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Family status and self-reported health in West Germany

Summary

The goal of the study was to examine the association between family status and several health-related variables, such as perceived general health, health behavior and self-reported morbidity. Data were derived from Health Surveys conducted in West Germany in the framework of the German Cardiovascular Prevention Study. 25'229 males and 26'097 females, aged 25 to 69 years, were examined. Age-adjusted prevalence odds ratios, calculated by multiple logistic regression analysis, were used as effect measure. The reference category was "married, living with partner" throughout. For most health-related variables significantly higher prevalence odds ratios, indicating unhealthy conditions, were observed for "singles", including persons never married, persons living separated, and divorced or widowed persons. Two or more unhealthy health behaviors were found most frequently for divorced persons of either sex. Age-adjusted odds ratios for self-reporting of three or more chronic diseases were 1.31 ($p < 0.01$) for divorced males, and 1.66 ($p < 0.001$) for divorced females. Both men and women who were divorced or separated were characterized by an unfavourable health profile.

The family status of the great majority of the West German population in the age group 25–69 years is characterized as being married and living together with their partners. But in recent years, the pattern of marriage and relationships changed remarkably. The median age of first marriage increased, and non-traditional types of living arrangements, such as unmarried cohabitation and one-parent households, became more frequent. The frequency of separation, divorce and remarriage increased, and affected a great proportion of the population. As a consequence of these lifestyle changes, a steady increase in the number of single-person households has been observed for West-Germany. The percentage of single person households increased from 25.1% in 1970 to 34.9% in 1990. In German cities with more than 100,000 inhabitants, 44.3% of all private households were single person households in 1990[1]. For the short time period 1984 to 1992, the percentage of unmarried persons aged 25–39 years who were not living together with a partner increased by about 50% (from 12% to 18%). Therefore, from a public health perspective, it seems to be important to investigate whether these demographic changes are associated with health status, health-related behaviors, and utilization of the health care system.

Many studies in Western industrialized countries have shown that never-married, divorced and widowed people have higher mortality rates[2–10] and higher incidence rates for most diseases[11–20]. For Germany, however, data regarding the question of whether family status have an important impact on mortality and health-related variables are quite sparse[21,22], and no reported studies have been based on large, nationally representative data sets. We therefore analyzed the relationship of family status to several perceived health-related variables, including general health, health behavior and self-reported morbidity, using data from cross-sectional surveys conducted in West-Germany betweeen 1984 and 1992.

Materials and methods

Data for this analysis were derived from the National (NHS) and Regional Health Examination Surveys (RHS), and the National Interview Survey (NIS), which were carried out in the framework of the German Cardiovascular Prevention Study (GCP)[23]. The GCP is a community-based intervention study of the primary prevention of cardiovascular diseases. It was carried out from 1984 to 1992 in the eleven "old" federal states of the Federal Republic of Germany.

The methodology for these surveys has been described previously in more detail[24,25]. Briefly, independent cross-sectional health surveys were carried out prior to the intervention phase in the GCP-Study (1984), at the midpoint of the study (1987), and after the end of the intervention period (1992) in five intervention regions (RHS) and in the remaining part of West-Germany (NHS). Furthermore, in 1984 the NIS was carried out, using a postal questionnaire, with a sample size of 11,000 persons.

Eligible survey candidates were German residents aged 25–69 years. For the HNS a sample of 8,000 persons was randomly selected from 200 sampling points in the first survey and from 100 sampling points in the second and third surveys. Addresses for all surveys were selected by simple random sampling from population registries. Response rates were between 66.0 and 71.4% in the NHS, 69.6% in the NIS, and between 65.9 and 83.3% in the RHS. Altogether 27,022 males and 28,286 females were examined. 1,793 males and 2,189 females were excluded from this analysis due to missing values for at least one study variable.

The RHS and the NHS included a medical examination of the standard cardiovascular disease risk factors, which was carried out by intensively trained medical staff, and a self-administered questionnaire ("Life and Health in Germany"), that ascertained among others, sociodemographic variables, smoking history and diet, using a food-frequency list and a medical history. The questionnaire was assessed prior to the medical examination in survey centers. The NIS, carried out in 1984 only, encompassed a postal questionnaire but no medical examination. Identical questionnaires were used for the NHS, the RHS and the NIS at baseline (1984). The surveys at the midpoint and the end of the GCP included some changes, but for the present analysis only items and variables that were identical in all surveys were considered.

Study variables

Family status

Marital status was assessed in the questionnaire using the following six categories: married and living with partner, not married living with partner, married living separated, divorced, widowed, never married, living alone.

Health related variables

Perceived general health was assessed with the following question: "How would you describe your present health status?" Possible answering categories were: very good, good, fair, less than good, and bad. All subjects responding that their health status was "less than good", or "bad" were compared to persons responding that their health status was "fair", "good", or "very good" (reference category).

The measurement of *health satisfaction* was accomplished by using a non-verbal analogue scale, known as the "faces scale"[26]. Each respondent was asked: "How satisfied are you with the following aspects of life"? Among others we were interested in satisfaction with health. The answering schema comprised seven faces ranging from "very dissatisfied" (=1) to "very satisfied (=7). Only for the two most extreme positions was a verbal label attached. All respondents who checked the three most "dissatisfied" faces were defined as not being satisfied with their health.

Another health related variable dealt with *health restrictions* during the last four weeks. The survey question was: "For how many days during the last four weeks did you stay in bed all day or most of the day due to health reasons?" All respondents who reported that they met this criterion for one day or more were considered as experiencing a health restriction.

Health behavior and risk factors

The following four risk factors were considered: smoking, physical inactivity, overweight, and regular alcohol intake. All study subjects, who reported that they were currently smoking regularly at least 5 cigarettes per day were defined as *cigarette-smokers.* Furthermore, we included in the "cigarette-smokers" category all study subjects who quit smoking during the previous 12 months, and before quitting had regularly smoked 5 or more cigaretttes per day. The reason for including recent quitters is the observed high relapse-rate for cigarette smoking during the first year of nicotine-abstinence[27].

Leisure time *physical inactivity* was based on the question "How often do you engage in sport activities?" The answering categories for this question were "regularly more than two hours per week", "regularly one to two hours per week", "regularly less than one hour per week", and "no sport activities at all". Study subjects with no regular leisure time sport activities were

defined as being physically inactive. *Overweight* was based on self-report by the following question: "Are you at present severely overweight or obese?" *Alcohol intake* was based upon the frequency of the consumption of beer, wine, and spirits. All participants who reported (almost) daily consumption of any of these three alcoholic beverages were classified as regular alcohol consumers.
In order to derive an overall measure for the health risk due to the above four unhealthy behaviours we classified all respondents who reported two or more of these risk factors, as being at high risk.

Chronic diseases

The lifetime-prevalence of chronic diseases was assessed by a standardized self-administered checklist of 30 diseases. The wording was: "Do you have or have you ever had any of the following diseases?" A more detailed description of the methodology for assessing self-reported diseases, and the reliability of this procedure as carried out in the framework of the GCP-Study, have been published elsewhere[28,29]. Some items in the checklist were risk factors rather than specific diseases or were very unspecified, and were therefore not considered. Some other diseases were omitted due to very low prevalence rates and some specific diseases were combined into a broader disease grouping to avoid very small numbers. The present analysis was based on the following ten chronic diseases: Myocardial infarction/ stroke, diabetes mellitus, gout/ hyperuricaemia, rheumatic diseases, intervertebral disc damage, chronic bronchitis, peptic ulcer, bladder-/renal-/bile-diseases (except cancer), allergies/hay fever, and cancer. Study respondents with three or more of these diseases were classified as having multiple morbidities.

Statistical analysis

All statistical analyses were carried out separately for males and females. Prevalence odds ratios (OR), calculated by multiple logistic regression analysis, were used as effect measures[30]. In all regression models age was included as control variable. As the reference category we used "married, living with partner" throughout. All statistical analyses were performed with the Statistical Analysis System (SAS, Version 6)[31] on an IBM mainframe computer.

Results

Table 1 shows the study population by family status and age group. In both sexes, the majority of study subjects belonged to the family status "married/living with partner" (males: 74.4% and females 70.6%). The largest difference between males and females was

Family status	Age 25–39 y.		40–54 y.		55–69 y.		All	
	N	%	N	%	N	%	N	%
Males								
Married, living with partner	5224	58.0	7966	81.7	5589	86.4	18779	74.4
Unmarried, living with partner	1484	16.5	320	3.3	90	1.4	1894	7.5
Married, living separated	159	1.8	202	2.1	76	1.2	437	1.7
Divorced	313	3.5	546	5.6	200	3.1	1059	4.2
Widowed	14	0.2	86	0.9	299	4.6	399	1.6
Never married, living alone	1812	20.1	634	6.5	215	3.3	2661	10.6
All	9006	100	9754	100	6469	100	25229	100
Females								
Married, living with partner	6348	68.8	7417	79.3	4670	62.1	18435	70.6
Unmarried, living with partner	1077	11.7	196	2.1	71	0.9	1344	5.2
Married, living separated	230	2.5	196	2.1	79	1.1	505	1.9
Divorced	506	5.5	681	7.3	424	5.6	1611	6.2
Widowed	54	0.6	413	4.4	1711	22.8	2178	8.4
Never married, living alone	1012	11.0	448	4.8	564	7.5	2024	7.8
All	9227	100	9351	100	7519	100	26097	100

Table 1. *Age and family status, West-Germany 1984–1992.*

	Males (n = 25'229)	Females (n = 26'097)
1. Health related variables		
Perceived general health less than good, or bad	13.5	15.5
Health satisfaction dissatisfied	16.5	16.7
Health restriction >= 1 day restricted to bed	8.1	10.5
2. Health behavior and risk factors		
Cigarette smoking	41.4	27.2
Physical inactivity	36.9	45.0
Overweight	11.4	13.8
Regular alcohol intake	25.1	6.6
Two or more of these behaviors and risk factors	31.7	23.0
3. Chronic diseases		
Myocardial infarction or stroke	4.3	2.0
Diabetes mellitus	4.9	4.0
Hyperuricaemia/gout	13.0	5.6
Rheumatic diseases	18.1	22.4
Intervertebral disc damage	26.4	22.8
Chronic bronchitis	9.5	6.4
Peptic ulcer	27.2	24.0
Bladder, renal, bile-diseases (except cancer)	6.6	5.2
Allergies or hay fever	17.9	25.6
Cancer	1.4	3.0
Three or more of these diseases	16.0	14.4

Table 2. *Prevalence of health related variables, risk factors and chronic diseases (in %), West Germany 1984–1992.*

observed for the category "widowed" (399 [1.6%] males and 2,178 [8.4%] females).

The prevalences of health variables, risk factors and chronic diseases are shown in Table 2. Marked sex-specific differences were found for cigarette smoking (males 41.4%, females 27.2%) and regular alcohol intake (males 25.1%, females 6.6%). For both sexes, the most frequently reported chronic diseases were intervertebral disc damage, peptic ulcer, allergies/hay fever and rheumatic diseases. Despite the higher percentage of male respondents who reported two or more unhealthy behaviors and three or more chronic diseases, female respondents more frequently reported perceived general health "less than good", health dissatisfaction and health restrictions than males did.

All three variables concerning self-reported health status, namely perceived general health, health dissatisfaction and health restriction, were generally less favourable for both sexes among those living alone than for those who were married or were unmarried but living with a partner (Table 3). Those who were divorced or separated appeared to have the least favourable self-reported health status.

Regarding unhealthy health behaviors we found the most striking differences for cigarette smoking, which yielded odds ratios between 2 and 3 for married/living separately and divorced respondents compared to those who were married and living together. Less variability among categories of family status was observed for the other three behaviors. Similarly, the odds ratios for reporting two or more of these unhealthy behaviours was significantly increased for all four types of respondents living single, with the exception of never-married females. The highest odds ratios for the variable "two or more unhealthy health behaviors" was observed for divorced respondents and those who were married but living separately. These findings were consistent among both men and women.

The self-reported prevalences of smoking-related diseases, in particular chronic bronchitis and peptic ulcer disease, were elevated compared to the reference category for both men and women who were divorced, or who had never been married and were living alone. The age-adjusted odds-ratios for these differences ranged from 1.25 to 1.85. The age-adjusted odds ratios for self-reported prevalence of chronic bronchitis were also significantly elevated among women who were married but living separately and among women who were widowed. The adjusted odds ratios for self-reported prevalence of pectic ulcer disease were also significantly elevated among women who were unmarried but living with a partner, and those who were separated. Men who had never been married and were living alone reported a lower prevalence of peptic ulcer disease, despite a higher prevalence of smoking and chronic bronchitis in this group, compared to the reference group. Self-reported prevalence of myocardial infarction, which is in part a smoking-related disease, was increased among men who were divorced or widowed. The self-reported prevalence of diabetes mellitus was significantly increased among both men and women who were widowed (adjusted OR: 1.55 and 1.41, respectively),

	Family status[a] Sex	1	2	3	4	5	6
Perceived general health	M	1.00	0.97	1.89***	1.88***	1.46**	1.33***
less than good or bad	F	1.00	0.93	1.73***	1.69***	1.16**	1.29***
Health satisfaction	M	1.00	1.31***	1.32*	1.86***	1.27*	1.31***
dissatisfied	F	1.00	1.00	1.56***	1.54***	1.11	1.19**
Health restriction	M	1.00	1.08	1.31	1.73***	1.03	1.26***
>=1 day restricted to bed	F	1.00	1.54***	1.81***	1.63***	1.09	1.48***

[a] 1 = married, living with partner (reference category); 2 = unmarried, living with partner; 3 = married, living separated; 4 = divorced; 5 = widowed; 6 = never married, living alone.
M = males, F = females.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table 3. *Age-adjusted prevalence odds ratios for health-related variables by family status, West Germany 1984–1992.*

	Family status[a] Sex	1	2	3	4	5	6
Cigarette smoking	M	1.00	1.33***	2.19***	2.67***	1.35**	1.09
	F	1.00	1.69***	2.35***	3.05***	1.55***	1.25***
Physical inactivity	M	1.00	0.93	1.02	1.28***	1.35**	1.41***
	F	1.00	0.71***	1.00	1.03	1.04	0.90*
Overweight	M	1.00	0.84	0.66*	0.95	0.98	1.15
	F	1.00	0.69**	0.93	0.96	1.11	0.93
Regular alcohol intake	M	1.00	0.89	1.08	0.95	1.21	0.91
	F	1.00	1.34*	1.11	0.80*	0.83*	1.19
Two or more of these behaviors	M	1.00	1.07	1.52***	1.68***	1.47***	1.23***
and risk factors	F	1.00	1.04	1.53***	1.56***	1.20**	0.96

[a] 1 = married, living with partner (reference category); 2 = unmarried, living with partner; 3 = married, living separated; 4 = divorced; 5 = widowed; 6 = never married, living alone.
M = males, F = females.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table 4. *Age-adjusted prevalence odds ratios for health-behavior and risk factors by family status, West Germany 1984–1992.*

and there was a non-significant trend for increased prevalence of diabetes among both men and women who were separated or divorced, compared to the reference group. These findings for diabetes did not appear to be related to differences in the prevalence of overweight in these groups, compared to the reference group (Table 4), but, at least among men, may have been in part related to lower levels of physical activity. Prevalence odds ratios for reporting ever having had three or more of the ten diseases under consideration were highest for divorced males (OR: 1.31) and divorced females (OR: 1.66) (Table 5). Among females, the other categories of family status were associated with significantly elevated odds ratios for lifetime prevalence of three or more of the ten chronic diseases, compared to the reference group.

	Family status[a] Sex	1	2	3	4	5	6
Myocardial infarction or stroke	M	1.00	0.66	1.29	1.30	1.19	1.01
	F	1.00	1.59	1.35	1.53*	1.47**	1.35
Diabetes mellitus	M	1.00	0.96	1.40	1.26	1.55***	1.10
	F	1.00	1.23	1.03	1.27	1.41***	1.07
Hyperuricaemia/gout	M	1.00	0.76*	0.86	1.00	0.97	0.94
	F	1.00	0.93	0.88	1.13	1.08	0.98
Rheumatic diseases	M	1.00	1.11	1.03	1.09	0.84	0.90
	F	1.00	1.13	1.10	1.25	0.93	1.19
Intervertebral disc damage	M	1.00	0.88	1.11	1.00	1.09	0.61***
	F	1.00	1.24*	1.30*	1.30***	0.99	0.97
Chronic bronchitis	M	1.00	1.33**	1.35	1.76***	0.90	1.30***
	F	1.00	2.02***	1.89***	1.85***	1.48***	1.83***
Peptic ulcer	M	1.00	0.95	1.17	1.32***	0.98	0.80***
	F	1.00	1.42***	1.50***	1.38***	1.00	1.25***
Bladder/renal/bile diseases (except cancer)	M	1.00	0.98	1.14	1.06	1.24	1.11
	F	1.00	1.46**	1.43	1.46***	1.17	1.41***
Allergies or hay fever	M	1.00	1.19	1.03	1.06	1.05	1.24***
	F	1.00	1.27***	1.01	1.24***	0.91	1.25***
Cancer	M	1.00	0.94	1.15	0.70	0.82	1.19
	F	1.00	1.28	0.85	1.55***	1.09	0.96
Three or more of these diseases	M	1.00	0.89	1.30*	1.31**	1.01	0.88
	F	1.00	1.58***	1.51**	1.66***	1.20**	1.39***

[a] 1 = married, living with partner (reference category); 2 = unmarried, living with partner; 3 = married, living separated; 4 = divorced; 5 = widowed; 6 = never married, living alone.
M = males, F = females.
* $p<0.05$, ** $p<0.01$, *** $p<0.001$.

Table 5. *Age-adjusted prevalence odds ratios for chronic diseases by family status, West Germany 1984–1992.*

Discussion

In this paper we examined relationships between family status and health in West Germany in a sample of over 50,000 people in the German Health Surveys. The main finding was that "singles", which include persons never married and living alone, persons married and living separated, and divorced or widowed persons, reported significantly higher prevalences of several measures of poor overall health status. The most striking difference was found between "singles" and married people living together, for perceived general health. We also found large differences between people in these two categories of family status in the self-reported prevalences of adverse health-related behaviors. In particular, the prevalence of cigarette smoking was substantially higher among "singles" compared to people married and living together, as was the prevalence of "two and more unhealthy behaviors". Finally, we found that the prevalence of multiple morbidities, defined as ever having experienced three or more self-reported chronic diseases, was significantly higher among "singles" compared to people who were married and living together. These patterns were observed among both men and women.

Studies of family status and health in other countries have found patterns similar to those we observed in West Germany. In studies from

Holland[14] and Scotland[16], perceived general health was reported as "less than good" more frequently among divorced or separated persons compared to those who were married. Likewise, prevalence of cigarettte smoking was found to be higher among divorced or separated persons compared to those who were married[15,16], whereas no such higher prevalence was observed for overweight[32]. Prätällä et al.[33] in a study of a Finnish population found a substantially higher prevalence of three or four adverse health related behaviors (smoking, lack of exercise, high alcohol intake and unfavourable diet) among divorced or widowed males compared to those who were married. Survey data from the United States[11] and Great Britain[34] suggested that widowed and divorced people have higher rates of self-reported morbidity than married persons.

Other studies have found higher prevalences of regular or high alcohol consumption among both males and females who are divorced or widowed, compared to those who were married[15,32]. In our study, no relationship between family status and regular alcohol intake was found among males, and prevalence of regular intake was lower among widowed or divorced women compared to those who were married. Some other studies have also reported sex differences in the effects of family status on health, with a more pronounced effect of being widowed or divorced on morbidity and mortality among males than among females[35,36], but we did not find important sex differences in the effects of family status on health.

Our findings do not directly address issues of cause and effect because of the cross-sectional design of the study. The causal direction of the relationship between family status and health has been considered in some depth in the literature[10,12,15,37], and it is likely that effects operate in both directions. First, it is likely that family status influences health behavior, with single living creating stresses that may promote unhealthy behaviors, may enhance or amplify the perception of less good health status, and may reduce the ability to cope with illness and thereby increase the prevalence of morbidity. Second, it is likely that some unhealthy behavior patterns, particularly heavy drinking, may contribute to separation and divorce. Third, there may be other factors that are related to both family status and health behaviors, such as psychiatric disease, low mental capacity, or depression. Thus, it seems appropriate to use the word "association" to describe the relationships found in our data, as this word is neutral with respect to implications of causal direction. Longitudinal cohort studies with strong measures of social and psychological variables, as well as of health behaviors and outcomes, are needed to investigate in depth the influences of family status, living arrangements, and social support on health.

Zusammenfassung

Familienstand und selbst wahrgenommener Gesundheitszustand in Westdeutschland

Das Ziel der Studie ist es, die Zusammenhänge zwischen dem Familienstand und verschiedenen gesundheitsbezogenen Variablen, wie den subjektiven Gesundheitszustand, das Gesundheitsverhalten und die Prävalenz chronischer Krankheiten, zu untersuchen. Die Daten stammen aus Gesundheitssurveys, die im Rahmen der Deutschen Herz-Kreislauf-Präventionsstudie erhoben wurden. Insgesamt wurden 25229 Männer und 26097 Frauen im Alter von 25–69 Jahren untersucht. Altersadjustierte Prävalenz-Odds Ratios, basierend auf der multiplen logistischen Regressionsanalyse, wurden als Effektparameter verwendet. Referenzkategorie waren jeweils verheiratete Personen, die mit ihrem Ehepartner zusammenleben. Für die meisten gesundheitsbezogenen Variablen ergaben sich signifikant erhöhte Prävalenz-Odds Ratios, die auf ungesunde Lebensumstände hinweisen, für „Singles" (Ledige, getrennt lebende Verheiratete, Geschiedene und Verwitwete). Ein Gesundheitsverhalten, das zwei und mehr gesundheitsabträgliche Aspekte beinhaltete, fand sich bei beiden Geschlechtern am häufigsten bei Geschiedenen. Die altersadjustierten Odds Ratios für die selbstberichtete Prävalenz von drei und mehr chronischen Krankheiten betrugen 1,31 ($p < 0,01$) für geschiedene Männer, und 1,66 ($p < 0,001$) für geschiedene Frauen. Insgesamt ergab sich für die geschiedenen und getrennt lebenden Personen das ungünstigste Gesundheitsprofil.

Résumé

L'état de famille et l'auto-estimation de santé en Allemagne de l'Ouest

L'objectif de l'étude est l'examination des rapports entre l'état de famille et differents indices sanitaires tels que l'auto-estimation de santé, le comportement sanitaire individuel et la prévalence des maladies chroniques. Les données proviennent des surveys de santé réalisées dans la mésure de l'Étude Préventive Cardio-vasculaire d'Allemagne. Au total, 25229 hommes et 26097 femmes entre 25 et 69 ans ont participé. Des odds ratios de prévalence sont appliqués comme paramètres d'effect. Ils sont âge-adjustés et fondés sur la régression logistique multiple. Des personnes mariées vivant en commun avec le conjoint forment le groupe-témoin. Pour la plupart des indices sanitaires les odds ratios de prévalence sont significativement élevés chez les «singles» (célibataires, veufs, personnes séparées ou divorcées). Un comportement sanitaire comprendrant plus qu'un aspect nuisible est observé. Le plus souvent chez les personnes divorcées. Les odds ratios âge-ajustés pour la prévalence de plus de deux maladies chroniques auto-rapportées sont 1.31 ($p < 0.01$) pour les hommes divorcés et 1.66 ($p < 0.001$) pour les femmes divorcées. En résumé les personnes séparées ou divorcées présentent le profil sanitaire le plus défavorable.

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