

# Migrant density and well-being—A national school survey of 15-year-olds in Sweden

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**Background:** The aim of this study was to investigate the impact of migrant density in school on the well-being of pupils with a migrant origin in first as well as second generation. **Methods:** Cross-sectional analysis of data from a national classroom survey of 15-year-old Swedish schoolchildren. The study population included 76 229 pupils (86.5% participation) with complete data set from 1352 schools. Six dimensions of well-being from the KIDSCREEN were analysed in two-level linear regression models to assess the influence of migrant origin at individual level and percentage of students with a migrant origin at school level, as well as interaction terms between them. Z-scores were used to equalize scales. **Results:** A high density (>50%) of pupils with a migrant origin in first or second generation was associated with positive well-being on all six scales for foreign-born pupils originating in Africa or Asia compared with schools with low (<10%) migrant density. The effect sizes were 0.56 for boys and 0.29 for girls on the comprehensive KIDSCREEN 10-index ( $P<0.001$ ) and 0.61 and 0.34, respectively, for psychological well-being ( $P<0.001$ ). Of the boys and girls born in Africa or Asia, 31.6% and 34.6%, respectively, reported being bullied during the past week in schools with low (<10%) migrant density. **Conclusions:** Pupils born in Africa or Asia are at high risk for being bullied and having impaired well-being in schools with few other migrant children. School interventions to improve peer relations and prevent bullying are needed to promote well-being in non-European migrant children.

## Introduction

International migration has become an increasingly common experience of human beings in the era of globalization. Sweden has been in the forefront of this development with a comparatively generous refugee policy and membership in the European Union. This migration has changed Sweden from a fairly homogeneous society to a multicultural society where 17% of the total population are immigrants.<sup>1</sup> With immigration, the population in low-status housing areas in Sweden has increasingly been dominated by people with few resources and often a 'visual' immigrant status (i.e. originating in southern Europe, Asia, Africa and Latin America), whereas resourceful families of Swedish origin have moved away from these residential areas.<sup>2</sup>

There have been few previous studies of mental health and well-being of broader groups of children in migrant families in the Nordic countries. Swedish studies of children and adolescents have reported no or only slight differences in psychological and psychosomatic symptoms among children with foreign-born parents compared with children in the majority population.<sup>3,4</sup> There has, however, been considerable concern regarding the mental health of the children who themselves are refugees. Several studies have shown that a high proportion of these children shortly after settlement have high rates of psychosomatic and psychological symptoms such as sleep disorders, anxiety, phobias and depression.<sup>5–7</sup> Follow-up studies have indicated a tendency for normalization over time.<sup>8,9</sup>

A recent international literature review by Fazel *et al.*<sup>10</sup> confirmed these patterns, with refugee children in the longer-term having a

moderately increased risk of depressive symptoms and posttraumatic stress disorder. Fazel *et al.*<sup>11</sup> have also pointed out the extensive focus in the literature on refugee health on risk factors that are difficult to influence, such as traumatic experiences in the country of origin, and the dearth of knowledge of risk and protective factors in the receiving country that can provide the basis for effective prevention.

An increased rate of hospital admissions because of psychotic disorders/schizophrenia among immigrants and coloured minorities has consistently been reported in northern Europe. Discrimination as a chronic stressor in the society and racial stereotyping within psychiatric services have been much discussed in association with this phenomenon.<sup>12</sup>

Swedish immigration policy builds heavily on the assumption that residential segregation is detrimental for the health and social adjustment of migrants, but has rarely been evaluated in a well-being perspective.<sup>1</sup> In this study, we wanted to exploit the rich data collected in a national school survey in Sweden to investigate research questions about the consequences of residential segregation for migrant children in the school environment. Do migrant children have a better well-being if they are integrated into schools dominated by children from families from the Swedish majority population? Are there any differences in this respect between children who themselves are migrants and those who are born in Sweden to foreign-born parents? To this end, we used a two-level analysis to allow us to separate effects of diverse migrant backgrounds at the individual level from migrant density at the school level, as well as to study the interaction of these two effects.

## Methods

### Study population

We used data from a national classroom survey of mental health of children and adolescents in the ninth grade conducted by Statistics Sweden on behalf of the Swedish Public Health Institute and the National Board of Health and Welfare in 2009.<sup>13</sup> The data came from 1352 schools with at least 10 participating pupils in the ninth grade, altogether 91 395 individuals. We excluded pupils if the questionnaires lacked at least two items from one of the scales used in the study or if the information about their own or their parents' origin was lacking; all together, 15 166 (16.6%) in the ninth grade were excluded, leaving 76 229 pupils to be included in the study population. The internal attrition was significantly greater among the foreign-born pupils with a migrant background (21.9%), whereas the attrition was more moderate in Swedish-born children with a migrant background (17.3%).

The survey included eight categories for the pupils' own, parental and maternal region of birth. Based on this information, the population was divided into six categories: *Swedish origin*: child and both parents born in Sweden. *Mixed*: child and one parent born in Sweden, one parent born outside Sweden. *Foreign-born originating in Africa or Asia*: child and both parents born in Africa or Asia (including Lebanon, Turkey, Iran, Iraq or Syria). *Swedish-born originating in Africa or Asia*: child born in Sweden, both parents born in Africa or Asia (including Lebanon, Turkey, Iran, Iraq or Syria). *Foreign-born with other migrant origin*: child born outside Sweden and at least one parent born outside Sweden, Africa or Asia. *Swedish-born with other migrant origin*: child born in Sweden and at least one parent born outside Sweden, Africa or Asia.

### Outcome measures

From the national school survey, we selected six dimensions from the KIDSCREEN-52 quality-of-life questionnaire<sup>14</sup> with relevance for the school setting: psychological well-being, moods and emotions, peer relations, social acceptance (bullying), school satisfaction and the KIDSCREEN-10 general well-being index. The KIDSCREEN items use 5-point Likert-type scales to assess either the frequency (never–seldom–sometimes–often–always) or intensity (not at all–slightly–moderately–very–extremely). A high score indicates positive well-being. The recall period is 1 week. Scores for each dimension were calculated using Rasch analysis<sup>15</sup> and then transformed into Z-values with a mean value 0 and standard deviation 1 to simplify the interpretation of effect sizes according to Cohen.<sup>16</sup> The KIDSCREEN questionnaire has been shown to have acceptable levels of reliability and validity.<sup>15,17</sup>

Being victimized for bullying as a dichotomized variable was defined as <-1 SD on the social acceptance scale as suggested by Analitis *et al.*<sup>18</sup>

### Co-variables

Information on family status and gender was obtained from the survey. Data on the distribution of migrant origin and post-secondary parental education in the entire school and the school's geographical location at the municipal level were obtained from the National SIRIS database<sup>19</sup> and linked to the data set through the school id. The migrant density of the schools was categorized based on the percentage of pupils who were themselves born abroad or had two parents who were born abroad into 0–10% (low), 11–50% (intermediate) and 51–100% (high), whereas the proportion of parents with post-secondary education was categorized as 0–40%, 41–60% and 61–100%. The municipality, where the school was located, was grouped into big city (Stockholm, Gothenburg and Malmö), small- or medium-sized

city or rural in a categorization provided by the Swedish Association of Local Authorities and Regions.

### Statistical analysis

The statistical analyses were stratified by gender in a multivariate two-level analysis that used a random intercept model.<sup>20</sup> Family situation and migrant origin in the six categories defined previously were analysed at the individual level, whereas percentage of parents with at least some post-secondary education, the percentage of parents with an immigrant origin and type of municipality were analysed at the school level.

Linear multivariate multilevel analysis was used to calculate beta coefficients on the six z-transformed scales for the six categories of origin where Swedish origin was used as the comparison category. Total intraclass correlations were analysed in an empty model, whereas the multivariate model was adjusted for family situation (living with two parents living together or alternately, one parent, other) as confounder at the individual level, and migrant density, parental secondary education and type of municipality as confounders at the school level.

To investigate whether our outcomes varied by school context, we created interaction variables of the migrant origin categories and the migrant density variable. These were analysed in a two-level analysis adjusted for the individual and school variables mentioned previously with the Swedish origin group as the comparison group. All analyses were performed with the aid of MLwiN 2.28.<sup>21</sup>

## Results

Table 1 shows sociodemographic information of the study population and their schools. Pupils with one or two foreign-born parents more often lived with a single parent. The percentage who did not live with their parents (living with other) was highest among the foreign-born pupils, and especially high among boys originating in Africa or Asia, where it was as high as 8%. In all, 56.1% of the pupils in the majority population attended schools with low migrant density. Only 2% of the population with Swedish origin attended schools with high migrant density compared with 29.1% and 35.9% of the pupils with an African or Asian background, foreign-born and Swedish-born, respectively.

Beta coefficients, expressed as z-scores, by migrant origin are presented in Table 2, after adjustment for family situation and the school-level variables. The foreign-born pupils with an origin in Africa or Asia reported the lowest levels on the scales of psychological well-being, moods and emotions, peer relations and social acceptance, with z-scores of -0.11 to -0.38 in comparison with the pupils of Swedish origin. School satisfaction was systematically reported to be higher among migrant girls compared with migrant boys, but otherwise patterns of well-being were similar in boys and girls with a migrant background.

The intraclass correlation of the empty model varied between 6.3% and 15.2% and was generally higher for boys. In schools with a high migrant density, pupils consistently reported higher levels of well-being, with z-scores for school effects of 0.17 and 0.17 for Kidscreen-10 and 0.22 and 0.23 for school satisfaction, for boys and girls, respectively (Supplemental Table).

In the interaction analysis presented in Table 3, pupils with an origin in Africa or Asia systematically reported higher levels of well-being in schools where the density of pupils with a migrant origin was high or intermediate compared with schools with a low density of migrant children. This interaction effect was particularly pronounced for boys with an origin in Africa or Asia, where the difference between the school with high and low density of migrant children was as large as 0.56 on the KIDSCREEN 10-index, 0.61

**Table 1** Sociodemographic characteristics of the study population by origin ( $N = 76\,229$ ), percentages

	Swedish	Mixed	Africa/Asia		Other	
			Foreign-born	Swedish-born	Foreign-born	Swedish-born
N	59 703	8647	2588	3763	1528	2830
<b>Individual level</b>						
Boys	48.7	48.4	52.0	47.4	52.5	51.6
Girls	51.3	51.6	48.1	52.6	47.5	48.4
<b>Family situation</b>						
Lives with both parents	87.4	74.1	69.1	80.7	69.3	79.6
Single parent	11.9	24.1	24.4	18.0	27.8	19.2
Other	0.6	1.7	6.5	1.3	2.8	1.2
<b>School level</b>						
<b>Type of municipality</b>						
Large city	26.4	38.7	38.8	55.3	35.1	41.5
Other city	51.2	44.4	47.4	39.0	43.0	42.4
Rural	22.3	17.0	13.8	5.7	21.9	16.1
<b>Migrant background</b>						
0–10%	56.1	42.8	19.3	9.6	25.3	18.4
11–50%	41.9	51.2	51.6	54.4	55.5	62.1
>50%	2.0	6.0	29.1	35.9	19.2	19.5
<b>Post-secondary education among parents</b>						
0–40%	31.3	30.2	51.3	47.8	47.1	43.3
41–60%	45.7	43.3	36.6	34.5	36.7	39.3
>60%	23.2	26.5	12.1	17.7	16.2	17.4

**Table 2** Z-transformed beta coefficients for different migrant backgrounds on six aspects of health-related quality of life in a two-level linear regression

	Swedish	Mixed	Africa/Asia		Other	
	Swedish-born	Swedish-born	Foreign-born	Swedish-born	Foreign-born	Swedish-born
N	59 703	8647	2588	3763	1528	2830
<b>Boys</b>						
KIDSCREEN 10-index	0	−0.04*	0.02	<b>0.20***</b>	0.09**	<b>0.20</b>
Psychological well-being	0	−0.05**	−0.16***	0.12***	−0.02	0.16***
Moods and emotions	0	−0.04*	−0.30***	0.10***	0.04	−0.11***
Peer relations	0	−0.05**	−0.19***	0.11***	−0.03	0.17***
Social acceptance	0	−0.03	−0.35***	−0.02	−0.15***	0.11***
School satisfaction	0	−0.02	0.03	<b>0.20***</b>	0.07*	−0.11***
<b>Girls</b>						
KIDSCREEN 10-index	0	−0.06***	0.00	0.16***	0.04	0.11***
Psychological well-being	0	−0.06***	−0.11***	0.22***	0.05	0.15***
Moods and emotions	0	−0.06***	−0.12***	0.23***	0.09**	0.08**
Peer relations	0	−0.05**	−0.38***	0.09**	−0.12**	0.07**
Social acceptance	0	−0.01	−0.31***	0.05**	−0.06*	0.06**
School satisfaction	0	−0.06***	0.18***	0.24***	0.17***	0.09*

\*\*\* $P < 0.001$ ; \*\* $P < 0.01$ ; \* $P < 0.05$ .

All estimates adjusted for family type at the individual level and parental education, domicile and proportion of students with foreign background at the school level. Small effect sizes (0.20–0.40), according to Cohen,<sup>11</sup> have been marked in bold type.

on the psychological well-being scale and 0.87 on the social acceptance scale.

As Figure 1 shows, as many as 31.6% of the boys and 34.6% of the girls born in Africa or Asia reported having been bullied in the past week if they went to a school with a low density of migrant children, whereas the level was similar to other children in schools with a high density of migrant children (13.3% and 11.2% for boys and girls, respectively).

## Discussion

In this national classroom survey of mental health in 76 000 15-year-olds in Sweden, we found that the well-being of foreign-born children with an origin in Africa or Asia was lower than their peers, but varied greatly by the density of pupils with a migrant origin in the school, with much lower well-being in schools with

few migrant children. One-third of the pupils born in Africa or Asia reported being bullied during the past week if they attended a school with a low density of pupils with a migrant origin.

This study confirms previous reports of children and youth in majority and minority populations in Sweden living parallel lives, as 56% of the Swedish majority pupils attended schools where <10% of the other peers had a migrant background. Our study, however, falsifies the assumption that integration of newly settled migrant children into schools dominated by the Swedish majority population is favourable for their well-being. It seems important to separate long- and short-term consequences for well-being of schoolchildren of residential segregation. It is possible that the parallel lives of children with migrant and Swedish origin in the long-term creates tensions between majority and minority children that lie behind the high rates of bullying of Asian and African children in schools dominated by majority pupils, at the same

**Table 3** Z-transformed beta coefficients for interaction effects of migrant background at the individual level and proportion of children with a migrant background at the school level

		Girls' migrant density			Boys' migrant density		
		Low	Medium	High	Low	Medium	High
<b>Kidscreen-10</b>							
Swedish	Swedish-born	ref	ref	ref	ref	ref	ref
Mixed	Swedish-born	0	0.06	0.16*	0	0.08*	0.04
Origin in Africa/Asia	Foreign-born	0	<b>0.25***</b>	<b>0.29***</b>	0	<b>0.57***</b>	<b>0.56***</b>
	Swedish-born	0	0.12*	<b>0.35**</b>	0	<b>0.21**</b>	<b>0.35***</b>
Other migrant origin	Foreign-born	0	0.18*	<b>0.36***</b>	0	-0.12*	0.02
	Swedish-born	0	<b>0.19***</b>	<b>0.18**</b>	0	<b>0.21**</b>	<b>0.29***</b>
<b>Psychological well-being</b>							
Swedish	Swedish-born	ref	ref	ref	ref	ref	ref
Mixed	Swedish-born	0	0.04	<b>0.24***</b>	0	0.10*	0.08
Origin in Africa/Asia	Foreign-born	0	<b>0.20**</b>	<b>0.34**</b>	0	<b>0.64***</b>	<b>0.61***</b>
	Swedish-born	0	0.16*	<b>0.35***</b>	0	0.15*	<b>0.29***</b>
Other migrant origin	Foreign-born	0	0.13*	<b>0.54***</b>	0	-0.05	0.09
	Swedish-born	0	<b>0.25**</b>	<b>0.41***</b>	0	0.11*	0.16**
<b>Moods and emotions</b>							
Swedish	Swedish-born	ref	ref	ref	ref	ref	ref
Mixed	Swedish-born	0	0.03	0.18**	0	0.12*	0.06
Origin in Africa/Asia	Foreign-born	0	<b>0.25***</b>	<b>0.43***</b>	0	<b>0.61***</b>	<b>0.61***</b>
	Swedish-born	0	<b>0.27***</b>	<b>0.45***</b>	0	<b>0.25**</b>	<b>0.25**</b>
Other migrant origin	Foreign-born	0	0.11*	<b>0.48***</b>	0	0.00	-0.03
	Swedish-born	0	<b>0.28***</b>	<b>0.41***</b>	0	0.04	0.00
<b>Peer relations</b>							
Swedish	Swedish-born	ref	ref	ref	ref	ref	ref
Mixed	Swedish-born	0	0.03	0.20**	0	-0.02	0.00
Origin in Africa/Asia	Foreign-born	0	<b>0.20**</b>	<b>0.35***</b>	0	<b>0.58***</b>	<b>0.48***</b>
	Swedish-born	0	0.15**	<b>0.27***</b>	0	0.03	0.00
Other migrant origin	Foreign-born	0	0.19*	<b>0.41***</b>	0	0.01	0.00
	Swedish-born	0	0.16*	<b>0.34**</b>	0	0.06	0.12***
<b>Social acceptance</b>							
Swedish	Swedish-born	ref	ref	ref	ref	ref	ref
Mixed	Swedish-born	0	0.06*	0.17**	0	0.02	0.00
Origin in Africa/Asia	Foreign-born	0	<b>0.56***</b>	<b>0.79***</b>	0	<b>0.66***</b>	<b>0.87***</b>
	Swedish-born	0	0.08	<b>0.23**</b>	0	<b>0.21**</b>	0.19**
Other migrant origin	Foreign-born	0	0.09	<b>0.28*</b>	0	0.15*	<b>0.24*</b>
	Swedish-born	0	0.13	0.19*	0	0.02	0.14*
<b>School satisfaction</b>							
Swedish	Swedish-born	ref	ref	ref	ref	ref	ref
Mixed	Swedish-born	0	0.03	0.17**	0	0.16**	0.12**
Origin in Africa/Asia	Foreign-born	0	<b>0.31***</b>	<b>0.56***</b>	0	<b>0.55***</b>	<b>0.51***</b>
	Swedish-born	0	0.13	<b>0.41**</b>	0	<b>0.21***</b>	<b>0.30***</b>
Other migrant origin	Foreign-born	0	<b>0.30***</b>	0.15**	0	-0.03	0.16*
	Swedish-born	0	<b>0.30**</b>	<b>0.33***</b>	0	0.16**	<b>0.23**</b>

\*\*\* $P < 0.001$ ; \*\* $P < 0.01$ ; \* $P < 0.05$ .

All estimates adjusted for family type at the individual level and parental education and domicile at the school level. Small (20–40), moderate (40–80) and high (>80) effect sizes, according to Cohen,<sup>11</sup> have been marked in bold type.

time as minority pupils in the short-term feel more comfortable in schools with a high density of minority children. Further research is needed to guide housing and school policy on this crucial issue for the future cohesion of the Swedish society.

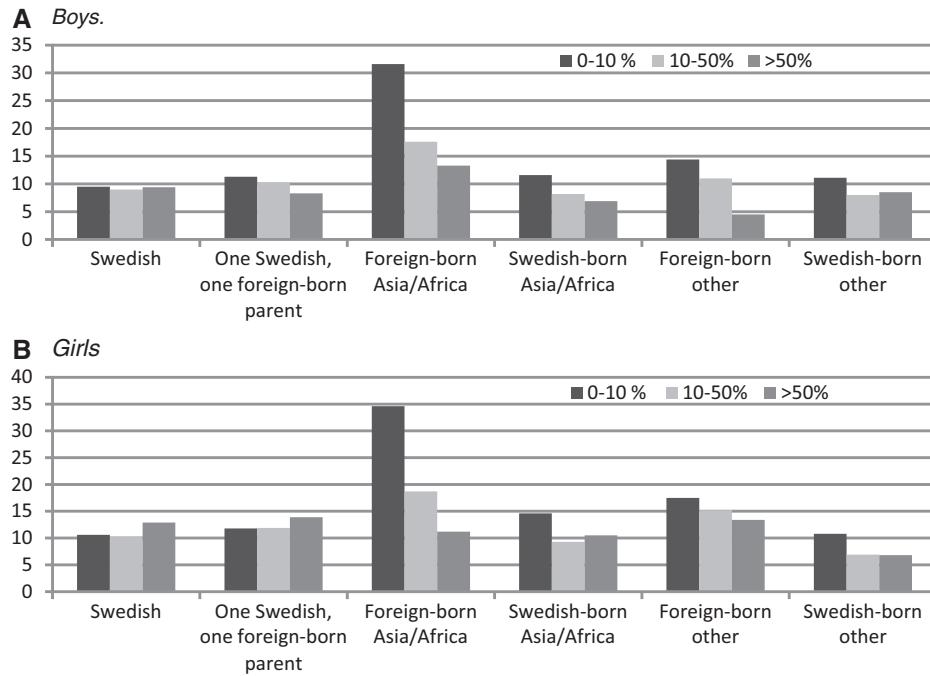
The results of this study add to the existing literature on ethnic density and mental health/well-being, which has hitherto primarily been investigated in adult populations. The ethnic density hypothesis is a proposition that members of ethnic minorities have better mental health when they live in areas with higher proportions of people of the same ethnicity. Previous studies in adults in the USA and UK have shown mixed results with higher as well as lower rates of mental health problems in areas with high ethnic density.<sup>22</sup> This study indicates that migrant/ethnic density in schools needs to be considered as an important social determinant of well-being in schoolchildren in a Swedish context.

The foreign-born pupils with an origin in Africa or Asia reported a lower level of well-being compared with their peers (Table 2), including Swedish-born children in families with a similar origin. As it can be assumed that most of the foreign-born pupils from Africa and Asia are refugees,<sup>2</sup> this finding is well in line with the Scandinavian studies, mentioned previously, that have demonstrated

high rates of mental health problems in newly settled refugee children that slowly fade over time.<sup>7,8</sup>

The children in families with an origin in Africa/Asia stand out in several ways in comparison with other migrants and the Swedish majority population. Their physical appearance will identify them as coming from a minority population in a Swedish context. The high bullying rates and poor peer relationships for students with a visible minority status in schools with predominately white majority pupils suggest that discriminatory processes based on physical appearance in the peer group might be relevant to explain the lower level of well-being in this context. Discrimination has not been much dealt with previously in relation to research on mental health and well-being in migrant/refugee children in Scandinavia. In a single study, Montgomery and Foldspang<sup>23</sup> described that experiences of discrimination were common among young migrants who had settled in Denmark as refugee children, and that they were strongly associated with internalized mental health problems.

Children with one foreign-born and one Swedish-born parent reported slightly lower levels of well-being on many scales compared with children with two Swedish-born parents and



**Figure 1** Percentage in ninth grade who reported having been bullied during the past week by origin and percentage of migrant children among the pupils in the entire school

Swedish-born children with a migrant origin. Young adults with a mixed background have also been described to have an increased risk of psychotic disorders in Sweden in a previous study.<sup>24</sup> The pattern in this study that well-being on the social acceptance and peer relations scale was better relative to the more psychological aspects of well-being seems to point to a causation outside of the peer group for this lower level of well-being.

An interesting and unexpected finding was the systematic tendency for pupils in migrant-dense schools, irrespective of their origin, to report higher levels of well-being, including peer relations and school satisfaction, compared with schools with intermediate and low migrant density (Table 3). This systematic difference explains some of the higher levels of well-being of the migrant children in schools with a high density of migrants compared with low-migrant-dense schools. The KIDSCREEN was created as a multicultural instrument in a European context,<sup>13</sup> which makes it unlikely that cross-cultural validity problems explain these differences, although this possibility cannot be completely ruled out, considering the significant proportion of pupils with a non-European origin among the migrants in this study. Further studies are needed to clarify these issues.

## Limitations

This study has several noteworthy limitations. First, the questions asked in the national survey and the available national school statistics greatly restricted the possibilities of creating categories of migrant origin. For example, it is unclear to what extent asylum seekers and undocumented children, and other pupils who only recently arrived in Sweden, participated in the study, as well as the age at which foreign-born students settled in Sweden. It cannot be completely ruled out that the participation of these vulnerable pupils explains some of the higher level of symptoms described among the pupils born in Africa and Asia. These crude categories of migrant background also prevented us from using more specific ethnic categories in the analysis of contextual factors at the school level, and to investigate patterns associated with acculturation in foreign-born children.

Another significant limitation of this study is the greater internal dropout of pupils of migrant origin compared with the majority population, and the unknown loss of students of migrant origin in the total population. It is reasonable to assume that some of the internal loss of foreign-born children was caused by difficulty in reading Swedish, which in that case would mean that students in the attrition differ somewhat from the students who participated in the survey. Given the link between learning disabilities and mental health problem, it seems likely that this would result in an underestimation of the true rate of mental health problems of foreign-born students, rather than an overestimation. Results for differences between students in different environments, however, can be expected to be more robust.

Finally, the social confounders in this study, apart from family status, were analysed at the school level only, which can be expected to leave significant residual social confounding at the individual level. Previous studies, however, have not indicated that socioeconomic circumstances of the family are important determinants of psychological well-being in Swedish schoolchildren.<sup>3</sup>

## Implications

This study indicates that poor peer relations and bullying are important risk factors to target in promotion of well-being in migrant children, particularly in schools where migrant children are scarce. The importance of access to other pupils with a migrant background should be considered in immigration policy. Further research is needed to deepen our understanding of discrimination in the peer group surrounding students of migrant origin in schools and its consequences, and how this negative influence on well-being can be prevented by actions on the structural level in the society as well as in the individual school.

## Supplementary data

Supplementary data are available at *EURPUB* online.

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*Conflicts of interest:* None declared.

## Key points

- Ethnic density of the neighbourhood has been linked to mental health problems in adult minority populations. This study demonstrates that 15-year-old pupils born in Africa or Asia in Sweden report substantially better well-being in schools with a high migrant density.
- Pupils born in Sweden into families with an origin in Africa or Asia reported a better well-being than children born on these continents. This is line with previous reports that refugee children are at particular risk for mental health problems and impaired well-being.
- The discourse on well-being and mental health in refugee children has a strong focus on determinants in the country of origin, such as exposure to political violence and ethnicity. This study demonstrates that social relations in the peer group in the receiving country are also important, and need to influence prevention strategies and policy.

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