

Ethnic differences in the risks of adverse reactions to drugs used in the treatment of psychoses: a systematic review and meta-analysis

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Introduction

- Susceptibility to adverse drug reactions (ADRs) varies with genetic make-up, age, sex, physiology, exogenous factors such as diet, and disease state ⁽¹⁾
- Ethnicity has been suggested as a potential risk factor for ADRs and some drugs have been shown to be more effective in certain ethnic groups
- Ethnic classifications, although controversial, may take into account some of the complex interactions between genetics and other biosocial variables ⁽²⁾

Aims of Study

- To undertake a systematic review of the literature to discover reports of associations between ADRs and ethnicity
- To examine the subset of articles describing ADRs to drugs used in the treatment of psychoses
- To estimate the size of the effect of ethnic differences on the risk of adverse reactions to these drugs

Methods

- We searched Medline, EMBASE, and PsycINFO to March 2006 using a combination of text words and indexing terms

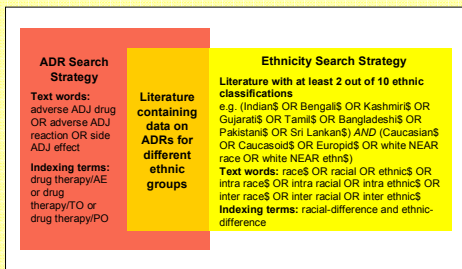


Figure 1 – Search strategy

- Studies were selected if there was a description of both an ADR and at least two different ethnic groups
- 673 studies met the inclusion criteria, of which 99 related to drugs used in the treatment of psychoses (British National Formulary class 4.2)
- Data were extracted using a standard data extraction form
- Data were pooled by means of a fixed effects model if heterogeneity was absent, otherwise by means of a random effects model
- Revman 4.2.7 ⁽³⁾ was used for the analysis

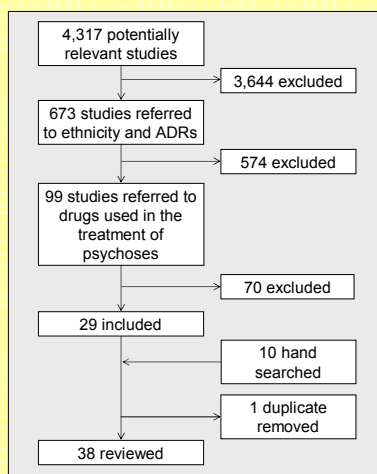
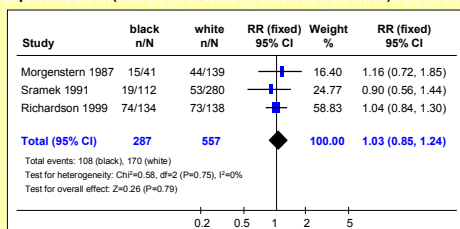


Figure 2 – Flow chart of study selection

Results

Tardive dyskinesia (TD)

- Pooled analysis suggests no statistically significant increase in risk of TD in black patients (RR=1.0, 95% CI=0.9–1.2)

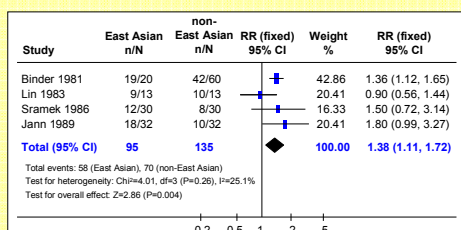


- 6 prospective studies of different size and study length reported varying results

Study	n	Ethnic groups	Results
Morgenstern 1993	272	white non-white	RR=1.00 RR=1.51* (1.07-3.06) P=0.026 *adjusted for age, years of use, and average dose RR= Rate Ratio (from life-table analysis)
van Os 1997	65	white black other	OR=1.0 OR=2.1 (1.03-4.2) OR=1.4 (0.5-4.2) OR=Odds ratio
Jeste 1995	217	white non-white	RR=1.0 RR=1.5 (0.8-2.6) P=0.20 RR= Risk Ratio from Cox regression
Chakos 1996	48	white non-white	HR=0.45 (0.16-1.26) HR=1.0 HR=Hazard ratio
van Os 2000	185	white black other	OR=1.00 OR=0.52* (0.23-1.18) P=0.134 OR=0.96* (0.35-2.68) P=0.941 *adjusted for sex, age, 2-year antipsychotic exposure, symptom 2-year average score, symptom 2-year change score
Oosthuizen 2003	11	Caucasian mixed African-Caucasian	2/11 5/46 (Fisher's exact test P=0.63)

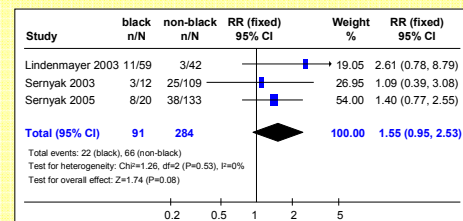
Extrapyramidal symptoms (EPS)

- Pooled analysis suggests that East Asian patients have a significantly greater risk of EPS compared with non-East Asian patients (RR=1.4, 95% CI=1.1–1.7)



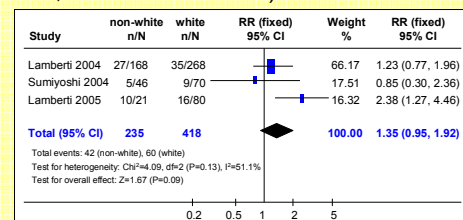
Hyperglycaemia

- We found no statistically significant increase in risk of hyperglycaemia in black patients (RR=1.6, 95% CI=0.95–2.5)



Diabetes mellitus

- Diabetes mellitus risk in non-white patients was also not significantly increased (RR=1.4, 95% CI=0.95–1.92)



Limitations

- Pooled data were unadjusted for confounding factors such as age, sex, or exogenous disease
- Literature searches may fail to identify studies that report ADRs
- Researchers often fail to describe how race and ethnicity are defined, making it difficult to compare different studies

Discussion

- We found limited evidence of ethnic differences in rates of ADRs
- Where ethnic differences in susceptibility exist, they may act as a signal for potentially important genetic or environmental factors that influence the balance between drug benefit and harm
- However, these data should not cause clinicians to become inappropriately cautious when prescribing some drugs to certain ethnic groups
- Instead, there is a requirement for improved recruitment of patients from different ethnic groups and an established consensus on how ethnicity is defined

Acknowledgements

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References

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