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Gender-related factors and out-of-hospital cardiac arrest incidence in women and men: analysis of a population-based cohort study in the Netherlands

Robin L A Smits [1], Laura H van Dongen,[2] Marieke T Blom,[2] Hanno L Tan,[2,3] Irene G M van Valkengoed[1]

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[1]Public and Occupational Health, Amsterdam UMC Locatie AMC, Amsterdam, The Netherlands
[2]Clinical and Experimental Cardiology, Amsterdam UMC Locatie AMC, Amsterdam, The Netherlands
[3]Netherlands Heart Institute, Utrecht, Netherlands

Correspondence to
Robin L A Smits, Public and Occupational Health, Amsterdam UMC Locatie AMC, Amsterdam, The Netherlands; r.l.a.smits@amsterdamumc.nl

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ABSTRACT

Background The incidence of out-of-hospital cardiac arrest (OHCA) differs consistently between women and men. Besides sex-related (biological) factors, OHCA risk may relate to gender-related (sociocultural) factors. We explored the association of selected gender-related factors with OHCA incidence in women and men.

Methods We combined data on emergency medical services-attended OHCA with individual-level data from all women and men aged ≥25 years living in North Holland, the Netherlands. We estimated the associations between employment status, primary earner status, living with children and marital status and the OHCA incidence with Cox proportional hazards models stratified by sex and adjusted for age and socioeconomic status. To determine if metabolic factors explain the associations, we added hypertension, diabetes mellitus and dyslipidaemia to the models. Population attributable fractions (PAF) for all gender-related factors were calculated.

Results All four gender-related factors were associated with OHCA incidence (eg, unemployed vs employed; HR 1.98, 95% CI 1.67 to 2.35 in women; HR 1.60, 95% CI 1.44 to 1.79 in men). In both sexes, those unemployed, those who are not primary earners, those living without children, and married or divorced individuals had an increased OHCA risk. The PAF ranged from 4.9 to 40.3 in women and from 4.4 to 15.5 in men, with the highest PAF for employment status in both sexes. Metabolic risk factors did not explain the observed associations.

Conclusion Gender-related factors were associated with risk of OHCA and contributed substantially to the OHCA burden at the population level, particularly in women. Employment status contributed most to the OHCA burden.

WHAT IS ALREADY KNOWN ON THIS TOPIC

⇒ Gender-related (sociocultural) factors may associate differently with cardiovascular disease burden in women and men.
⇒ Research on how gender-related factors are associated with the burden of out-of-hospital cardiac arrest (OHCA) within women and men is scarce.

WHAT THIS STUDY ADDS

⇒ Factors related to paid labour, economic responsibility, caregiving and civil status are associated with OHCA incidence in women and men.
⇒ Employment status contributed most to the OHCA burden at the population level, particularly in women.

HOW THIS STUDY MIGHT AFFECT RESEARCH, PRACTICE AND/OR POLICY

⇒ Ultimately, consideration of gender-related factors may help target (population) interventions to decrease the OHCA burden.

INTRODUCTION

Out-of-hospital cardiac arrest (OHCA) is the leading cause of mortality related to cardiovascular disease (CVD) worldwide.[1] Incidence rates are higher in men than in women, overall and across subgroups within the population.[2] As these disparities may arise from differences in gender-related (sociocultural) factors, there is an increasing interest to include such factors in research practices.[3] Elucidating which gender-related factors—and to what extent—associate with the incidence of OHCA in women and men will not only contribute to understanding how the burden of OHCA arises, but will ultimately provide opportunities for early detection and intervention for women and men at risk.[4]

Gender-related factors that relate to traditional expectations of women and men are associated with health.[5–13] These include factors reflecting paid labour, economic responsibility, caregiving and social relations. These factors may differ between women and men and may play an important role in CVD risk.[5] Although these have not been specifically studied for OHCA, studies investigating the associations of marital status, employment status, primary earner status and caregiving burden with CVD and other health outcomes illustrate their potential relevance.[5–13] For instance, being the breadwinner is associated with the health and well-being of men; more financial responsibility for women may increase health and well-being of both themselves and their partner.[5]

Metabolic dysregulation may explain such gender-related differences in disease incidence. Factors such as marital status, employment and number of children have been associated with metabolic risk factors,[13–16] which are known to associate with increased risk of OHCA.[17]

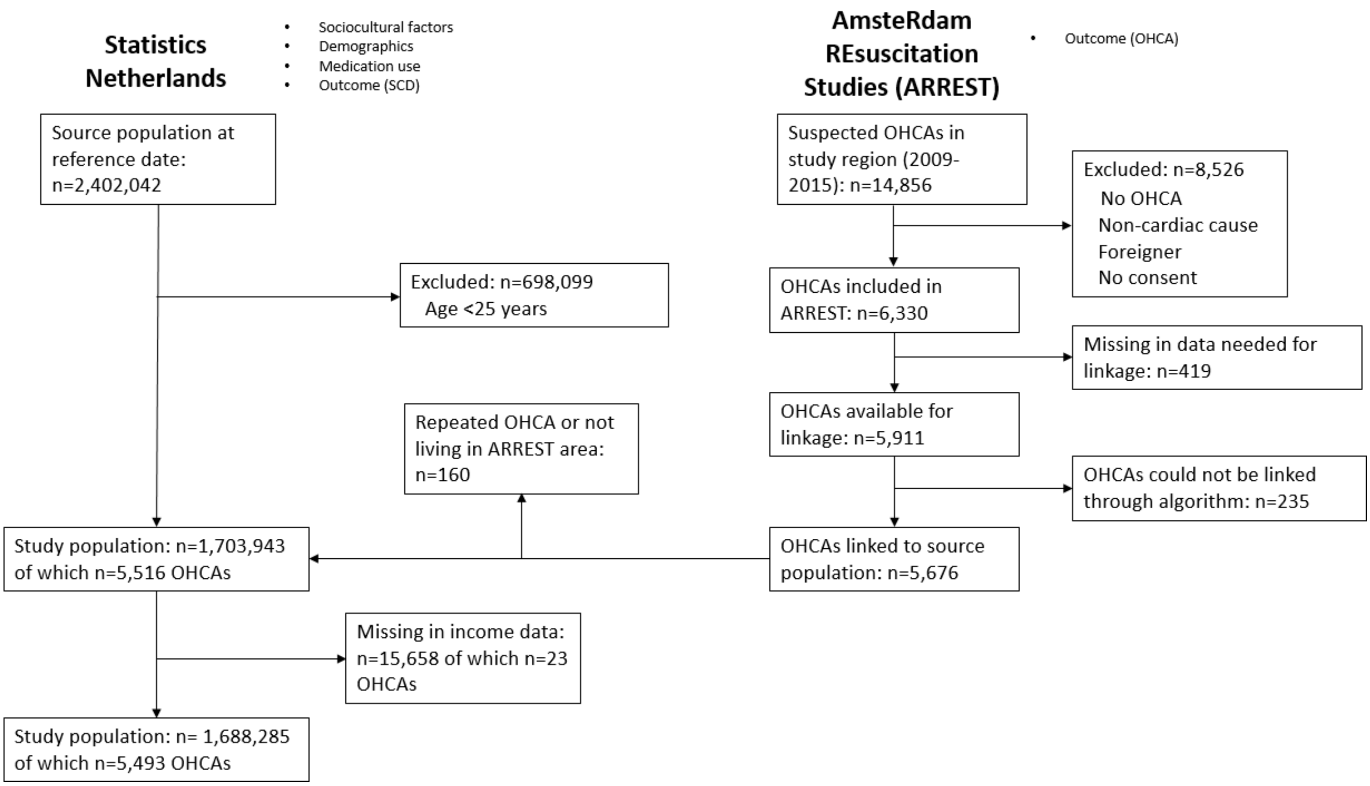

Figure 1 Flow chart of the study population. Figure created by the authors. OHCA, out-of-hospital cardiac arrest; SCD, sudden cardiac death.

This population-based cohort study aimed to determine the association between four gender-related factors reflecting paid labour, economic responsibility, caregiving and social relations and the incidence of OHCA in women and men aged ≥25 years. We determined the contribution of these factors to the OHCA incidence within women and men and explored whether metabolic risk factors explained these associations.

METHODS

Data sources

In this cohort study, data on emergency medical services (EMS)-attended OHCA between 2009 and 2015 from the ARREST (AmsteRdam REsuscitation Studies) registry[18] were combined with individual-level data from all women and men aged ≥25 years living in North Holland, the Netherlands, derived from the administrative records of Statistics Netherlands (online supplemental box 1).

Study population

We selected all women and men aged ≥25 years (assuming individuals are likely financially independent from this age onwards) living in the province of North Holland (minus the Gooi en Vechtstreek area) in the Netherlands on 1 January 2009, the reference date. This region was chosen because the ARREST registry includes OHCA in this specific study region. Individuals were excluded from the analyses if personal and household income data were missing (n=15 658, 0.9%). No further exclusions were made as no more data were missing. The characteristics of excluded individuals were similar to the study population (online supplemental table 1). Data of 1 688 285 individuals were available for analyses (figure 1).

Outcome

In the primary analysis, we derived OHCA cases from the ARREST registry. An OHCA was considered if a resuscitation attempt was made by EMS personnel and/or a defibrillation attempt with an automated external defibrillator was made by a first responder or a bystander. EMS and hospital case files were reviewed and OHCAs from clear non-cardiac causes were excluded (eg, drug overdose, trauma and asphyxiation).

For sensitivity analyses, we included sudden cardiac death (SCD) using International Classification of Diseases Death 10th revision codes obtained from death certificate data from Statistics Netherlands. Since a gold-standard, register-based definition for SCD is still lacking,[19] we used codes I21, I24, I46 or I50 in line with previous work from our study group.[2]

Gender-related factors

We included four gender-related factors related to paid labour, economic responsibility, social relations and caregiving, based on data availability and in line with recent work.[10] Participation in paid labour is higher in men than in women across all age groups.[20] Therefore, employment status was included, classified as employed, unemployed or pensioner according to personal income and the Algemene Ouderdomswet (National Old Age Pensions Act) pension age of 65+ on the reference date. Men more often carry the largest economic responsibility as they work more hours and on average earn more.[21] For this reason, we included primary earner status as a reflection of personal income and economic responsibility. It was calculated by dividing personal income by the gross household income provided by Dutch tax authorities to Statistics Netherlands, and classified as primary earner (contributing >60% to the household income), equal earning (contributing between 40% and 60%) and not primary earner (contributing <40%). Caregiving is still mostly

Table 1 Baseline characteristics of the total study population and cases only, stratified by sex

			Women		Men	
			Study population (n=866 834)	Cases (n=1659)	Study population (n=821 451)	Cases (n=3834)
Characteristics	Age in years, median (IQR)		49.3 (37.9–62.8)	70.1 (59.2–78.8)	48.2 (37.7–60.8)	65.2 (56.4–74.6)
	Ethnicity	Dutch	644 413 (74.3)	1353 (81.6)	610 862 (74.4)	3164 (82.5)
		Western	102 123 (11.8)	162 (9.8)	91 508 (11.1)	360 (9.4)
		Antillean	6794 (0.8)	*	6618 (0.8)	20 (0.5)
		Moroccan	21 227 (2.4)	20 (1.2)	23 564 (2.9)	33 (0.9)
		Surinamese	34 382 (4.0)	68 (4.1)	27 742 (3.4)	117 (3.1)
		Turkish	19 575 (2.3)	19 (1.1)	21 219 (2.6)	57 (1.5)
		Miscellaneous non-Western	38 320 (4.4)	*	39 938 (4.9)	83 (2.2)
	Income in euros, median (IQR)		21 753 (16 221–29 432)	18 367 (14 855.5–24 222)	23 258 (17 331–31 132)	20 844 (16 213–27 793)
	Income quintiles†	Q1	159 075 (18.4)	163 (9.8)	178 574 (21.7)	560 (14.6)
		Q2	164 660 (19.0)	218 (13.1)	173 005 (21.1)	701 (18.3)
		Q3	170 208 (19.6)	291 (17.5)	167 367 (20.4)	770 (20.1)
		Q4	183 494 (21.2)	499 (30.1)	154 227 (18.8)	967 (25.2)
		Q5	189 397 (21.8)	488 (29.4)	148 278 (18.1)	836 (21.8)
Determinants	Employment status	Unemployed	167 707 (19.3)	339 (20.4)	86 297 (10.5)	564 (14.7)
		Employed	508 418 (58.7)	293 (17.7)	589 213 (71.7)	1325 (34.6)
		Pensioner	190 709 (22.0)	1027 (61.9)	145 941 (17.8)	1945 (50.7)
	Primary earner status	Primary earner	298 266 (34.4)	634 (38.2)	463 601 (56.4)	2236 (58.3)
		Equal earning	110 311 (12.7)	193 (11.6)	223 079 (27.2)	1048 (27.3)
		Not primary earner	458 257 (52.9)	832 (50.2)	134 771 (16.4)	550 (14.3)
	Living with children	Yes	282 171 (32.6)	155 (9.3)	244 526 (29.8)	476 (12.4)
		No	584 663 (67.4)	1504 (90.7)	576 925 (70.2)	3358 (87.6)
	Marital status	Not married	227 684 (26.3)	174 (10.5)	272 656 (33.2)	496 (12.9)
		Married	438 221 (50.6)	857 (51.7)	446 055 (54.3)	2648 (69.1)
		Divorced	109 610 (12.6)	239 (14.4)	80 021 (9.7)	465 (12.1)
		Widowed	91 293 (10.5)	389 (23.4)	22 697 (2.8)	225 (5.9)
		Missing	26 (0.003)	–	22 (0.003)	–
	Living situation	Alone	551 967 (63.7)	1097 (66.1)	496 031 (60.4)	2274 (59.3)
		Together	314 867 (36.3)	562 (33.9)	325 420 (39.6)	1560 (40.7)
Metabolic factors	Hypertension medication		201 039 (23.2)	1007 (60.7)	160 780 (19.6)	2064 (53.8)
	Diabetes mellitus medication		44 736 (5.2)	304 (18.3)	45 827 (5.6)	588 (15.3)
	Dyslipidaemia medication		90 240 (10.4)	506 (30.5)	107 736 (13.1)	1418 (37.0)
Outcome	Follow-up time in days, median (IQR)		2556 (2556–2556)	NA	2556 (2556–2556)	NA
	Follow-up time in days, mean (SD)		2395.717 (504.4625)	NA	2391.596 (510.9087)	NA
	Censoring	OHCA	1659 (0.2)	NA	3834 (0.5)	NA
		SCD	817 (0.09)	NA	928 (0.1)	NA
		Other death	63 810 (7.4)	NA	56 889 (6.9)	NA
		Unknown death	1175 (0.1)	NA	1206 (0.1)	NA
		Moved	37 420 (4.3)	NA	38 991 (4.7)	NA
		Administrative	761 953 (87.9)	NA	719 603 (87.6)	NA

Results are presented as n (%) unless indicated otherwise.
*Data are omitted to prevent revelation.
†Q1: €32 621–1 000 000; Q2: €25 152–32 620; Q3: €20 110–25 151; Q4: €15 527–20 109; Q5: €−500 000–15 526.
NA, not applicable; OHCA, out-of-hospital cardiac arrest; SCD, sudden cardiac death.

Table 2 Crude and age-standardised OHCA incidence rates per 100 000 person-years, overall and by factor, stratified by sex

		Women			Men		
		n/events	Crude OHCA incidence rate	Age-standardised OHCA incidence rate	n/events	Crude OHCA incidence rate	Age-standardised OHCA incidence rate
Overall		866 834/1659	29.2	30.8	821 451/3834	71.2	87.1
Employment status	Employed	508 418/293	8.5	7.9	589 213/1325	33.4	30.1
	Unemployed	167 707/339	30.0	17.0	86 297/564	99.8	56.4
	Pensioner	190 709/1027	91.4	19.6	145 941/1945	228.4	53.2
Primary earner status	Primary	298 266/634	33.9	27.3	463 601/2236	74.0	83.4
	Equal	110 311/193	26.3	35.7	223 079/1048	71.0	93.0
	Not primary	458 257/822	26.6	35.5	134 771/550	62.0	93.8
Living with children	Yes	282 171/155	8.0	42.4	244 526/476	28.6	85.7
	No	584 663/1504	40.0	31.7	576 925/3358	90.3	88.6
Marital status	Not married	227 684/174	11.6	29.0	272 656/496	27.6	77.9
	Married	438 221/857	28.9	35.5	446 055/2648	89.8	87.8
	Divorced	109 610/239	33.1	36.0	80 021/465	90.3	90.1
	Widowed	91 293/389	76.1	25.7	22 697/225	187.0	71.8
Living situation	Alone	551 967/1097	30.3	29.7	496 031/2274	70.0	86.8
	Together	314 867/562	27.2	33.1	325 420/1560	73.1	87.7

OHCA, out-of-hospital cardiac arrest.

considered a female task; women more often take care of the children, regardless of their employment status.[22] Thus, we determined the potential caregiving burden by assessing whether participants lived with any underage (<18 years) children in the household (henceforth, living with children),[9] classified as 'yes' (living with at least one child) or 'no'. Finally, women and men traditionally fulfil different roles in a relationship[22] and therefore marital status was included,[6–8] classified as married (including civil partnership), not married, divorced or widowed.[8] Additionally, as a secondary classification, we labelled people as 'living alone' or 'living together' (regardless of relationship) based on the number of adults registered at the address.

Other variables

Age on the reference date was calculated from date of birth as a continuous variable. We used standardised disposable household income[23] (henceforth, household income) data divided into quintiles based on the total population, provided by Dutch tax authorities to Statistics Netherlands, as a proxy for socioeconomic position of the household. Ethnicity[24] was determined based on the country of birth of the participants and their parents, according to the definition used by Statistics Netherlands.[25]

We included hypertension, diabetes mellitus and dyslipidaemia dichotomised into yes/no as metabolic risk factors, using data on medication use from dispensing records of all public pharmacies in the Netherlands, for the year preceding the reference date. A dispensing record for antihypertensive drugs (C02, C03, C07–C09), diabetes mellitus medication (A10) and statins (C10) classified hypertension, diabetes mellitus and dyslipidaemia, respectively.

Statistical analyses

We stratified all analyses by sex.[5–8 12 20] Baseline characteristics were determined for the whole study population as well as for the cases. The crude OHCA incidence was calculated per 100 000 person-years. Subsequently, OHCA incidence was standardised to the age structure of the Dutch population in 2009.

Cox proportional hazards models were constructed to estimate the HR of OHCA incidence for the gender-related factors. Censoring occurred if an individual appeared in the ARREST registry as having suffered an OHCA, an individual died, an individual migrated out of the study region or at the end date of follow-up (31 December 2015). Visual inspection of log-log plots and tests based on Schoenfeld residuals did not lead to a rejection of the proportional hazards assumption.

We determined the associations for each of the separate gender-related factors adjusting for age (model 1) and for age, household income and ethnicity (model 2). To correct for potential relatedness of the factors, in model 2 primary earner status was additionally adjusted for marital status and employment status, and employment status for primary earner status. Subsequently, to assess whether the associations were different for women and men, we added a statistical interaction term for each gender-related factor and sex on an additive scale. To investigate whether metabolic factors explain the association between gender-related factors and OHCA incidence, treatments for hypertension, diabetes mellitus and dyslipidaemia were simultaneously added to the full models (model 3).

To determine how much of the OHCA cases could theoretically be prevented by eliminating the underlying conditions associated with a factor,[26] the population attributable fraction (PAF) for each individual gender-related factor in women and men was calculated using the adjusted HR from model 2.[26] Primary earner status had multiple categories; accordingly, an extension of the formula was used to calculate the PAF. For pensioner men and widowed women and men, the HRs were below 1 and therefore the PAF could not be calculated. Hence, employment status (employed vs unemployed) and marital status (married vs not married) were dichotomised. Additional analyses were performed as described in online supplemental box 2.

All statistical tests were two-tailed and statistical significance was defined as $p<0.05$. Statistics were performed using R V.4.0.3.

RESULTS

The median age of women was 49 (total population) and 70 (cases) years vs 48 (total population) and 65 (cases) years in men on the reference date (table 1). In total, 1659 OHCAs occurred

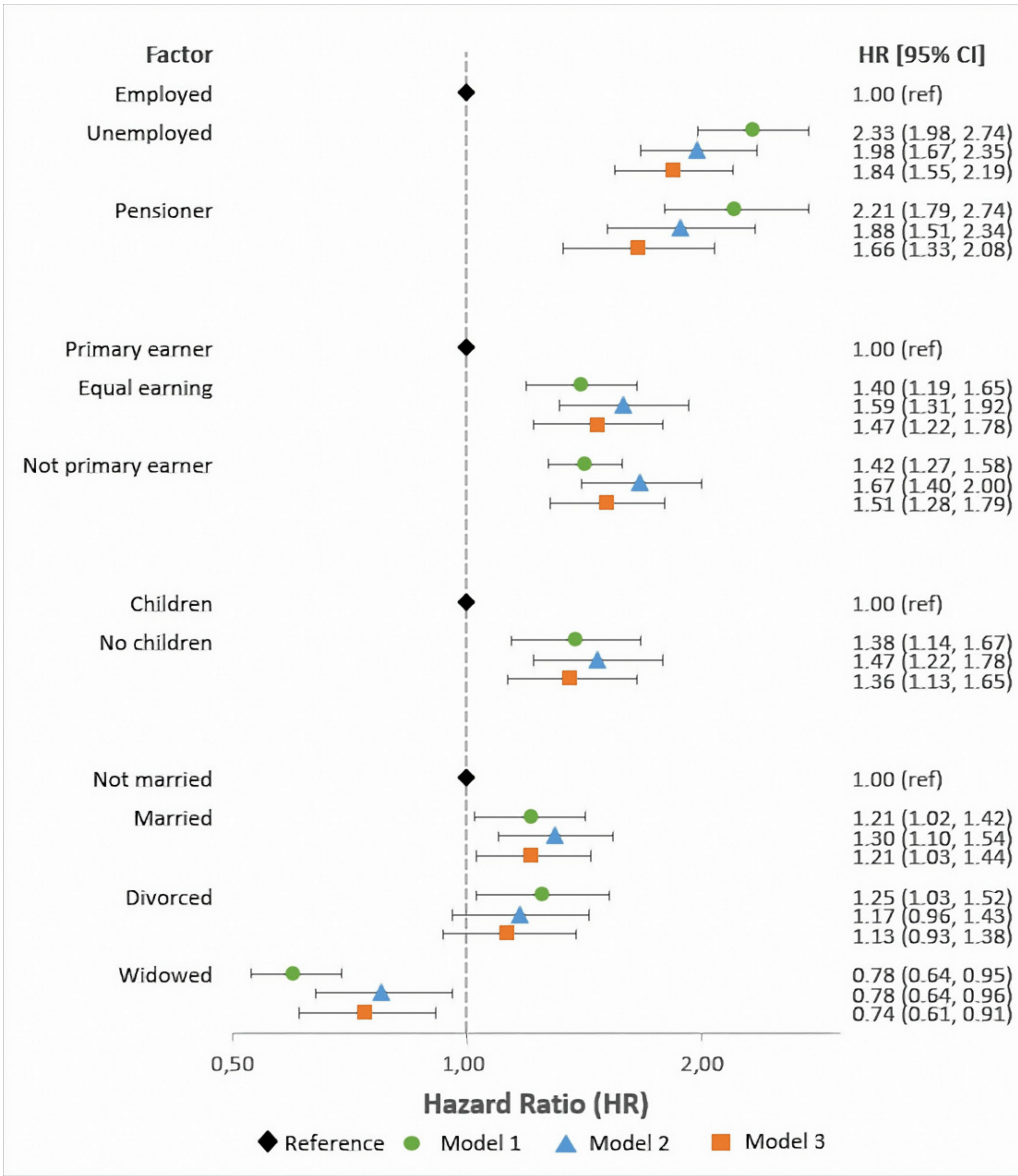

Figure 2 Association between gender-related factors and out-of-hospital cardiac arrest incidence in women. Model 1: adjusted for age. Model 2: adjusted for age, ethnicity and household income; additionally employment status adjusted for primary earner status, and primary earner status adjusted for employment status and marital status. Model 3: model 2 adjusted for medication for hypertension, diabetes mellitus or dyslipidaemia. Figure created by the authors.

during follow-up in women and 3834 in men. In both the total population and the cases, men more frequently than women had higher household income, were more often employed and a primary earner, and were less often widowed. Distributions of ethnicity, living with children, living situation and metabolic factors were similar in women and men.

The age-standardised incidence rate of OHCA was 30.8 per 100 000 person-years in women and 87.1 in men, and ranged from 7.9 to 42.4 per 100 000 across levels of the gender-related factors in women and from 30.1 to 93.8 per 100 000 in men (table 2).

Several of the gender-related factors were associated with OHCA incidence (figures 2 and 3) and the associations appeared stronger in women than in men. For instance, the associations with employment status, primary earner status, living with children and living situation were stronger in women than in men. In our fully adjusted models, women and men who were unemployed and pensioners (women only) had a higher OHCA risk than those who were employed (eg, in women: HR 1.98, 95% CI 1.67 to 2.35; for unemployment and in men: HR 1.60, 95% CI 1.44 to 1.79). Moreover, those who were equal earners or not primary earners had a lower risk than primary earners (eg, in women: HR 1.67, 95% CI 1.40 to 2.00; not primary earners and in men: HR 1.17, 95% CI 1.06 to 1.29). Interaction with sex was statistically significant for pensioners and those earning equally (online supplemental table 2). Women and men living without children had a higher hazard for OHCA compared with women and men living with children. The hazard for OHCA was also significantly higher for those who were married (HR 1.30, 95% CI 1.10 to 1.54 in women; HR 1.23, 95% CI 1.11 to 1.36 in men) or living together (women only). Divorced (women

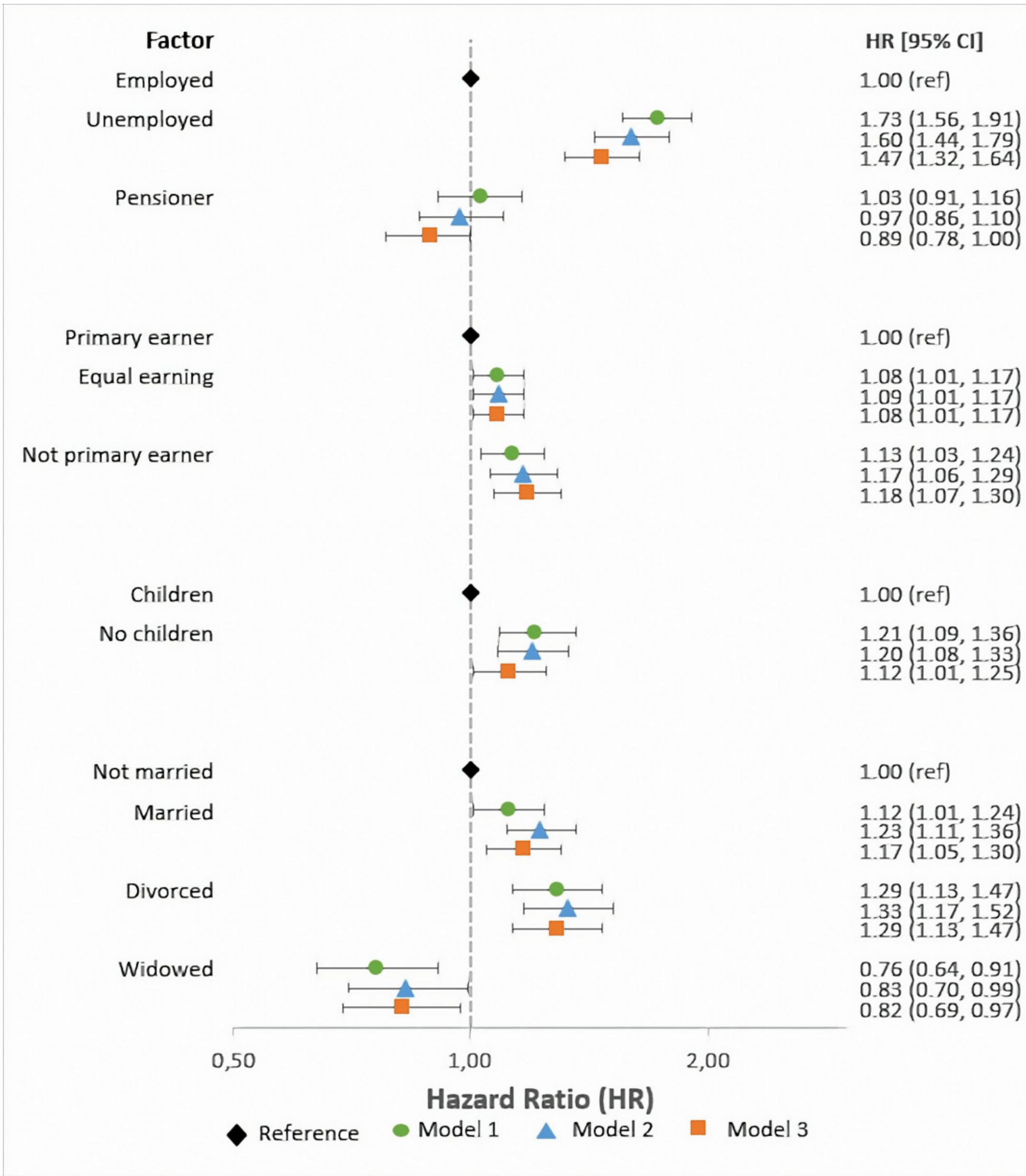

Figure 3 Association between gender-related factors and out-of-hospital cardiac arrest incidence in men. Model 1: adjusted for age. Model 2: adjusted for age, ethnicity and household income; additionally employment status adjusted for primary earner status, and primary earner status adjusted for employment status and marital status. Model 3: model 2 adjusted for medication for hypertension, diabetes mellitus or dyslipidaemia. Figure created by the authors.

only) and widowed individuals did not have an increased hazard for OHCA as compared with their unmarried counterparts. No evidence for different associations was found for these variables (online supplemental table 2).

The relative contribution of employment and the other gender-related factors to the OHCA burden varied between 1.6% and 40.3% and was stronger in women than in men (table 3; underlying data given in online supplemental tables 2 and 3). For instance, women 'earning equally' or 'not being the primary earner' contributed 24.4%, while in men this was 4.4%. In both women and men, PAF was highest for employment status.

The associations of most factors with OHCA incidence weakened slightly in both sexes when metabolic factors were added to the models, but remained statistically significant (figures 2 and 3, online supplemental table 4).

Overall, our findings were not substantially altered by the additional analyses using the combined OHCA+SCD outcome (online supplemental table 2). Subgroup analyses limited to those <65 years showed a similar direction for all the associations, but the associations for living with children in men and being married or widowed for both sexes were no longer statistically significant. Finally, no considerable differences in patterns of associations compared with the main analysis were found in the analyses limited to those living together or in the analyses excluding the first year of follow-up.

DISCUSSION

In a large cohort of almost 1.7 million individuals, we found that those who were not employed, who were equal or not primary earners, were living without children, and were married

Table 3 Population attributable fraction of out-of-hospital cardiac arrest for each factor within women and men

	PAF (%)	
	Women	Men
Employment status (unemployed)*	40.3	15.5
Employment status (unemployed; no pensioners)†	24.5	7.7
Primary earner status (not primary earner)	24.4	4.4
Living with children (no)	29.0	14.6
Marital status (married)	14.5	9.5
Living situation (together)	4.9	1.6

*Unemployed and pensioner were combined into one category to calculate the PAF.
†Pensioners are not included.
PAF, population attributable fraction.

or divorced (men) had an increased OHCA risk. The contribution of these gender-related factors to the OHCA burden was stronger in women than in men, with employment status and children in the household, and in women primary earner status, contributing most to the burden. Finally, metabolic risk factors had a limited contribution to the observed associations of gender-related factors with OHCA.

The strengths of this study were the availability of a large-scale, population-based database and linkage to national statistics, which allowed prospective analysis of gender-related factors in relation to OHCA risk, disaggregated by sex. Potential limitations should also be considered. First, measures of the gender-related factors may have been suboptimal. We relied on the availability of data in Statistics Netherlands, which were not collected for categorising gender-related variables and may not entirely reflect the processes we aimed to study. For example, we presumed that people living with children were the caregivers. However, we could not determine who was responsible for the caregiving, nor the amount of time invested or experienced burden. Second, we relied on medication data to classify people with hypertension, diabetes mellitus or dyslipidaemia. Consequently, we might have missed people who were not yet aware and people who had been diagnosed but were not receiving treatment.[27] This potentially underestimated the contribution of metabolic dysregulation to the associations of gender-related factors with OHCA. Lastly, our statistical analyses may suffer from noise. We were not able to exclude people with a history of OHCA before the reference date. Further, we did not account for competing risks in our analyses. Therefore, HRs should be interpreted as 'risk among those patients who did not (yet) experience the event of interest or competing event'.[28] Moreover, the calculation of the PAF required us to merge certain groups, complicating distinction between, for example, varying risks for those who are not employed and those who are pensioner. In spite of the adjustments (eg, primary earner status adjusted for employment status and marital status), residual confounding may remain.

Overall, we found that the factors reflecting paid labour and economic responsibility contributed most to the OHCA burden in our population, particularly in women, which is in line with previous studies.[29–31] For instance, being unemployed was associated with greater CVD risk on area level, specifically in women.[30] In line with the findings that unemployed individuals had a higher OHCA risk, women and men who were not primary earners (eg, income equal or lower than other household members) had an increased OHCA risk compared with primary earners. Differences between groups may relate to a higher occurrence of known risk factors for CVD. For instance, unemployed individuals are more likely to smoke[31] or have a higher body mass index,[29] which is associated with higher systolic blood pressure, blood glucose and total cholesterol.[29] However, in our study, differences in metabolic factors only markedly explained the associations. A likely explanation is that other mechanisms, for example, related to social and mental well-being, play a role.[11 32] Furthermore, the unemployed and non-primary earner groups may include home makers. Home making has been associated with lower psychological well-being, and a higher CVD, coronary heart disease and stroke risk in female home makers, compared with their employed counterparts.[33] Besides caregiving and household responsibilities at home, home makers may be involved in caregiving activities outside their own household, for example, for the elderly.

Factors related to social relations and caregiving also contributed to the OHCA burden. For instance, living without children was associated with an increased OHCA risk. Caring for children may have benefits and disadvantages for one's health and well-being.[34] The balance is determined by demands and resources that may vary by the social position and across the life course. We found a higher estimated contribution to the OHCA burden in women, and also in people living with another adult and in those aged <65 years. This is consistent with literature on gendered differences in the effects of parenthood.[34] For instance, while all parents describe better social integration and less depressive feelings, only women report more housework and marital conflict,[35] which are associated with poorer health outcomes.[36–38]

We observed that OHCA burden was higher in married women or cohabiting women. This is in line with a study observing a trend towards a lower risk of cardiovascular death, myocardial infarction and stroke for women with stable coronary artery disease who are living alone compared with those living with others.[6] The authors speculate that this is a result of women living alone forming stronger social networks, relying less on spousal support and having developed superior self-care skills. In men, we also found a higher risk among those who were married or divorced, but no association for living situation. Earlier studies found that married men in particular were at a lower risk of CVD or sudden cardiac arrest than those who were not,[7 8 36 39] and identified living alone as a CVD risk factor.[6] This may be in part explained by inclusion of older men or men who were divorced (higher risk) or widowed (lower risk) in the comparison group.

The associations of marital status with OHCA were not mediated by metabolic factors, while earlier studies found lifestyle and metabolic factors to partially mediate the association of marital status with CVD.[7 13] One reason may be that beneficial effects of being married, such as increased social support, early recognition of health changes and better adherence to medication, are over-ruled by disadvantageous effects. Marital communication, conflict and strain are associated with a higher mortality.[37] Stress and hostility in a relationship may result in depression and worse health metrics, leading to worse outcomes.[36] Alternatively, the associations of marital status with OHCA may be explained by an increased chance of being witnessed or found after a cardiac arrest. Indeed, the associations for being married, but not divorced (in men), weakened when SCD was considered. This suggests that associations may also reflect selection, rather than beneficial or disadvantageous processes.

In conclusion, this study contributes to mounting evidence that the studied gender-related factors associate with OHCA incidence and may play a different role in women and men. As we were able to analyse only a subset of factors, future studies may extend this work to other factors related to economic responsibility, social relations, the division of unpaid work or other domains of interest.[10 38] Ultimately, consideration of gender-related factors may improve clinical practice, for instance if gender-related factors offer additional value to OHCA risk prediction models. Additionally, it may contribute to the development of interventions that mitigate the OHCA burden, for instance through the design of policies targeting the risks at the population level or educational campaigns for specific subgroups.

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ORCID iD

Robin L A Smits http://orcid.org/0000-0002-5744-3166

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