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Title: Measuring concern about pollution in questionnaire-based environmental surveys

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Body: Understanding attitudes towards pollution in the population might help to prevent bias in questionnaire-based environmental studies, because subjects living closer to emission sources may be more concerned than those who live farther away, thus tending to over-report adverse health outcomes. Using data from a survey on parents of 3697 school-age children (response rate 99%) in an industrial area in northern Italy (Viadana), we devised a score on environmental concerns (EC), evaluated its psychometric properties and its association with several determinants. Six questions surveyed respondents' concerns about electromagnetic fields (EMFs), traffic, lack of public parks, air pollution, indoor cigarette smoke and chemicals in food. Answers were coded as 0 (don't know/not at all), 1 (a little), 2 (quite a lot), 3 (a lot). Explanatory factor analysis (EFA) and homogeneity analysis were performed. A summed score was computed (range 0-18). The association between a 1-unit increase in the score and potential determinants was estimated by relative risks (RRs), obtained by negative binomial regression. EFA identified one unique factor, explaining 61% of the variance. The homogeneity analysis revealed its good internal reliability (Cronbach's α = 0.85) and confirmed the equidistance of the item options response. Item mean scores ranged from 2.0±1.0 (EMFs) to 2.8±0.7 (air pollution). Fathers, indoor-smokers, low educated and non-Italian parents reported less concerns (RRs=0.59, 0.68, 0.38, and 0.82, respectively) with respect to referral groups (p<0.001). Respondents' characteristics influence their level of EC. The devised score may be useful in future research to control for EC-related confounding.