a history of migration (Mallett et al, 2002).

Study limitations

Since family dysfunction and psychotic symptoms were measured simultaneously,

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it is possible that family dysfunction was a result of the psychotic symptoms rather than its cause. A second limitation is the definition of psychosis. Patients were categorised according to the presence of probable or definite psychotic symptoms, and not DSM–IV or ICD–10 categories. However, this is in accordance with the evidence that the boundaries of the psychosis phenotype extend beyond the clinical concept of a psychotic disorder (van Os et al, 2000). Importantly, psychotic symptoms in childhood and adolescence are often followed by psychotic disorders in adult life (Yung et al, 1998).

Third, the educational level of the breadwinner is not a reliable indicator of socio-economic status. Current evidence, however, increasingly indicates that the risk for schizophrenia is not associated with parental socio-economic status (Byrne et al, 2004). Finally, information bias and referral bias have to be considered. Information bias can only explain the interaction observed if the interviewers systematically scored family dysfunction more frequently in migrant patients than in non-migrant patients, and if this occurred specifically in patients with psychotic symptoms. Likewise, referral bias can only explain our results if referral of subjects from dysfunctional families was more likely for migrants than for non-migrants, and if this applied specifically to psychotic symptoms. Hence, we regard information and referral bias as unlikely explanations of our results. However, the findings of this cross-sectional study need confirmation in longitudinal population-based studies.

In conclusion, in children and adolescents the increased risk of psychotic symptoms associated with a history of migration is considerably larger in the presence of family dysfunction. This suggests that migration history and family dysfunction act in a synergistic manner. Psychosocial stress associated with family dysfunction may contribute to the development of psychosis in migrants.

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