not been sufficiently studied. Sectional analyses were conducted among menopausal employees (n=486), participating in a longitudinal study (the Pró-Saúde Study). Data on insomnia complaints (IC), menopause characteristics, self-report of physical morbidity, medical diagnosis, common mental disorders (CMD), social support and stressful life events (SLE) were collected. Insomnia complaints were analysed as polytomous outcome (frequent, occasional and absent), and crude and adjusted ORs were calculated by multinomial logistic regression. Prevalences of frequent and occasional IC among women in menopause were 25.7% and 32.7%, respectively. Menopause characteristics were not associated with IC. Presence of CMD (GHQ-12) was strongly associated with frequent IC [OR=6.14 (95% CI 3.24 to 11.65)]. For occasional IC, values were lower [OR=2.98 (95% CI 1.59 to 5.57)], but still significant. All social support dimensions were associated with occasional IC, after adjustment, except for the intermediate tertile of total social support. The social support dimension associated with frequent IC after adjustment was “to have low total social support” [OR=2.46 (95% CI 1.53 to 4.22)], “to have low emotional support/information” [OR=2.31 (95% CI 1.27 to 4.19)], and “to have low affective support/positive social interaction” [OR=2.21 (95% CI 1.22 to 4.02)].

**Conclusion**

Menopause may be an important determinant of maternal and infant health outcomes. However, the nutritional status of pregnant women in the Spanish Mediterranean region has been scarcely studied.

**Methods**

We studied 822 women from the INMA-Valencia cohort. Intakes from food and supplements in early pregnancy as well as adequacy to dietary recommendations were assessed according to maternal characteristics. Adequate intakes for food groups were estimated based on Spanish dietary guidelines. Intake inadequacy for micronutrients was assessed using the Dietary Reference Intakes of the Institute of Medicine. Descriptive statistics of dietary intakes were reported. We contrasted the distribution and the adequacy of intake according to maternal characteristics by means of ANOVA, post-hoc tests and logistic regression.

**Results**

Overall, more than 50% of the population studied had deficient intakes of cereals and legumes, carbohydrates, n-3 and n-6 fatty acids, and exceeded the recommendations for total fat intake. Prevalence of inadequacy for folate, iron and vitamin E from foods ranged from 90% to 70%. Younger and less educated women had lower intakes of vegetables, proteins and n-3 fatty acids and higher intakes of trans-fatty acids along with a greater prevalence of inadequacy for micronutrients. Spanish women showed lower intakes of fruits and carbohydrates and higher intake of proteins, total fat, saturated fatty acids, MUFA and n-3 fatty acids compared to their foreign counterparts.

**Conclusion**

Women in the studied area have inadequate intakes of several nutrients relevant during pregnancy. Besides age and education, origin is an important determinant of dietary intake and adequacy.
into eight food groups, based on the DASH diet. The pictures of food items were useful to remind patients of the components of food groups. As a result, FFQ was quickly applied, in approximately 20 and 16 min for FFQ at 30 and for 7 days, respectively.

**Conclusion** This first step allowed detecting that the FFQ for food groups was feasible at seven and 30 days, and no major issues were detected during the testing.

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**P1-506 MULTILEVEL MODELLING OF SURVEY DATA**

doi:10.1136/jech.2011.142976g.94

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**Introduction** Presently, about five million people worldwide die yearly from tobacco related diseases. The WHO currently estimates that there is 1.3 billion people who are regular smokers.

**Objectives of data analysis** To develop two level random effects logistic regression model for the analysis of clustered binary responses to identify factors associated with smoking among school going male adolescents. To assess if the variability between schools is different for the public and private schools using a random coefficient model. Two random effects will account for the variability between public and private schools respectively. To fit a contrasting Generalising Estimating Equation model to deal with two level clustered data for binary outcome. To compare and evaluate the results from the above mentioned models with a conventional logistic regression model as used in the original study.

**Methods** A two-stage cluster sampling with stratification based on school type was employed for the selection of schools and students. We interviewed 772 male secondary school students. The outcome variable is smoking status of the students. We have two level data with a single level of clustering.

**Results** Final multilevel random effect model showed that between cluster variance is significantly different from zero (p value of likelihood ratio test =0.01), which indicates that there is variability between schools and we need to take between cluster variation into account by using multilevel modelling. The intra-class Correlation quantities consistencies among observations within each cluster and it is also greater than zero (ICC =0.15).

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**P1-507 POLYMORPHISMS IN GENES RELATED TO SEX STEROID TRANSPORT AND SIGNALLING MODULATE MENOPAUSAL HORMONE THERAPY EFFECT ON RISK OF COLORECTAL CANCER**

doi:10.1136/jech.2011.142976g.95

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**Introduction** Menopausal hormone therapy (MHT) has been associated with reduced colorectal cancer (CRC) risk. Since the underlying biological mechanisms of MHT effects on CRC are unknown, we investigated whether single nucleotide polymorphisms (SNPs) in genes related to sex steroid metabolism, transport and signalling modify MHT-associated CRC risk.

**Methods** 47 SNPs in 16 candidate genes related to sex steroid transport (ABCB1), metabolism (COMT, CYP1A1, CYP1A2, CYP1B1, CYP2C9), CYP2C19, CYP3A4, CYP17A1, GSTP, HSD17B1) and signalling (ESR1, ESR2, SHBG, FCR, NR1D2) were genotyped using genomic DNA samples from 685 female postmenopausal CRC patients and 664 controls without CRC of a German population-based case-control study (DACHS). Unconditional multivariate logistic regression was performed and effect modification was assessed using a multiplicative interaction term.

**Results** CRC risk associated with ever MHT use as well as with duration was significantly modified by rs1202168 in ABCB1 (p interaction =0.04). The MHT-associated risk reduction was not any longer significant in homozygous non-carriers, while homozygous carriers of the minor T allele had a 57% lower risk with ever use of MHT and a 22% lower risk per 5 years of MHT use. Significant effect modification was also observed for rs910416 in ESR1, whereby the decreased CRC risk was attenuated in carriers of the minor C allele (p interaction =0.05 for ever use and 0.07 for duration of use).

**Conclusion** Our results provide the first evidence that polymorphisms in sex-steroid-related genes may modify CRC risk associated with MHT. Our findings warrant replication in independent study populations.