Chapter 3
Adapted from:

**Congenital heart disease may hurt men more than women in job participation.**


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ABSTRACT

Background
Several studies show poorer outcomes regarding socio-economic status among adults with congenital heart disease (CHD) compared to their healthy peers. The aim of the present study was to investigate differences in socio-economic status between men and women with CHD and to compare these patterns to a reference group.

Methods
A random selection of patients from different hospitals participating in the CONCOR registry were invited to complete a questionnaire with questions on medical history, educational, occupational and marital status and offspring. Results were compared with a reference group. Data on offspring in this group were lacking.

Results
With a response rate of 76%, 1,496 adult patients (49% female gender; median age 39 years) with CHD participated. Participants with CHD were more likely to achieve lower education and were significantly more often unemployed. Among adults with CHD, women were more often unemployed than men. Within the reference group this was even more outspoken. People with CHD had lower incomes than the reference group. Adjusted for several factors, women with CHD have lower income than men, in contrast to the general population. CHD participants without a relationship were more often male in the CHD population, as opposed to the reference group. Males with CHD were more often without children than women with CHD.

Conclusion
CHD, even in mild forms, has a negative impact on socio-economic status and gender plays a role. Gender differences were also seen in the reference group, suggesting that cultural aspects are important. Studies in other countries are therefore needed.
INTRODUCTION

Gender disparities are seen in all different kinds of socio-economic fields where women still more likely have socioeconomic disadvantage than men and therefore receive increasing attention\(^1\). Several studies have shown that despite the dramatic improvement in survival, adults with congenital heart disease (CHD) are still in social arrears with higher rates of unemployment compared to the general population\(^2\)–\(^4\). We fear that the current focus on women in cardiovascular disease may lead to insufficient attention for specific problems in CHD, especially among men\(^2\)–\(^5\).

METHODS

This study investigates aspects of job participation between male and female adults with CHD in comparison with a reference group. Data were derived from a questionnaire on socio-economic factors that was sent to a selection of participants from the Dutch National Congenital Corvitia (CONCOR) registry\(^6\). CONCOR facilitates research on the aetiology and outcome of adult CHD. Between 2001 and 2009, over 11000 adult patients with CHD were included, of whom 2106 patients were randomly selected. The questionnaire that was sent out consisted of questions on demographic items, including information about education and the patient’s current work, working hours and type of contract. Results were compared to a cohort from a prospective registration study in the Netherlands which served as a reference group (the Utrecht Health Project, N=6810)\(^7\). Statistical significance was set at a p-value <0.05. Descriptive data are presented as median with interquartile ranges if normally distributed or as percentages when appropriate. The comparison of discrete variables was performed using chi-square or Fisher’s exact test. Associations were expressed as odds ratios (OR) with 95% confidence intervals. SPSS 19 (SPSS Inc., Chicago) was used for statistical analysis.

RESULTS

From 2106 selected patients, 1496 patients participated (response rate of 75%). Patients with known cognitive impairment were excluded (118 patients), 449 patients did not respond and 43 patients refused to participate or were lost to follow-up. The mean age of the respondents was 39 years (29–51) and 35 years (30–45) in the reference group; 52% was male (45% in reference group). In men with CHD, unemployment was more than twice as high as in the reference group (16% versus 7%, Figure 1). In women with CHD, unemployment was only 1.4 times as high as that in the reference group (35%...
versus 25%). Among men with CHD, proportionally more men worked part-time (1.6 times more) than in the reference group. Women with CHD proportionally worked part-time only 1.2 times more often than the reference group. Looking at the proportion of unemployed men and women, even when corrected for age and severity of the CHD, the odds ratio of unemployment was one third (adjusted OR 0.37, CI 0.28–0.48, Table 1) in the CHD group and one fifth (adjusted OR 0.18, CI 0.15–0.21) in the reference group. Lower incomes were seen less often among men than women with CHD (additionally adjusted OR 0.32 (CI 0.22–0.4)). In contrast, this gender difference was not found in the reference group (additionally adjusted OR 0.71 (CI 0.41–1.24)).

![Figure 1. Distribution of (un)employment for men and women with congenital heart disease (CHD) and in the reference group (RG).](image)

Abbreviations: CHD = congenital heart disease, RG = reference group
Definitions:
* Full-time employed: paid job for > 35 hours per week. Part-time employed: paid job for 12 to 35 hours per week.  
# Unemployed: no job, job seeking / disabled, volunteer work or paid job < 12 hours per week.
Table 1. Men with congenital heart disease and in the reference group have less chance on being unemployed compared to women.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>total CHD men versus women OR (95% CI)</th>
<th>RG men versus women OR (95% CI)</th>
<th>co-efficient (ratio CHD/RG)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unemployment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- unadjusted</td>
<td>0.37 (0.28-0.48)</td>
<td>0.22 (0.18-0.26)</td>
<td>1.7</td>
</tr>
<tr>
<td>- adjusted for age and severity (in CHD group)</td>
<td>0.37 (0.28-0.48)</td>
<td>0.18 (0.15-0.21)</td>
<td>2.1</td>
</tr>
<tr>
<td>Low income</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- unadjusted</td>
<td>0.22 (0.17-0.28)</td>
<td>0.43 (0.28-0.66)</td>
<td>0.5</td>
</tr>
<tr>
<td>- adjusted for age and CHD severity</td>
<td>0.21 (0.16-0.28)</td>
<td>0.45 (0.29-0.68)</td>
<td>0.5</td>
</tr>
<tr>
<td>- additionally adjusted for *</td>
<td>0.32 (0.22-0.46)</td>
<td>0.71 (0.41-1.24)</td>
<td>-</td>
</tr>
</tbody>
</table>

Multivariate analyses presented by odds ratios on chance on unemployment and low incomes for men versus women with CHD and in the reference group.

Abbreviations: CHD = congenital heart disease, RG = reference group, OR = odds ratio; CI = confidence interval. Reference group is the Utrecht Health Project (N=6810).

* educational attainment, employment and job hours.

DISCUSSION

CHD has a large impact on working life both in men and in women, but the impact of CHD on job participation is greater in men than in women. Whereas very few men in the general population are unemployed or work part-time, this is not uncommon among male patients with CHD. Gender differences in unemployment were seen both in the CHD as in the reference group, but were much more outspoken in the reference group. Compared to women, men in the reference group had a much lower chance of unemployment than when comparing unemployment among men and women with CHD.

We cannot explain the lack of the expected significant gender difference in lower incomes in our reference group. In women with CHD, patterns of (un)employment and working fulltime or part-time are more similar to those that are seen in the female reference group. Having children does not play a significant role here, since CHD patients are more often without children than the general population. Beside physical limitations, factors like cognitive impairments, ambition or other personality traits and even job discrimination could play a role. These factors might be more important in male than in female patients, but little about this is known in adult CHD, especially not related to employment.

Our results emphasize that attention for job participation of patients with chronic disease should not exclude men, especially in CHD. Since job participation is important for the society as well as the personal quality of life, more attention for occupational pursuits from health care providers and company doctors for women and men with CHD is warranted.
Chapter 3

REFERENCES