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BRIEF REPORT

Risk of psychosis in Yorkshire African, Caribbean and Mixed Ethnic communities

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Background: An elevated risk of psychosis in migrant and ethnic minority groups has been frequently reported. Previous UK studies have found an elevated risk in African-Caribbean, African and Mixed Ethnic groups, but risks for these groups in West Yorkshire are not known.
Aim: To carry out a naturalistic study of the relative risk of psychosis in Yorkshire African, African-Caribbean and Mixed Ethnic groups as compared with the British White population.
Method: We used data from Early Intervention for Psychosis services on 15–35 year-olds diagnosed with first episode psychosis (ICD-10, F20-29) in 2013–2015 and local census data to calculate risks.
Results: Risk ratios (RR) are significantly increased in African (RR 3.23: 95% CI, 2.46, 4.25), African Caribbean (RR 3.15: 95% CI, 2.04, 4.85) and Mixed Ethnic group (RR 2.27: 95% CI, 1.77, 2.91).
Conclusion: Risks are elevated but not as much as elsewhere in England. The reasons for this difference require further investigation.

Key words: psychosis risk; Yorkshire; African; Caribbean; Mixed

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Declaration of interest: None

Introduction

An elevated risk of psychosis in migrant and ethnic minority groups has been reported in many countries (Selton et al. 2007). Previous studies in the UK, which reported an elevated risk in African-Caribbean, African and Mixed Ethnic groups, were mostly carried out in southern England (Bhugra et al. 1997; Kirkbride et al. 2006; Coid et al. 2008; Boydell et al. 2012; Morgan et al. 2017). However, risks are not known for these groups in West Yorkshire in the north of England, which is home to a number of immigrant communities particularly in the Bradford, Leeds and Kirklees districts. This multi-ethnic population previously provided an opportunity to study the risk of psychosis among South Asian ethnic groups (Saleem et al. 2019). In this paper we report our findings in African, African-Caribbean and Mixed Ethnic groups.

Material and method

Anonymous summary data on the number of 15–35 year-old cases diagnosed with first episode psychosis (ICD-10 F20–29) in 2013, 2014 and 2015 was provided by Early Intervention for Psychosis services in the West Yorkshire districts of Bradford, Leeds and Kirklees. The ethnic groups investigated were British White, African, African-Caribbean and Mixed ethnicity. Permission to use these data for the current study was granted by the medical directors of the three NHS trusts where the services are based. Population data were obtained from 2011 UK census figures (ONS 2019). RevMan 5.3 (Cochrane Community 2014) was used for analysis and data from the three years 2013–2015 were combined. Incidence risk ratios (RR) with 95% confidence intervals were calculated for each district individually, and for the three districts combined using a fixed effects model. RR with 95% confidence intervals that did not include 1 were regarded as statistically significant at $p < 0.05$, two-tailed.

Table 1. Census 2011 data for West Yorkshire.

	Bradford	Leeds	Kirklees
Total population			
British White	333628	609714	334270
African	4993	14894	2364
African-Caribbean	3581	6728	4626
Mixed	12979	19632	9790
Total 15–35 year age band			
British White	79973	187578	78892
African	2231	5939	963
African-Caribbean	709	1680	955
Mixed	4555	7517	3303

Results

Table 1 shows the demographic data derived from UK Census 2011, which provided the denominators for RR calculations (ONS 2019). The total populations are included for information but the calculations were based on the relevant at-risk populations: the population in the 15–35-year age band. Compared with the British White population in Bradford, Leeds and Kirklees (of whom 24%, 31% and 24% respectively are in the 15–35-year age band), African, African-Caribbean and Mixed Ethnic populations are youthful, as percentages of the total: African (45%, 40%, 41%); African-Caribbean (20%, 25%, 21%); Mixed Ethnic (35%, 38%, 34%). Table 2 summarises the RR found in the three ethnic groups which are significantly increased in all the groups: African 3.23 (95% CI 2.46, 4.25), African-Caribbean 3.15 (95% CI 2.04, 4.85), and Mixed Ethnic 2.27 (95% CI 1.77, 2.91). Forest plots provide more detail and a separate breakdown for the three districts (Figure 1). The African-Caribbean group in Bradford achieved the highest RR of 4.62 and the Mixed Ethnic group in Bradford the lowest RR of 1.01 (Table 2).

Discussion

To our knowledge, this is the first study of its kind in West Yorkshire and although the RR is significantly elevated

Table 2. Relative risk of first episode psychosis by ethnic group.

	Number of cases 2013–2015 Population (/100 000) [15–35 years]				
	Bradford	Leeds	Kirklees	Risk ratio relative to White ethnic group	Combined risk ratio relative to White ethnic group (95% CI)
White	122 (50.6) [79973]	365 (64.6) [187578]	192 (81.0) [78892]	1	
African	12 (179.0) [2231]	40 (224.3) [5939]	4 (138.3) [963]	3.527 (1.95, 6.37)[1,*] 3.472 (2.5, 4.79)[2,*] 1.707 (0.63, 4.53)[3]	3.23* (2.46, 4.25)
African-Caribbean	5 (235.0) [709]	8 (158.6) [1680]	8 (297.0) [955]	4.623 (1.89, 11.27)[1,*] 2.447 (1.21, 4.92)[2,*] 3.442 (1.7, 6.96)[3,*]	3.15* (2.04, 4.85)
Mixed	7 (51.0) [4555]	41 (181.6) [7517]	19 (191.6) [3303]	1.007 (0.47, 2.15)[1] 2.803 (2.03, 3.86)[2,*] 2.364 (1.47, 3.78)[3,*]	2.27* (1.77, 2.91)

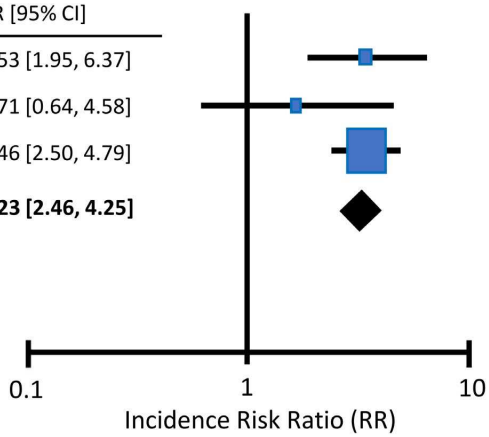
*statistically significant at $p < 0.05$
[1]Bradford; [2]Leeds; [3]Kirklees

A

District	African Cases	African Total	White British Cases	White British Total	Weight (%)	RR [95% CI]
Bradford	12	2231	122	79973	19.7	3.53 [1.95, 6.37]
Kirklees	4	963	192	78892	13.8	1.71 [0.64, 4.58]
Leeds	40	5939	365	187578	66.6	3.46 [2.50, 4.79]
Total [95% CI]	**56**	**9133**	**679**	**346443**	**100**	**3.23 [2.46, 4.25]**

Heterogeneity: $chi^2 = 1.86$, df = 2 ($p = 0.40$); $I^2 = 0\%$

Test for overall effect Z = 8.41 ($p < 0.00001$)

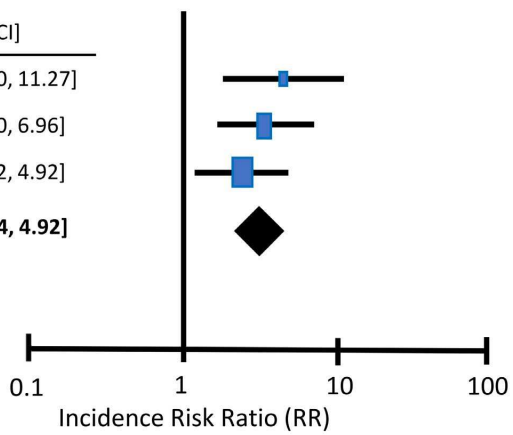


B

District	African-Caribbean Cases	African-Caribbean Total	White British Cases	White British Total	Weight (%)	RR [95% CI]
Bradford	5	709	122	79973	4.62	4.62 [1.90, 11.27]
Kirklees	8	955	192	78892	3.44	3.44 [1.70, 6.96]
Leeds	8	1680	365	187578	2.45	2.45 [1.22, 4.92]
Total [95% CI]	**21**	**3344**	**679**	**346443**	**100**	**3.15 [2.04, 4.92]**

Heterogeneity: $chi^2 = 1.28$, df = 2 ($p = 0.53$); $I^2 = 0\%$

Test for overall effect Z = 5.19 ($p < 0.00001$)



C

District	Mixed Ethnic Cases	Mixed Ethnic Total	White British Cases	White British Total	Weight (%)	RR [95% CI]
Bradford	7	2231	122	79973	23.2	1.01 [0.47, 2.16]
Kirklees	19	963	192	78892	27.2	2.36 [1.48, 3.78]
Leeds	41	5939	365	187578	49.6	2.80 [2.03, 3.87]
Total [95% CI]	**67**	**15375**	**679**	**346443**	**100**	**2.27 [1.77, 2.91]**

Heterogeneity: $chi^2 = 6.06$, df = 2 ($p = 0.05$); $I^2 = 67\%$

Test for overall effect Z = 6.42 ($p < 0.00001$)

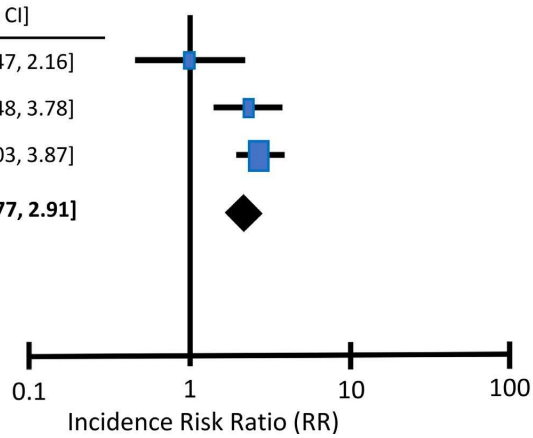


Fig. 1. Forest plots illustrating the risk ratios for incidence in the three districts comparing the various ethnic groups with the larger White British group. Mantel–Haenszel (M–H) fixed effect methods analysis. Squares are proportional to the weights given to individual study in the meta-analysis (based on the number of cases); horizontal lines indicate confidence intervals; RR = 1 indicates no effect; RR > 1 indicates a higher risk than seen in the White British population; analyses in which the CI overlap the vertical are inconclusive. The summary measure is indicated by the centre point of the black diamond, and associated confidence intervals by the lateral tips of the diamond. A, African vs White British. B, African-Caribbean vs White British. C, Mixed Ethnic vs White British.

for African, African-Caribbean and Mixed Ethnic populations, they are not as high as elsewhere in England (e.g. Black African 4.06, Black African-Caribbean 4.63; Kirkbride et al. 2017). It is not known whether these differences are due to methodological differences between studies and/or differences in risk and protective factors between regions.

The Mixed Ethnic group had less elevation of risk than other ethnicities (RR 2.27) and in the Bradford district sample there is negligible risk elevation (RR 1.01). Comparable RR of a Mixed Ethnic group reported by AESOP (Kirkbride et al. 2008) and SEPEA (Kirkbride et al. 2017) were 3.2 and 2.01 respectively. SEPEA employed methods relatively similar to the current study and found a similar result. A possible reason for the lower risk in Bradford is the higher proportion of mixed Asian + White group (Bradford 37%, Leeds 25%, Kirklees 25%). The mixed population in AESOP was mostly African-Caribbean + White, and in SEPEA it was exclusively African-Caribbean + White (Kirkbride et al. 2008, 2017). By contrast, the mixed African-Caribbean + White group form less than half of the Mixed Ethnic population in West Yorkshire (Bradford 42%, Leeds 45%, Kirklees 56%; ONS 2019).

Calculations based on subdivisions with small numbers run the risk of generating statistical artefacts. Nevertheless, any differences between risks in the mixed Asian + White compared with mixed African-Caribbean + White groups appear to be modest at best. The raw numbers for mixed Asian + White are: Bradford 0 cases out of a population of 1710 (0%), Leeds 2 cases/1982 (0.1%), Kirklees 3 cases/852 (0.4%). The numbers for mixed African Caribbean+Whites are, Bradford 2 cases out of a population of 1926 (0.1%), Leeds 5 cases/3555 (0.1%) and Kirklees 12 cases/1852 (0.6%).

There are a number of limitations of this study design. First, its reliance on summary clinical data, which does not allow the analysis of individual psychotic disorders. Second, as the cases are not traced and interviewed by investigators, there is reliance on clinical diagnoses which may create some doubt about their standardisation. However, all services use a standardised screening tool namely the Comprehensive Assessment of At-Risk Mental States to confirm or rule out the presence of psychotic symptoms from which diagnoses can be made, thus ensuring inter-rater reliability (Yung et al. 2005). Third, small population sizes precluded further beak-down into 10-year age bands and by gender. Fourth, migrant status was not further stratified into first and later generations. The greatest advantage of this method of investigation is its no-cost, simple naturalistic design, which relies on the easily accessible information stored in NHS data banks. These studies do not require remunerated research staff and therefore can be carried out by enthusiastic investigators, such as medical students (Beattie et al. 2020) who are prepared to give their time.

Conclusion

This study provides initial evidence of elevated risk of psychosis in African, African-Caribbean and Mixed Ethnic populations in West Yorkshire. These findings, by no means definitive, need replication and, if substantiated, more research to clarify the factors that underlie variation in the risk of psychosis in these groups, including differences between UK regions.

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