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THE EFFECTS OF FAMILY HISTORY AND PERSONAL EXPERIENCES OF ILLNESS ON THE INCLINATION TO CHANGE HEALTH-RELATED BEHAVIOUR

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SUMMARY

The aim of the present study was to examine how a personal experience of illness and a family history of cardiovascular disease (CVD), adjusted for sex, level of education and nationality, affect risk behaviour. Participants were 1,011 and 1,043, 50-year-old men and women from Sweden and Poland, respectively, who were recruited from a primary health care screening programme. Family history, personal experience of illness and risk behaviour (smoking and exercise habits, BMI level) were self-reported. The results showed that smoking behaviour was affected by a personal experience of illness but not by a family history of CVD. No effects of these variables were found on the remaining risk-related variables tested in this study. These results suggest that individuals with a personal experience of illness may be more inclined to change smoking behaviour than the average person. Smoking prevention strategies may therefore benefit from targeting this group in particular.

Key words: history, experience of illness, CVD, risk behaviour, obesity

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INTRODUCTION

One important part of preventive public health work is to support a population’s ability to translate knowledge about risk factors into healthy behaviour. In the individual, this ability is driven by, among other things, attitude and the confidence in their own capacity (1–3). But is an inclination to change behaviour also affected by the degree to which the individual perceives that he or she is at risk of illness?

Several theoretical models, such as the Health Belief Model (HBM) and Social Cognitive Theory (SCT), suggest that this may be the case (4–7). One example of how this assumption has been examined empirically is a study of 178 mostly well-educated women (8). It emerged that perceived susceptibility for illness, perceived severity of illness and knowledge about risk factors were predictors of behaviour preventing cardiovascular disease (CVD). The study indicated that women with a personal experience of treatment for high blood pressure were more inclined to appropriate health behaviour compared to others.

In addition to a personal experience of illness, a family history of illness is also a factor that could theoretically increase the perceived risk of illness (9). However, a longitudinal study of 3,590 young adults (18–30 years old) unexpectedly showed that the development of heart disease in a close relative was not motivation for long-lasting change in health behaviour (10).

Hence this may indicate that a personal experience, but not family history, of illness may have a strong effect on an individual’s perception of the risk of illness, thus affecting behaviour. One possible explanation might be that the influence of family history on the perceived risk of illness is not strong enough to change behaviour. Results could furthermore have been influenced by the fact that participants were relatively young and may have had less inclination to perceive themselves as being at risk of disease in a general sense.

Other factors not examined in the above mentioned studies are how the level of education and nationality affect the correlation between the risk of illness and behaviour. A high level of education leads to healthier behaviour (11–13). The question is, however, whether it is the result of a high level of education in combination with a personal experience of illness and family history that contributes to healthier behaviour. For this reason, the aim of the present study was to further examine how a family history of cardiovascular disease and a personal experience of cardiovascular disease, adjusted for sex, education and nationality, affect risk behaviour.

METHODS

Study populations. This investigation was carried out using a screening programme specifically designed to study potential cardiovascular risk factors in 50-year-olds in the Polish city of Wrocław and the Swedish county of Västmanland (14). Screening was organised by district nurses and also included verbal health information. The Polish data were collected between October 2000 and January 2001, and the Swedish data between May 1997 and April 1998. Wrocław has a population of 640,000 inhabitants and is situated in Lower Silesia in South West Poland. The region of Wrocław is highly industrialised and the city has one of the largest universities in the country. The Swedish county of
Västmanland has a population of about 260,000 inhabitants. It is industrialised, and does not differ from other counties in central Sweden in terms of demographic factors (15).

Based on a model previously developed in Västmanland, the Wrocław Health Department organised the screening procedure in Poland. There are 89 health care centres (HCCs) of differing sizes and management structures in the region of Wrocław. For this study, a total of ten HCCs were selected to participate. In the year 2000, these HCCs provided health-related services to 2,205 men and women aged 50, all of whom were sent an invitation to participate in the screening procedure. Of these individuals, 1,043 agreed (419 men and 624 women).

In the Swedish county of Västmanland data collection was conducted from May 1997 to April 1998, with 1,129 50-year-old individuals taking part in a health screening procedure performed in 34 out of a total of 36 HCCs. Of these individuals, 1,011 (90%, 554 women and 457 men) completed the questionnaire. This was about half of the population of 50-year-olds in the county of Västmanland and Wrocław, respectively, and thus also about half of those invited to participate in the health screening programme.

Questionnaires and screening analyses. A questionnaire similar to that utilised in an earlier study was used. It contains items pertaining to background variables (e.g. sex and level of education) as well as to knowledge about and attitudes to important risk factors for cardiovascular disease (CVD) (14, 16, 17). The Polish screening form was developed from the one used in the Swedish study.

The screening analyses dealt with questions about life habits and health status. Smoking behaviour was classified into one of five categories (never smoked, ex-smokers, 1-14, 14-25 or >25 cigarettes/day) and in this study were dichotomised into current smokers and non-smokers. Physical exercise was assessed on a self-reported five-point scale (exercise daily, 3-4 times a week, 1-2 times a week, 1-2 times a month, seldom or never). This scale was dichotomised into those who exercised at most 1-2 times a week and those who exercised more often. Body Mass Index (BMI) was calculated as weight in kilograms (kg) divided by height in metres squared (kg/m²). Weight was measured without shoes and with light clothing, and calculated to the nearest 0.1 kg on a balance beam scale. Standing height was measured with a fixed stadiometer calibrated in centimetres. In this study, BMI was dichotomised into <30 kg/m² and ≥30 kg/m² (obesity).

Participants stated whether they had diabetes, were being treated for hypertension or were receiving hospital treatment for myocardial infarction or stroke. These individuals were dichotomised into whether or not they had a personal experience of illness. A family history of CVD was obtained from the self-report questionnaire. It contained dichotomous questions to ascertain whether or not the participants’ parents had died or suffered from myocardial infarction or stroke before the age of 55 (yes/no). Level of education was classified into low (a maximum of 12 years) and high (more than 12 years).

The regional human ethics committee (Uppsala University, Sweden) approved the Swedish study. The director of health authorities in the city of Wrocław approved the Polish counterpart.

Statistical analyses. A personal experience of illness and a family history of CVD in relation to country, sex and level of education were presented as proportions and chi-square test was used for comparison of those non-parametric data. The gamma-test was used as a measure of association between family history and a personal experience of illness. Multiple logistic regression was used to study the relationship between dichotomous responses and the following factors: smoking habits (non-smokers = 1; current smokers = 0), exercise habits (regularly = 1, seldom/never = 0) and actual BMI level (BMI <30 kg/m² = 1, BMI ≥30 kg/m² = 0). The analyses were adjusted for country, sex and level of education if applicable (p<0.05). First-order interaction terms were also tested for possible inclusion (p<0.10). The significance level was 5% (two-sided) except for interaction analyses, where the significance level (two-tailed) was p<0.1.

RESULTS

Of all participants, 21% (n = 424) had a family history of CVD (Table 1), of whom considerably more were Polish (27%) than Swedish (14%) (p<0.002). There was an even distribution between men and women with one exception: considerably more highly educated Polish women (28%) than men (22%) (p=0.206) had a family history of CVD.

Of all participants, 19% (n = 388) had a personal experience of CVD (Table 2), of whom considerably more were Polish (27%) than Swedish (10%) (p<0.001). Among both nationalities, those with a lower level of education had experienced CVD to a greater extent than those with a higher level of education (Poland 29% versus 23%, p=0.02; Sweden 12% versus 5%, p=0.003, respec-

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Family history</th>
<th>Sweden</th>
<th>Poland</th>
<th>p-value</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men</td>
<td>% (n = 96)</td>
<td>% (n = 129)</td>
<td>% (n = 140)</td>
<td>% (n = 165)</td>
</tr>
<tr>
<td>High</td>
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<td>14</td>
<td>16</td>
<td>22</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>86</td>
<td>84</td>
<td>78</td>
<td>72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>% (n = 354)</td>
<td>% (n = 411)</td>
<td>% (n = 277)</td>
<td>% (n = 457)</td>
</tr>
<tr>
<td>Low</td>
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<td>14</td>
<td>14</td>
<td>26</td>
<td>28</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>86</td>
<td>86</td>
<td>74</td>
<td>72</td>
</tr>
</tbody>
</table>

p = difference between Swedish and Polish male and female.
Table 2. Demographic data for personal experience of illness, related to nationality, level of education and sex

<table>
<thead>
<tr>
<th>Level of education</th>
<th>Experience of Illness</th>
<th>Sweden</th>
<th>Poland</th>
<th>p-value</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Men % (n = 97)</td>
<td>Women % (n = 130)</td>
<td>Men % (n = 140)</td>
<td>Women % (n = 165)</td>
<td>% (n = 532)</td>
</tr>
<tr>
<td>High</td>
<td>Yes</td>
<td>8</td>
<td>3</td>
<td>26</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>92</td>
<td>97</td>
<td>74</td>
<td>79</td>
</tr>
<tr>
<td>Low</td>
<td>% (n = 355)</td>
<td>% (n = 420)</td>
<td>% (n = 277)</td>
<td>% (n = 457)</td>
<td>% (n = 1509)</td>
</tr>
<tr>
<td></td>
<td>Yes</td>
<td>10</td>
<td>13</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>90</td>
<td>87</td>
<td>71</td>
<td>70</td>
</tr>
</tbody>
</table>

p< difference between Swedish and Polish male and female

tively). Similarly, more of the highly educated individuals with an experience of illness were men (Poland, men 26% versus women 21%, p=0.290); Sweden, men 8% versus women 3%, p=0.151). However, among those with a lower level of education, the sex difference for experience of illness was marginal (Poland, men 29% versus women 30%, p=0.721; Sweden, men 10% versus women 13%, p=0.342).

There was a statistically significant correlation between family history and a personal experience of illness, however, it was only moderate (r² = 15.481, gamma 0.248, p=0.001).

The results showed increased odds for those with a personal experience of illness to be non-smokers than for those without an experience of illness. This was adjusted for family history, sex, level of education and nationality (Table 3). A family history of CVD, adjusted for experience of illness, sex, level of education and nationality, did not lead to healthier smoking behaviour. The odds ratios (OR) for experience of illness (OR = 1.48, 95% CI = 1.14–1.93) and family history (OR = 0.84; 95% CI = 0.66–1.07) in relation to smoking behaviour (including 95% CI) did not overlap. This indicates that experience of illness influences smoking behaviour to a higher degree than family history.

Family history and personal experience of CVD were not predictors of more physical exercise. Swedish participants had increased odds (OR = 2.82, 95% CI = 2.22–3.59) of exercising regularly compared to Polish individuals (adjusted for experience of illness, family history, sex and level of education). This demonstrates an interaction effect for experience of illness and nationality, i.e. there were increased odds of exercising more seldom for Polish than Swedish participants with a personal experience of illness.

Furthermore, the results show that those participants with an experience of illness and a family history of CVD were to a greater extent obese than those without it (adjusted for sex, nationality and level of education). Polish individuals had increased odds of being obese compared with Swedish nationals, and more men than women were extremely overweight. When analysing interaction effects of family history and nationality, participants with a family history of CVD from Poland were to a greater extent obese than those from Sweden. In addition, the odds of being obese were greater among men than women for participants with a family history of CVD.

**DISCUSSION**

The aim of the present study was to examine how a personal experience of illness and a family history of CVD affect risk behaviour. The results, adjusted for sex, education level and nationality, showed that smoking behaviour was influenced by a personal experience of illness but not by a family history of CVD. Neither had any significant effects on other health- and behaviour-related outcomes studied.

The finding that a personal risk of illness will lead to healthier smoking behaviour can theoretically be explained by the Health Belief Model (HBM), according to which the perception of vulnerability contributes to healthier behaviour (18). To be a smoker, diabetic or to receive treatment for high blood pressure probably constitutes a warning signal, and thus increases the perception of the personal risk of illness.

In obese individuals, the experience of earlier illness is not a sufficiently strong threat to try and normalise their weight. On the contrary, it increases the odds of being obese. A personal experience of illness and being overweight ought to involve a desire to change behaviour, but according to the results of this study this is not the case. According to an earlier study among overweight patients with CVD, low self-efficacy explained why obese individuals did not change their behaviour (19). The study participants were invited to undergo medical examination and probably did not perceive an increased personal risk of illness to the same extent as individuals with CVD. However, low self-efficacy could explain why obese people do not engage in healthier behaviour. The correlation between a personal risk of illness and self-efficacy has been previously studied and it has been shown that self-efficacy has a strong effect on behaviour and change of behaviour despite a personal risk of illness (20). According to the results of this study, a family history of illness did not predict healthier behaviour. When a close relative falls ill, it might be assumed that a family member would try to adopt a healthier behaviour in order to avoid the same illness. Earlier studies showed that the behaviour of young adults (18–30 years old) changes in close connection with the illness of a parent, but that this change is not permanent (10). One conceivable explanation may be that a family history of CVD is not experienced as a sufficiently strong threat. Previous observations furthermore suggest that a history of cancer in a family may be perceived as more threatening than of CVD (9). Thus, the lack of understanding of a family history
Table 3. The influence of adjusted experience of illness (reference = no experience of illness) and family history (reference = no family history) of CVD on smoking (event = non-smoker), exercise habits (event = regular exercise) and obesity (event = non-obese), including first order interactions

<table>
<thead>
<tr>
<th>Smoking habits</th>
<th>P-value</th>
<th>OR</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of illness (no = 0)*</td>
<td>0.004</td>
<td>1.479</td>
<td>1.136</td>
<td>1.925</td>
</tr>
<tr>
<td>Family history (no = 0)*</td>
<td>0.152</td>
<td>0.839</td>
<td>0.660</td>
<td>1.067</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Exercise habits</th>
<th>P-value</th>
<th>OR</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of illness</td>
<td>0.457</td>
<td>0.957</td>
<td>0.738</td>
<td>1.241</td>
</tr>
<tr>
<td>Family history</td>
<td>0.344</td>
<td>1.134</td>
<td>0.877</td>
<td>1.465</td>
</tr>
<tr>
<td>Country (Poland = 0)*</td>
<td>0.000</td>
<td>2.821</td>
<td>2.216</td>
<td>3.591</td>
</tr>
<tr>
<td>Experience of illness x Country</td>
<td>0.024</td>
<td>0.510</td>
<td>0.285</td>
<td>0.914</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Obesity</th>
<th>P-value</th>
<th>OR</th>
<th>95% CI Lower</th>
<th>95% CI Upper</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experience of illness</td>
<td>0.000</td>
<td>0.406</td>
<td>0.315</td>
<td>0.522</td>
</tr>
<tr>
<td>Family history</td>
<td>0.002</td>
<td>0.492</td>
<td>0.314</td>
<td>0.771</td>
</tr>
<tr>
<td>Country</td>
<td>0.002</td>
<td>1.403</td>
<td>1.154</td>
<td>1.931</td>
</tr>
<tr>
<td>Sex (Men = 0)*</td>
<td>0.120</td>
<td>0.816</td>
<td>0.683</td>
<td>1.054</td>
</tr>
<tr>
<td>Family history x Country</td>
<td>0.036</td>
<td>1.972</td>
<td>1.045</td>
<td>3.719</td>
</tr>
<tr>
<td>Family history x Sex</td>
<td>0.005</td>
<td>2.153</td>
<td>1.254</td>
<td>3.697</td>
</tr>
</tbody>
</table>

* Reference category

of CVD as a risk factor could explain why individuals with such a family history do not engage in healthier behaviour (21, 22).

The data presented in this study were correlational, which means that conclusions regarding the direction of cause and effect must be considered tentative. Another limitation of the present study was the relatively high proportion of individuals who chose to not participate in the health screening. Earlier studies, however, including a drop-out analysis performed in the same area of Sweden on a similar intervention, have shown similar results comparing non-participants and participants (23–25). A strength of the present study was the adjustment of results for sex, level of education and nativity. The latter appeared to be a factor that correlated with a risk behaviour, a condition that has been corroborated in previous studies (14, 26). Another strength was that the study was population-based which may have avoided selection bias inherent in clinical samples.

One conclusion of this study is that individuals with a personal experience of illness may be more inclined to change smoking behaviour than the average person. This suggests that health prevention strategies may benefit from focusing on this group in particular.

REFERENCES


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