Key Research: Black and Black (2007) Aircraft noise exposure and resident's stress and hypertension

Method / Design

Cross-sectional study with a matched control group.

Participants

Suburbs around the flight path of Sydney Airport was selected for the aircraft noise exposure area, due to having more than 50 events of aircraft noise louder than 70dB per day. 750 subjects sent survey.

Control areas: locations not exposed to aircraft matched on socio-economic status to exposure area. 750 subjects sent survey.

Procedure

Field data: Noise stations set up outside randomly selected households. 26 located around Sydney airport and three in the control area from 7am to 6pm October-November. Night-time curfew of flights imposed between 11pm and 6am.

Survey data: Subjective health outcomes measured by a questionnaire. Subjects sent a cover letter detailing the study was on environmental noise (omitting mention of aircraft noise specifically).

Questionnaire measured seven major characteristics:

1. Health related quality of life.
2. Hypertension condition – assessed by closed questions e.g. "Have you ever been told by a Doctor that you have high blood pressure" YES/NO.
3. Noise stress.
4. Noise sensitivity.
5. Noise annoyance.
6. Demographic characteristics.
7. Confounding factors such as exercise, smoking status etc.

Results

Subjects in the noise exposure group were more sharply annoyed by aircraft noise than controls. Whilst hypertension was slightly higher in the controls than the noise exposure group, this was not significant. Those in the noise exposure group did however show a less positive health status compared to controls, notably with mental health ($p<0.001$).

Conclusions

The mean score of physical functioning, general health, vitality and mental health of the noise exposure group were significantly lower than the matched control implying that noise exposure from the Airports flight path did have an impact on general health. Long term aircraft noise exposure was significantly associated with chronic noise stress (odds of 2.61) and this was thus associated with prevalence of hypertension (odds of 2.74) compared to those without chronic noise stress.

Key Issues relevant to study

- Ethnocentrism
- Usefulness
- Methodological issues of using self-report measures
- Reliability & Validity (control of confounding factors)