

Use of hormone replacement therapy and the profile of CVD risk factors between hormone replacement therapy users and non-users: results from 29 populations of the WHO MONICA Project

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ABSTRACT

Background During the menopause, the changing hormone levels affect the cardiovascular disease (CVD) risk factor profiles of women. Body weight tends to increase as well as total cholesterol and blood pressure. Results of the effects of hormone replacement therapy (HRT) to the CVD risk factor profiles from randomized trials and observational studies are contradictory.

Methods In the WHO MONICA Project, cross-sectional population surveys were conducted in 29 populations in 19 countries. Data from the use of HRT, educational level and classical CVD risk factors was collected using standardized protocols. This data was used to study the potential differences of CVD risk factor profiles between post-menopausal women who either use or do not use HRT using multilevel analysis.

Results The prevalence of HRT use varied considerably between populations. The general pattern across the population was that the HRT users tended to have higher level of education than non-users. HRT users had on average 2 mmHg lower systolic and 1 mmHg lower diastolic blood pressure, 0.2 mmol/l lower total cholesterol and 1 kg/m² lower BMI than non-users. The differing educational level between HRT users and non-users explained the differences in CVD risk factor profiles only partly.

Conclusion HRT users tend to have better CVD risk factor profile than non-users. This difference may partly be due to use of HRT but it may also be explained by the socio-economic differences between HRT users and non-users as well as the health status of women at the time when they start the HRT use. Women with higher socio-economic status have probably better access to information about the HRT and can afford the medication. Also doctors may prescribe HRT more easily to women who are healthier and do not risk have problems with CVD risk factors.

BACKGROUND AND PURPOSE

Menopause is associated with a worsening of cardiovascular risk factor profiles, like weight gain, increase of blood pressure and increase of total cholesterol. These changes are due to change in hormone levels of the women.

The purpose of this study was to investigate the differences in CVD risk factor profiles between HRT users and non-users in cross-sectional setting.

METHODS

Data from the final WHO MONICA Project (<http://www.kti.fi/monica/>) risk factor surveys was used. Surveys were conducted between 1989 and 1997 (mostly between 1992 and 1995).

Data was collected using standardized methods (questionnaire) and data went through the retrospective quality assessment (<http://www.kti.fi/publications/monica/womenqa/womenqa.htm>).

Surveys included a total of 8741 post-menopausal women aged 45-64 years in 29 different populations in 19 countries.

STATISTICAL METHODS

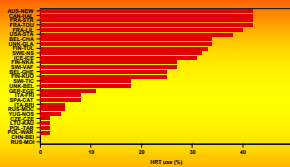
All presented prevalences and mean values were age standardized to the World Standard Population.

Multilevel analysis were used to investigate the differences in CVD risk factors between HRT users and non-users

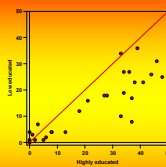
- Random effect: population
- Adjusted for age

RESULTS

Prevalence (%) of HRT use



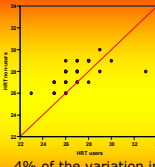
HRT use in different education levels



HRT prevalence by educational level:

- Low: 14%
- Middle: 20%
- High: 23%

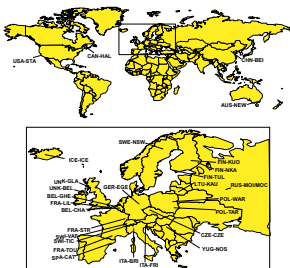
BMI (kg/m²)



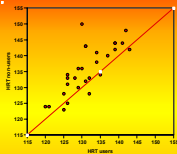
4% of the variation in BMI explained by the variation between populations

- 1.11 (s.e. 0.15) kg/m² lower among HRT users
- After controlling for educational level: 0.97 (s.e. 0.15) kg/m² lower among HRT users
- BMI lowest among highly educated

MONICA POPULATIONS



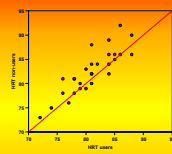
Systolic blood pressure (mmHg)



10% of the variation in systolic bp explained by the variation between populations

- 2.35 (s.e. 0.60) mmHg lower among HRT users
- After controlling for educational level: 2.03 (s.e. 0.60) mmHg lower among HRT users
- Systolic blood pressure lowest among highly educated
- After controlling for educational level and BMI: 1.00 (s.e. 0.58) mmHg lower among HRT users

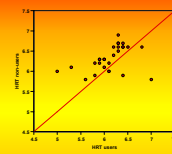
Diastolic blood pressure (mmHg)



13% of the variation in diastolic bp explained by the variation between populations

- 1.06 (s.e. 0.32) mmHg lower among HRT users
- After controlling for educational level: 0.97 (s.e. 0.32) mmHg lower among HRT users
- Diastolic blood pressure lowest among highly educated
- After controlling for educational level and BMI: 0.40 (s.e. 0.31) mmHg lower among HRT users

Total cholesterol (mmol/l)



10% of the variation in total cholesterol explained by the variation between populations

- 0.17 (s.e. 0.03) mmol/l lower among HRT users
- After controlling for educational level: 1.17 (s.e. 0.03) mmol/l lower among HRT users
- Total cholesterol lowest among highly educated
- After controlling for educational level and BMI: 0.15 (s.e. 0.03) mmol/l lower among HRT users

CONCLUSIONS

HRT users tend to have better CVD risk factor profile than non-users. This is possible explained by differences in the socio-economic status between HRT users and non-users. Women with higher socio-economic status have probably better access to the information about the HRT and can afford the medication. Other possible explanation is that doctors are more willing to prescribe HRT to healthy women without existing CVD risk factors.

