

## Abstracts

### The German Health Interview and Examination Survey for Adults – Results of the first wave (DEGS1)

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### **The first wave of the German Health Interview and Examination Survey for Adults (DEGS1). Participant recruitment, fieldwork, and quality management**

A. Gößwald, M. Lange, R. Dölle, H. Hölling

The purpose of the German Health Interview and Examination Survey for Adults (DEGS) is to repeatedly obtain representative nationwide health data for adults aged 18–79 years living in Germany. The first wave (DEGS1) was carried out by the Robert Koch Institute (RKI) from November 2008 to December 2011. The study has a mixed design, which permits both cross-sectional and longitudinal analysis. It was carried out on an up-to-date sample from the population registration office and on participants from the 1998 German National Health Interview and Examination Survey (GNHIES98), who were invited to take part again. All newly selected individuals, and those GNHIES98 participants living in the same locations as in 1998, were asked to undergo an interview and examination. GNHIES98 participants who had moved to a different location were asked to take part in a survey based on self-completion questionnaires and telephone interviews. This article describes the practicalities of recruiting participants, planning and carrying out fieldwork, managing data, and taking measures to ensure the quality of the process and data. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/rebnp4fkguREc/PDF/23mJ4nug4aplQ.pdf>

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### **The first wave of the German Health Interview and Examination Survey for Adults (DEGS1). Sample design, response, weighting, and representativeness**

P. Kamtsiuris, M. Lange, R. Hoffmann, A. Schaffrath Rosario, S. Dahm, R. Kuhnert, B.M. Kurth

The “German Health Interview and Examination Survey for Adults” (DEGS) is part of the health monitoring system of the Robert Koch Institute (RKI) and is designed as a combined cross-sectional and longitudinal survey. The first wave (DEGS1; 2008–2011) comprised interviews and physical examinations. The target population comprised 18- to 79-year-olds living in Germany. The mixed design consisted of a new sample randomly chosen from local population registries that was supplemented by participants from the “German National Health Interview and Examination Survey 1998” (GNHIES98). In total, 8,152 persons took part, among them 4,193 newly invited participants (response 42%) and 3,959 who had previously taken part in GNHIES98 (response 62%). In all, 7,238 participants visited one of the 180 local study centres, and 914 took part in the interview-only programme. A comparison of the net sample with the group of non-participants and with the resident population of Germany suggests a high representativeness regarding various attributes. To account for certain aspects of the population structure, cross-sectional, trend and longitudinal analyses were corrected by weighting factors. Furthermore, different participation probabilities of the former participants of GNHIES98 were compensated for. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/re8iyCUiEOAw/PDF/22jo4AL9eLDTQ.pdf>

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### **Measurement of socioeconomic status in the German Health Interview and Examination Survey for Adults (DEGS1)**

T. Lampert, L.E. Kroll, S. Müters, H. Stolzenberg

Socioeconomic status (SES) constitutes a central analysis category of epidemiological research and health reporting. As part of the German Cardiovascular Disease Prevention Study 1984–1991, a multi-dimensional aggregated index was developed for the purpose of measuring SES. This index continues to be used in numerous studies to this day. For the purpose of health monitoring at the Robert Koch Institute (RKI), the index was fundamentally revised following critical assessment. This article describes the basic concepts underlying the revision and how they were implemented in relation to the German Health Interview and Examination Survey for Adults (DEGS1). In addition, the results of the age and sex-specific distribution of the values of the revised SES index and those relating to the connection with other measurements of socioeconomic status are reported. The results are based on the data of DEGS1 2012 and the German national health interview and examination survey 1998 (GNHIES98). An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reNx9PZM8PI6g/PDF/2013bQIExD5v.pdf>

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## **External quality assurance of the first wave of the German Health Interview and Examination Survey for Adults (DEGS1)**

I. Pelz, H. Pohlabeln, A. Reineke, W. Ahrens

The quality management concept for the first wave of the German Health Interview and Examination Survey for Adults (DEGS1) included in addition to conducting internal quality assurance (QS) also the supervision by an external independent institute. After a restricted tendering procedure, the Leibniz Institute for Prevention Research and Epidemiology–BIPS was commissioned to conduct the external quality assurance. The external quality control included the review of the operation manuals, the training of the field staff, the execution of field work (including measurements), and the monitoring of sampling, response and data management. For the realization of the controls in these areas, test criteria were developed to reveal shortcomings early and to give recommendations for the internal quality assurance. This paper briefly describes the concept and the execution of the accompanying external quality assurance with regard to the above mentioned areas. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/re9PNrl9PO56/PDF/21zXorTOfivQ.pdf>

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## **Health related quality of life in adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

U. Ellert, B.M. Kurth

The aim of this study is to describe health-related quality of life (HRQoL) of the German adult population and provide current representative normative data for the version 2 of the SF-36 (SF-36V2) in the German population. In the German Health Interview and Examination Survey for Adults (DEGS1) the SF-36V2 was used to measure health-related quality of life. Men report in all areas better HRQoL compared to women; a lower social status is associated with lower HRQoL values. Having one or more chronic diseases is associated with lower values in all dimensions of HRQoL. Compared to 10 years ago, the general health seems to be much better in women aged 40–49 years and older and in men aged 50–59 years and older. Version 2 of the SF-36 has proved to be a robust instrument of health-related quality of life that is able to plausibly map differences regarding sociodemographic and health characteristics. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reYqEXVaXguCI/PDF/26WikoOm6xdil.pdf>

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## **Prevalence of myocardial infarction and coronary heart disease in adults aged 40–79 years in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

A. Gößwald, A. Schienkiewitz, E. Nowossadeck, M.A. Busch

In the German Health Interview and Examination Survey for Adults (DEGS1), data on the prevalence of myocardial infarction and coronary heart disease were collected from 2008–2011 in a representative population-based sample of 5,901 adults aged 40–79 years. The results of DEGS1 were compared with the prevalence estimates from the German National Health Interview and Examination Survey 1998 (GNHIES98). The lifetime prevalence of myocardial infarction amongst 40–79 year olds in DEGS1 is 4.7% (women 2.5%; men 7%). In comparison with GNHIES98 a small increase was observed in men, but not in women. The lifetime prevalence of coronary heart disease in adults aged 40–79 years in DEGS1 is 9.3% (women 6.4%; men 12.3%). In comparison to GNHIES98 there is a slight reduction only in women. There is a significant inverse relationship between disease prevalence and socioeconomic status. The trend in prevalence of coronary heart disease is comparable with that in other high-income countries. Given a falling incidence of myocardial infarction and a decrease in the mortality rates due to coronary heart disease, the basically stable prevalence rates indicate a positive development in the field of cardiovascular prevention and therapy. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reKycYDTAjs/PDF/29lscYYXhIJQ.pdf>

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### **Prevalence of stroke in adults aged 40 to 79 years in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

M.A. Busch, A. Schienkiewitz, E. Nowossadeck, A. Gößwald

In the German Health Interview and Examination Survey (DEGS1), data on the prevalence of physician-diagnosed stroke were collected from 2008 to 2011 in a representative population-based sample of 5,901 adults aged 40–79 years. The stroke prevalence in DEGS1 was compared with prevalence estimates from the German National Health Interview and Examination Survey 1998 (GNHIES98). The lifetime prevalence of stroke in adults aged 40–79 years is 2.9% (women: 2.5%; men: 3.3%). In both sexes, the prevalence increases continuously with age, up to 6.3% in women and 8.1% in men 70–79 years old. More pronounced in women than in men, the prevalence of stroke decreases with increasing socioeconomic status. Compared to GNHIES98, there is no evidence for a change in stroke prevalence over time. The prevalence of stroke in adults aged 40–79 years in Germany is comparable to prevalence estimates from other national and international studies. Further studies should examine the reasons behind stable prevalence rates, accounting for population ageing and changes in incidence, mortality and case fatality rates. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/rezpw553Zk0zA/PDF/27Sbld1R4s96.pdf>

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### **Prevalence of dyslipidemia among adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

C. Scheidt-Nave, Y. Du, H. Knopf, A. Schienkiewitz, T. Ziese, E. Nowossadeck, A. Gößwald, M.A. Busch

Interview and laboratory data from the first wave of the German Health Interview and Examination Survey for Adults (DEGS1) from 2008–2011 were used to provide current estimates of the prevalence of dyslipidemia which are representative of the population in Germany 18–79 years of age. A total of 56.6% of men and 60.5% of women 18–79 years have elevated serum total cholesterol concentrations in excess of the currently recommended threshold of 190 mg/dL; 17.9% of men and 20.3% of women have highly elevated total cholesterol concentrations  $\geq 240$  mg/dL. A total of 19.3% of men and 3.6% of women have high density lipoprotein cholesterol concentrations below 40 mg/dL. The overall prevalence of dyslipidemia (total cholesterol  $\geq 190$  mg/dL or medical diagnosis of dyslipidemia) is 64.5% for men and 65.7% for women. Of these, more than half of both men and women have previously undiagnosed dyslipidemia. Among persons with known dyslipidemia, 30.8% take lipid-lowering medication. Dyslipidemia is widely prevalent among adults in Germany. More in-depth analyses will examine time trends in the prevalence of dyslipidemia in Germany and in an international comparison. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reCGcHnujy2kc/PDF/26LgwtYfPi9E.pdf>

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### **Prevalence and temporal trend of known diabetes mellitus. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

C. Heidemann, Y. Du, I. Schubert, W. Rathmann, C. Scheidt-Nave

The first wave of the “German Health Interview and Examination Survey for Adults” (DEGS1, 2008–2011) allows for up-to-date, representative prevalence estimates of known diabetes amongst the 18- to 79-year-old resident population of Germany. Temporal trends can be shown by comparing the survey findings with those of the “German National Health Interview and Examination Survey 1998” (GNHIES98). The definition of known diabetes was based on self-reports in physician-administered interviews that asked respondents if they had ever been diagnosed with diabetes by a doctor or were on anti-diabetic medication. Overall, diabetes had been diagnosed in 7.2% of the adults (7.4% of the women; 7.0% of the men). The prevalence increased substantially with advancing age and was higher in persons of low than of high socioeconomic status. Prevalence varied depending on the type of health insurance held and was highest amongst those insured with AOK health insurance funds. In comparison with GNHIES98, there was a 38% increase in prevalence, of which approximately one third is to be attributed to demographic ageing. In the context of other nationwide studies, the results indicate a figure of at least 4.6 million 18- to 79-year-olds having been diagnosed with diabetes at some point. Planned analyses of undiagnosed diabetes will contribute to the interpretation of the

observed increase in the prevalence of known diabetes. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/re8zBK9JuD8n2/PDF/29RbpZ8kv1L4c.pdf>

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### **Prevalence of selected musculoskeletal conditions in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

J. Fuchs, M. Rabenberg, C. Scheidt-Nave

The term musculoskeletal condition (MSKC) comprises inflammatory and degenerative diseases of joints and bones. They are among the most common conditions in older age and cause of severe long-term pain, physical disability, and decrease in quality of life. Data from the German Health Interview and Examination Survey for Adults (DEGS1) were used to estimate the life-time prevalence of osteoarthritis, rheumatoid arthritis (RA) and osteoporosis in Germany. A total of 7,988 persons aged 18–79 years (osteoporosis 50–79 years) were asked to report doctor-diagnosed MSKC in face-to-face interviews. Women were more likely to report all MSKC and all prevalences increase with age. Osteoarthritis is reported by 22.3% of women and 18.1% of men, RA by 3.2% of women and 1.9% of men, and osteoporosis by 13.1% of women and 3.2% of men. MSKC are of great relevance for older adults in Germany. Data from DEGS1 provide a lot of information along to MSKC and hereby allow a closer description of the health situation of older adults. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reT2unSMgvg/PDF/227IYT4toi5Rk.pdf>

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### **Prevalence of sensitisation to aeroallergens and food allergens. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

M. Haftenberger, D. Laußmann, U. Ellert, M. Kalcklösch, U. Langen, M. Schlaud, R. Schmitz, M. Thamm

In view of the increasing prevalence of allergies, up-to-date data on the prevalence of allergic sensitisation are of major interest. In the German Health Interview and Examination Survey for Adults (DEGS1) (2008–2011), blood samples from a population-based sample of 7,025 participants aged 18 to 79 years were analysed for specific IgE antibodies against 50 common single allergens and screened for common aeroallergens (SX1) and grass pollen (GX1). In all, 48.6% of the participants were sensitised to at least one allergen. Overall, men were more frequently sensitised to at least one allergen than women were. Sensitisations to at least one allergen were more common among younger than older participants and among participants with a higher socio-economic status. In all, 33.6% of the participants were sensitised to common aeroallergens, 25.5% to food allergens and 22.6% to wasp or bee venoms. Compared with the German National Health Interview and Examination Survey 1998 (GNHIES98), the prevalence of sensitisation to common aeroallergens increased from 29.8 to 33.6%. This increase was statistically significant only in women. The results of DEGS1 still showed a high prevalence of allergic sensitisation. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reIT0n4HJsak2/PDF/26aByBjQDXbt2.pdf>

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### **Prevalence of allergic diseases in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

U. Langen, R. Schmitz, H. Steppuhn

In the first wave of the “German Health Interview and Examination Survey for Adults” (DEGS1), up-to-date and representative data regarding allergic diseases in 7,988 18- to 79-year-old subjects living in Germany were collected using computer-assisted medical interviews. The study identified a lifetime prevalence of 8.6% for asthma, 14.8% for allergic rhinoconjunctivitis, 3.5% each for atopic dermatitis and urticaria, 8.1% for contact eczema, 4.7% for food allergies and 2.8% for insect venom allergies. Overall, nearly one third of adults in Germany have been diagnosed with at least one of the above-mentioned allergies during their lifetime by a physician. Currently, nearly 20% suffer from at least one allergic disease. Generally, women reported an allergic disease more frequently than men did and

younger subjects more frequently than older ones. Additionally, allergies are more common in the former federal states of West Germany than in the former East German federal states. A high socioeconomic status and living in large cities both increase allergy risk. During the last 10 years, asthma prevalence increased about 3%, whereas the prevalence of urticaria and contact eczema declined. The lifetime prevalence of allergic rhinoconjunctivitis, atopic dermatitis and food allergies appeared unchanged. In total, allergy prevalence has declined from 32.7 to 28.7% over the past decade. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reUsXePiiZFs/PDF/29PNwFWSiGnGA.pdf>

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### **Epidemiology of hepatitis A, B, and C among adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

C. Poethko-Müller, R. Zimmermann, O. Hamouda, M. Faber, K. Stark, R.S. Ross, M. Thamm

Ten years after seroepidemiological data were obtained in the German National Health Interview and Examination Survey 1998 (GNHIES98), German Health Interview and Examination Survey (DEGS1) data contribute to a population-based, representative surveillance of hepatitis A and B immunity and of the serological markers for hepatitis C in Germany. The prevalence of antibodies against the hepatitis A virus is 48.6%. In comparison to the situation 10 years ago, seroprevalence is significantly higher among 18- to 39-year-old adults and is significantly lower in those aged 50–79 years. The association between age and seroprevalence has changed, indicating a decrease in naturally acquired hepatitis A immunity. Individual and population immunity has to be achieved through vaccination. Prevalence of hepatitis B antibodies indicates that 5.1% of adults have been exposed to the virus, significantly fewer than 10 years ago (7.9%). Prevalence of hepatitis B surface antibodies indicates that 22.9% of adults have been vaccinated against hepatitis B. Vaccination coverage has increased in all age groups and is highest in the younger age groups. These positive trends can be attributed to the general recommendation since 1995 to vaccinate against hepatitis B. For hepatitis C, the prevalence of antibodies in the general population is 0.3%. Germany thus remains a low-HCV-endemic country. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reduGAQyPr1AI/PDF/221UAZ0QXaYVg.pdf>

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### **Prevalence of Hysterectomy in women 18 to 79 years old. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

F. Prütz, H. Knopf, E. von der Lippe, C. Scheidt-Nave, A. Starker, J. Fuchs

In many countries, hysterectomy is one of the most frequently performed surgical procedures in gynaecology. The aim of this study is to analyse the prevalence of hysterectomy in Germany by socio-demographic factors and factors of (reproductive) health. Analyses are based on data from the “German Health Interview and Examination Survey for Adults (DEGS1)”, which is part of the health monitoring of the Robert Koch Institute (RKI). The prevalence of hysterectomy among participating women (18–79 years old) was 17.5% (n=689). Most women (49.1%) were 40–49 years old when surgery was performed; 6.1% of hysterectomised women had cancer of the uterus or ovaries, and 19.7% underwent a simultaneous oophorectomy. There were significant differences in the prevalence of hysterectomy regarding social status, place of residence in 1988, number of live births, and body weight. DEGS1 is the first study showing the prevalence of hysterectomy in a representative sample of the German population. More detailed analyses of the DEGS data, among other data sources, are needed to evaluate the importance of the described associations and to assess trends. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reCTKOV00eTmQ/PDF/25UzeqX0jw9kM.pdf>

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### **Physical and cognitive capabilities among persons aged 65–79 years in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

J. Fuchs, M.A. Busch, A. Gößwald, H. Hölling, R. Kuhnert, C. Scheidt-Nave

In older age, physical and cognitive capabilities play an important role for independent living. For this reason, the German Health Interview and Examination Survey for Adults (DEGS1) included the Timed

Up and Go test (TUG) and a chair-rise test, balance tests, a measurement of hand grip strength and the Digit Symbol Substitution Test (DSST) in order to representatively describe physical and cognitive performance of older people in Germany. Among 1,853 persons 65–79 years of age who came to the study centre more than 90% participated in the performance tests. The average time needed to complete the TUG and chair-rise tests were 10.7 and 11.8 s, respectively. On average, participants reached 3.9 of a maximum of 5 points in the balance tests (FICSIT4 protocol). Mean maximum grip strength was 32.3 kg. The mean number of correctly assigned symbols in the DSST was 43.8. In all functional capacity areas tested, performance declined with increasing age. There were differences by sex in the chair-rise test, hand grip strength and DSST. The objective measurement of physical and cognitive capabilities in DEGS1 contributes to describe the health status of older people with implications for health promotion and prevention. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/re9x6K8JTj3i/PDF/27tPL7f6OwuzM.pdf>

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### **Prevalence of depressive symptoms and diagnosed depression among adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

M.A. Busch, U.E. Maske, L. Ryl, R. Schlack, U. Hapke

In the German Health Interview and Examination Survey (DEGS1), current depressive symptoms were assessed with the “Patient Health Questionnaire” (PHQ-9) in a representative population-based sample of 7,988 adults 18–79 years old. In addition previously diagnosed depression was assessed by physician interview. The prevalence of current depressive symptoms (PHQ-9  $\geq 10$  points) is 8.1% (women: 10.2%; men: 6.1%). For both sexes, the prevalence is highest among 18- to 29-year-olds and decreases with age. Persons with higher socioeconomic status (SES) are less likely to have current depressive symptoms. The lifetime prevalence of diagnosed depression is 11.6% (women: 15.4%; men: 7.8%) and is highest among persons 60–69 years old. The 12 month prevalence is 6.0% (women: 8.1%; men: 3.8%) and is highest among 50- to 59-year-olds. In women, but not in men, prevalences decrease with increasing SES. The results describe the distribution of two important aspects of depression among the adult population in Germany and confirm previously observed associations with age, gender and SES. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reLPtVNhg9T2/PDF/22QgLkX1IQgU.pdf>

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### **Frequency and distribution of sleep problems and insomnia in the adult population in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

R. Schlack, U. Hapke, U. Maske, M.A. Busch, S. Cohrs

Sleep disturbances are associated with a variety of physical and mental health disorders and cause high direct and indirect economic costs. The aim of this study was to report the frequency and distribution of problems of sleep onset and maintaining sleep, sleep quality, effective sleep time and the consumption of sleeping pills in the adult population in Germany. During the 4 weeks prior to the interview, about one third of the respondents reported potentially clinically relevant problems initiating or maintaining sleep; about one-fifth reported poor quality of sleep. When additionally considering impairments during the daytime such as daytime fatigue or exhaustion, a prevalence of 5.7 % for insomnia syndrome was found. Women were twice as likely to be affected by insomnia syndrome as men. Significant age differences were not seen. Persons with low socioeconomic status had an increased risk of insomnia (odds ratio [OR] 3.44) as did people residing in West Germany (OR 1.53). Women with low socioeconomic status (OR 4.12) and men living in western German (OR 1.79) were more affected. The results illustrate the considerable public health relevance of insomnia-related sleep disturbances. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reFbEMy2hvba/PDF/20KVdTpCThC0U.pdf>

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## **Chronic stress among adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

U. Hapke, U.E. Maske, C. Scheidt-Nave, L. Bode, R. Schlack, M.A. Busch

The German Health Interview and Examination Survey for Adults (DEGS1) was conducted from 2008–2011 and comprised interviews, examinations and tests. The target population was the resident population of Germany aged 18–79 years. A total of 8,152 persons participated. Chronic stress was assessed to examine its effects on health and mental wellbeing. The Screening Scale of the Trier Inventory for the Assessment of Chronic Stress was used to assess stress burden among participants up to the age of 64 years (N=5,850). High levels of stress are significantly more often reported by women (13.9%) than by men (8.2%). The prevalence of high stress levels decreases with a higher socioeconomic status (SES); it falls from 17.3% with low SES to 7.6% with high SES. High chronic stress levels are particularly common (26.2%) in persons who report low levels of social support. Depressive symptoms, burnout syndrome and sleep disturbances are more common in people who have high levels of chronic stress than in those without high levels of stress. The results confirm the importance of chronic stress as a health risk and underline the public health relevance of chronic stress. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/renAbreO0gPHs/PDF/27rOmB2akXRA.pdf>

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## **Physical and psychological violence perpetration and violent victimisation in the German adult population. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

R. Schlack, J. Rüdel, A. Karger, H. Hölling

Violence is of considerable relevance to Public Health. It was the aim of the violence screening implemented as part of the German Health Interview and Examination Survey for Adults (DEGS1) to assess data on physical and psychological violence in various social environments (partnership, family, workplace, public space). For the first time as part of a nationally representative health survey, the data were collected from the perspective of victim and perpetrator both among women and men. The study population was comprised of 5,939 participants aged between 18 and 64 years. Approximately every 20th participant reported being the victim of physical violence in the preceding 12 months, men significantly more frequently than women. With regard to the frequency of being the perpetrator of physical violence (overall prevalence 3.7%) there were no significant differences between the sexes. Psychological victimisation was reported by every fifth participant and overall perpetrating psychological violence was reported by every tenth. Women tended to be more frequently the victims but they were also significantly more frequently the perpetrators of both physical and psychological violence in the domestic area (partnership, family). In contrast, men more frequently reported being both the perpetrator and the victim of violence in the workplace and in public spaces. Young adults between 18 and 29 years as well as persons of low socioeconomic status were consistently more frequently affected by violence although there were exceptions with regard to psychological victimisation. More than three-quarters of the victims of physical violence reported being greatly or extremely affected in their well-being by the violence and in the case of psychological violence the rate was about approximately 60%. Impairments in well-being following physical and psychological violence were considerably higher in men, especially in the case of domestic violence (partnership, family). Overall, women reported a greater sense of wrongdoing following violence perpetration than men; as to the perpetration of violence towards a partner, however, there was no difference between the sexes in this regard. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reBnq2hSoD49l/PDF/24hjJmYovMWJg.pdf>

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## **Physical activity. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

S. Krug, S. Jordan, G.B.M. Mensink, S. Müters, J.D. Finger, T. Lampert

Regular physical activity can have a positive effect on health at any age. Today's lifestyles, however, can often be characterised as sedentary. Therefore, the promotion of physical activity and sports has become an integral part of public health measures. The representative data of adults aged 18 to 79



years in Germany obtained from the “German Health Interview and Examination Survey for Adults” (DEGS1) provide an overview of self-estimated current physical activity behaviour. The results show that one third of the adult population claims to pay close attention to reaching a sufficient level of physical activity and one fourth participates in sports for at least 2 h/week on a regular basis. Thus, the percentage of adults regularly engaged in sports has increased compared to the previous “German National Health Interview and Examination Survey 1998”. Still, four out of five adults do not achieve at least 2.5 h/week of moderate-intensity physical activity as recommended by the World Health Organisation. Consequently, future individual-level and population-level interventions should focus on target group-specific measures while continuing to promote regular physical activity in all segments of the population. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reaRZEXvjLdLg/PDF/29FQUZqqaDO1I.pdf>

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### **Cardiorespiratory fitness among adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

J.D. Finger, S. Krug, A. Gößwald, S. Härtel, K. Bös

A high level of fitness is an indicator for a good health state. Therefore, cardiorespiratory fitness was examined in the cross-sectional German Health Interview Survey for Adults (DEGS1). Data from 3,030 test-qualified adults between 18 and 64 years old were assessed by means of a standardized submaximal cycle ergometer test. Test-qualified participants were significantly younger, more often men, less often obese and showed a better health state than those who were not test-qualified. The calculated physical work capacity at 75% of the age-predicted maximum heart rate (PWC75%) in watts per kg bodyweight was among men 1.52 and among women 1.15. PWC75% declines by 4.2% per age decade for men and 4.8% for women. A higher socioeconomic status (SES) is associated with better fitness among women. No significant association was observed between SES and fitness among men. These findings can be used to develop target-group specific health-promotion interventions in order to enhance cardiorespiratory fitness. It is planned to calculate updated PWC reference values based on the DEGS1 data. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/rerNXeNenbGLU/PDF/28QIHFeaOEqJI.pdf>

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### **Fruit and vegetable intake in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

G.B.M. Mensink, J. Truthmann, M. Rabenberg, C. Heidemann, M. Haftenberger, A. Schienkiewitz, A. Richter

To date, the recommendations of the German Nutrition Society on fruit and vegetable intake have not been met by the majority of the population. In the first wave of the “German Health Interview and Examination Survey for Adults” (DEGS1), which was conducted from 2008 to 2011, food consumption was determined with a validated food frequency questionnaire in a representative random sample of the 18–79-year-old resident population of Germany (n=7,116). The number of portions of fruit and vegetables consumed on average every day and the number of persons meeting the recommended five portions of fruit and vegetables per day were calculated. On average, women consume 3.1 and men 2.4 portions of fruit and vegetables per day. Moreover, 15% of women and 7% of men reach the recommended quantity of five portions per day. Fruit intake increases in both men and women up to the age of 60–69 years. About 39% of women and 25% of men consume at least three portions of fruit and vegetables per day. The proportion of men and women who consume at least three portions per day tends to increase with rising socioeconomic status. Although the intake of fruit has increased slightly compared to previous surveys, the percentage of persons who consume five portions of fruit and vegetables per day is still very low. An English full-text version of this article is available at SpringerLink as supplemental.

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## **Overweight and obesity in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

G.B.M. Mensink, A. Schienkiewitz, M. Haftenberger, T. Lampert, T. Ziese, C. Scheidt-Nave

The increase in overweight and obesity is a worldwide health problem. The first wave of the German Health Interview and Examination Survey for Adults (DEGS1), conducted from 2008 through 2011, provides current data about overweight and obesity among adults in Germany. Within DEGS1, a representative sample of the 18- to 79-year-old population was interviewed with regard to health relevant issues and physically examined (n=7,116). From measurements of body height and weight, the body mass index (BMI) was calculated, which was used to define overweight (BMI  $\geq 25$  kg/m<sup>2</sup>) and obesity (BMI  $\geq 30$  kg/m<sup>2</sup>). Results are stratified for gender, age group, socioeconomic status and region and compared with results from the German National Health Interview and Examination Survey 1998 (GNHIES98) and the National Examination Surveys 1990/92. According to DEGS1, 67.1% of men and 53.0% of women are overweight. The prevalence of overweight has not changed compared to GNHIES98. The prevalence of obesity, however, has risen substantially, especially among men: in GNHIES98, 18.9% of men and 22.5% of women were obese, in DEGS1, these figures were 23.3% and 23.9%, respectively. The increase in obesity occurred especially among young adults. An English full-text version of this article is available at SpringerLink as supplemental.

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## **Blood pressure in Germany 2008–2011. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

H. Neuhauser, M. Thamm, U. Ellert

High blood pressure is one of the most important risk factors for cardiovascular diseases and chronic kidney disease. It is a main determinant of morbidity and mortality in Germany. In the German Health Interview and Examination Survey for Adults (DEGS1) the blood pressure of 7,096 adults aged 18–79 years was measured in a standardised way using oscillometric blood pressure devices (Datascopie Accutorr Plus). The average of the second and third measurements was used for analysis. The mean systolic blood pressure was 120.8 mmHg in women and 127.4 mmHg in men, while the mean diastolic blood pressure was 71.2 mmHg in women and 75.3 mmHg in men. Blood pressure values were hypertensive (systolic blood pressure  $\geq 140$  mmHg or diastolic blood pressure  $\geq 90$  mmHg) in 12.7% of women and in 18.1% of men. Hypertension (defined as having hypertensive blood pressure or taking antihypertensive medication in known cases of hypertension) was present in 29.9% of women and 33.3% of men. Almost 75% of the survey's highest age group, 70–79, had hypertension. DEGS1 demonstrates that high blood pressure remains a highly prevalent risk factor in the population at large. The methodology employed in measuring blood pressure has been improved as compared to that of the German National Health Interview and Examination Survey 1998 (GNHIES98) and it will be possible to draw comparisons soon, once a procedure for calibrating the 1998 data has been finalised. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/remFfPNbNkET/PDF/26OjP9h96xw.pdf>

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## **Prevalence of smoking in the adult population of Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

T. Lampert, E. von der Lippe, S. Müters

Although various tobacco control measures have been implemented in Germany in the recent years, smoking is still widespread and constitutes a considerable health risk for the population. According to the data of the German Health Interview and Examination Survey for Adults (DEGS1), which was conducted by Robert Koch Institute from 2008–2011, 29.7% of the 18- to 79-year-old population smokes (women =26.9%, men =32.6%). The proportion of women and men who smoke 20 or more cigarettes a day amounts to 6.0 and 10.6% respectively. Smoking is mostly widespread among young adults, as well as among persons with low social status who are also overrepresented among the heavy smokers. Comparison with data from previous health surveys indicates that the proportion of smokers has reduced slightly over the last 10 years. An English full-text version of this article is available at SpringerLink as supplemental.

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### **Alcohol consumption, at-risk and heavy episodic drinking with consideration of injuries and alcohol-specific medical advice. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

U. Hapke, E. v. der Lippe, B. Gaertner

The German Health Interview and Examination Survey for Adults (DEGS1) was conducted from 2008–2011 and comprised interviews, examinations and tests. The target population was the resident population of Germany aged from 18–79 years (n=8,152). Data on alcohol consumption, at-risk drinking and heavy episodic drinking was collected in a self-administered questionnaire with the Alcohol Use Disorders Identification Test–Consumption (AUDIT-C). At-risk drinking is most common among young individuals aged from 19–29 years (men 54.9%; women 36%), becoming less common from an age of 65 years. With 41.6%, at-risk drinking is more prevalent in men than in women (25.6%). Men are three times more likely to be heavy episodic drinkers than women. Injuries are more common among individuals with at-risk or heavy episodic drinking. They receive advice on alcohol consumption during visits to general practitioners/specialists or outpatient departments more often than individuals without these drinking patterns. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/re71685ZXKQNA/PDF/21ReLfCgkM.pdf>

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### **Socioeconomic status and health. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

T. Lampert, L.E. Kroll, E. von der Lippe, S. Müters, H. Stolzenberg

The analysis focuses on the connection between socioeconomic status (SES) and five health outcomes in the 18- to 79-year-old population of Germany. It uses data from the German Health Interview and Examination Survey for Adults (DEGS1) which the Robert Koch Institute conducted in the period from 2008–2011 (n=8,152). Socioeconomic status is recorded via a multidimensional index which includes information on education attainment, occupational status and household income. The results show that persons with a low socioeconomic status have a self-rated health status which is worse than that of persons with a medium or high socioeconomic status, and that they have diabetes more frequently. They also have a higher risk of depressive symptoms, obesity and no sports activity. The results illustrate that health chances and the risk of illness are still very socially unevenly distributed, thus emphasising the significance of political interventions to reduce health inequalities. An English full-text version of this article is available at SpringerLink as supplemental.

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### **Social inequities regarding annoyance to noise and road traffic intensity. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

D. Laußmann, M. Haftenberger, T. Lampert, C. Scheidt-Nave

To study the associations of annoyance to noise and exposure to residential traffic with sociodemographic, socioeconomic and regional characteristics as well as housing conditions, a population-based sample of 7,988 adults 18–79 years of age was studied in the German Health Interview and Examination Survey for Adults (DEGS1). Annoyance to noise and exposure to residential traffic were assessed by self-administered questionnaires. A total of 6.3% of the participants reported a high to very high exposure to residential traffic noise, 3.7% to neighbourhood noise and 2.1% to aircraft noise. An excessive exposure to residential traffic was reported by 21.3% of the participants. A high annoyance to traffic and neighborhood noise was associated with a lower equivalised disposable income and poor housing conditions. Additionally annoyance to neighborhood noise was associated with low socioeconomic and occupational status. A high annoyance to aircraft noise was only associated with a low equivalised disposable income and living in apartment blocks. Exposure to residential traffic was associated with all investigated indicators. At present in Germany environmental exposures are social unequally distributed and may lead to negative health consequences in social disadvantaged groups. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reLLpog0Oano/PDF/24RowagVqxtk.pdf>

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### **Utilization of outpatient and inpatient health services in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

P. Rattay, H. Butschalowsky, A. Rommel, F. Prütz, S. Jordan, E. Nowossadeck, O. Domanska, P. Kamtsiuris

The article provides representative benchmarks and trends for the use of medical and therapeutic services in Germany on the basis of the German Health Interview and Examination Survey for Adults (DEGS1) and the German National Health Interview and Examination Survey 1998 (GNHIES98) from the years 2008–2011 and 1997/98, respectively. DEGS1 shows that women seek most medical services more often than men. Differences by gender decreased with age. In almost all services, an increase in utilisation is recorded with age. There are large differences in utilisation depending on self-rated health, as opposed to fewer differences by social status, health insurance and region. At both time points, the proportion of the population that utilised outpatient or inpatient medical assistance at least once a year, is almost unchanged high. At the same time, a significant reduction in the annual number of contacts with medical practices and the length of hospital stay was recorded as well as an increase of the consulted specialist groups. This may be explained due to regulation effects of earlier reforms. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/reWsjeZR5HISQ/PDF/21nRhaJo8ha7o.pdf>

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### **Vaccination coverage in German adults. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

C. Poethko-Müller, R. Schmitz

In the absence of an immunisation register, vaccination coverage in Germany must be estimated. Ten years after the German National Health Interview and Examination Survey 1998 (GNHIES98), the population survey DEGS1 is one of the data sources that can be used for monitoring vaccination coverage. In the survey, data on vaccination history were obtained from vaccination cards and self-reports. The prevalence of immunisation for tetanus and diphtheria was higher compared to the prevalence estimated 10 years previously in GNHIES98. Nonetheless, 28.6% of adults have not been vaccinated against tetanus and 42.9% have not been vaccinated against diphtheria within the last 10 years. Vaccination is especially low among the elderly, among adults with low socioeconomic status and in western Germany. During the last 10 years, only 11.8% of women and 9.4% of men were vaccinated against pertussis in western Germany; vaccination coverage was twice as high in eastern Germany. In 2009, recommendations were published to combine the next tetanus immunisation with a pertussis immunisation; therefore pertussis vaccination coverage might improve in the coming years. The lifetime prevalence of influenza vaccination obtained in DEGS1 is higher than the annual vaccination rate for influenza. However, the lifetime prevalence among adults aged 60 years or older is still below the annual rate of 75% recommended by the WHO. An English full-text version of this article is available at SpringerLink as supplemental.

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### **Participation in cancer screening in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

A. Starker, A.-C. Saß

A growing number of people in Germany participate in the cancer screening services offered by statutory health insurance. Using data from the first wave of the German Health Interview and Examination Survey for Adults (DEGS1), current levels of participation in cancer screening services were determined. DEGS1 (2008–2011) permits representative cross-sectional analyses to be performed. In DEGS1, persons who were entitled to different cancer screening services were interviewed on their awareness, participation and regular utilisation of cancer screening for different types of cancer. Overall, 67.2% of women and 40.0% of men participate regularly. Participation rates fluctuate to a great extent for individual types of cancer screening. Women participate in cancer screening more frequently than men do. For women, a better socioeconomic status was associated with higher participation rates. Participation rates improve with increasing age, meaning that the

difference in participation rates between women and men becomes smaller. The current analyses present information on specifically targeted population groups to promote informed decision-making about cancer screening, so that participation rates can be improved further. The analyses thus provide an important basis for health policy measures. An English full-text version of this article is available at SpringerLink as supplemental.

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### **Medication use of adults in Germany. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

H. Knopf, D. Grams

The first wave of the German Health Interview and Examination Survey for Adults, 2008–2011 (DEGS1), assesses current medicine use among participating adults aged 18–79 years in the 7 days prior to the medical examination as part of a standardised interview. About three quarters (74.4%) of all men and women state that they used at least one preparation. Prevalence is highest among 70–79 year olds (men 94.9%; women 96.3%). Overall women have a significantly higher prevalence rate (85.4%) than men (63.8%). Preparations for the treatment of cardiovascular diseases are the most frequently used medicines (men 27.2%; women 29.5%). Polypharmacy (the use of 5 or more preparations) increases continuously with age and is observed significantly more often in women than in men in all age groups with the exception of the age group 70–79. Of the 20,084 recorded preparations, 71.8% are prescribed by a doctor and 27.7% are self-medicated. While there are no differences in overall medication linked to social status, a social gradient is observed in prescribed preparations and self-medication. The results presented here describe key indicators of medication use representative of the German adult population. Based on the extensive data of DEGS1, further analyses into aspects such as co- and multimедication will be addressed in the future. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/rePGAa9w0ILE/PDF/26L0DRctHeeE.pdf>

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### **Participation in health behaviour change programmes. Results of the German Health Interview and Examination Survey for Adults (DEGS1)**

S. Jordan, E. von der Lippe

Health behaviour change programmes to promote healthy behaviours are aimed at, among other things, counteracting the emergence of widespread non-communicable diseases. Which population groups use these programmes? This analysis is based on data from DEGS1, which was conducted from 2008–2011. People aged 18–79 years were asked about their participation in programmes in the last 12 months in the fields of nutrition, physical activity and relaxation (n=7,807). The analysis was stratified by sex, age, socioeconomic status (SES), and type of statutory health insurance fund. A total of 16.6% of respondents participate in at least one programme for behaviour change, with women using these programmes significantly more frequently, indeed twice as often, as men (22.1% versus 11%). The older population participates more often than younger age groups. Women and men with low SES use the programmes significantly less frequently than those with middle or high SES. Women who are insured by the AOK health insurance group have a significantly lower rate of participation than women insured by any other statutory health insurance fund. Overall participation has almost doubled since the “German National Health Interview and Examination Survey 1998” (9.1%). Further efforts are necessary to reach population groups with low participation rates. An English full-text version of this article is available at SpringerLink as supplemental.

Link to file: <http://edoc.rki.de/oa/articles/rePGAa9w0ILE/PDF/26L0DRctHeeE.pdf>

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### **Measurement of cardiorespiratory fitness in the German Health Interview and Examination Survey for Adults (DEGS1)**

J.D. Finger, A. Gößwald, S. Härtel, S. Müters, S. Krug, H. Hölling, R. Kuhnert, K. Bös

A state of good fitness is related to a better health state and a lower mortality risk. In the German Health Interview and Examination Survey for Adults (DEGS1), aerobic fitness was measured among

adults between 18 and 64 years old using a submaximal cycle ergometry test. The total sample comprised 5,263 persons, amongst those 3,111 were categorized as being test-qualified according to the Physical Activity Readiness–Questionnaire. There were 3,030 persons who absolved a submaximal exercise test according to the exercise protocol of the WHO (25/25/2). The test-participation rate was 57.2% in relation to the total sample and 97.4% among test-qualified persons. Apart from the continuous heart-rate monitoring, capillary blood was taken prior to starting the test and at the end of each workload stage for performing blood lactate analyses. The test ended when 85% of the age-predicted maximal heart rate was exceeded. In all 11.9% of the tests were terminated earlier, the mean exercise duration was 10.8 min, and the anticipated submaximal exertion in the highest workload stage was on average achieved with a mean of 15 on the 20-point RPE scale. The nationwide data can now be used for the national health monitoring system, epidemiological research and for the calculation of reference values. An English full-text version of this article is available at SpringerLink as supplemental.

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