12-Month prevalence of allergies in Germany

Abstract
The prevalence of allergies has increased dramatically during recent decades, and thus, got into the focus of public health. As part of the 2014 German Health Update (GEDA 2014/2015-EHIS), 28.1% of respondents reported that they were affected by an allergic disease other than asthma. Reports of allergies are more common among women than men and among younger and middle-aged adults than people over the age of 65. Adults with higher levels of education stated more frequently that they are affected by allergies than adults with lower levels of education. Allergic reactions occur in various organ systems, but the skin, mucous membranes, respiratory tract and the intestines are most commonly affected. As allergic reactions often significantly restrict people's quality of life, early diagnosis and appropriate care for sufferers is essential.

Introduction
Well-known symptoms of allergies include a runny nose, sneezing, itchy eyes, breathing difficulties up to shortness of breath, and severe itching of the skin. Allergic reactions are triggered by an excessive reaction of the body’s immune system to otherwise harmless environmental substances (allergens). Allergens are widespread and people are exposed to them through inhalation, diet and direct contact; they normally consist of proteins or protein compounds but have a variety of chemical and physical characteristics. Allergic reactions occur in a range of the body’s organ systems, with the skin and mucous membranes (hay fever, atopic dermatitis and allergic contact dermatitis), the respiratory tract (asthma), the oral cavity and the intestinal tract (food allergies) the most commonly affected. Type I reactions (immediate hypersensitivity) such as hay fever and atopic dermatitis involve the production of allergen-specific immunoglobulin E antibodies (IgE). Allergic sensitisation (atopy) is said to have occurred if these antibodies are detectable in the blood. In other allergic disorders, such as allergic contact dermatitis, an allergic reaction is delayed (Type IV hypersensitivity), and is mediated by specific white blood cells (T-cells) [1].

Since the 1970s, allergies have become significantly more common in Germany [2-7]. Estimates suggest that up to 30 million people are currently affected, and their quality of life and capabilities can be greatly restricted [8]. Moreover, chronic allergic disorders are usually associated with a high degree of care needs. In cases where it is impossible or very difficult to avoid exposure to specific allergens, allergy sufferers – depending on the extent of their disorder – remain reliant on medical treatment for their individual complaints, or specific immunother-
apy as the only existing form of causal therapy so far. No
detailed calculations of the costs of allergic conditions
in total are available for Germany.

**Indicator**

In the 2014 German Health Update (GEDA 2014/2015-
EHIS) the prevalence of allergic disease in the 12-month
period that preceded the study was defined by a positive
answer to the question ‘Have you had allergy, such as rhi-
nitis, hay fever, eye inflammation, dermatitis, food allergy
or other (allergic asthma excluded) in the past 12 month?’
This indicator describes 12-month prevalence of self-as-
sessed current affection by an allergic disease other than
asthma.

Analysis is based on data from 23,342 participants
aged 18 and above with available information about their
12-month allergy prevalence (674 participants were
excluded from the analysis because of missing informa-
tion). A weighting factor was applied throughout statis-
tical analysis that corrected the sample for deviations
from the German population (as of 31 December 2014)
in terms of gender, age, type of municipality and level of
education. The article entitled German Health Update –
New data for Germany and Europe [9], published in this
issue, provides a detailed description of the study meth-
odology. A detailed description of health monitoring and
health indicators in Europe is provided by a Focus arti-
cle [10] that is also published in this issue.

**Results and discussion**

28.1% of the adults reported that they are currently affect-
ed by allergies other than allergic asthma. Women – at
31.6% – are significantly more likely to report that they
are affected by allergies than men – at 24.5%. Young and
middle-aged adults (up to 65 years of age) more fre-
quently report that they are affected by allergies than
older people. Adults with higher levels of education are
particularly affected by allergies. This is especially the
case with middle-aged adults aged between the ages of
30 and 64. The tables present the 12-month prevalence
of allergies among 18- to 79-year-old adults stratified by
gender, age and educational background (ISCED classi-
fication of low, medium and high education [11]).

Allergies are on the one hand caused by genetic fac-
tors. On the other hand, various non-genetic factors are
discussed to be responsible for the significant rise in
allergic disease prevalence that has occurred in recent
decades. These factors have long been subject to inten-
sive research and include reduced exposure to microor-
ganisms and infectious agents, reductions in parasitic
diseases, increased exposure to allergens, environmen-
tal pollution and changes to the intestinal flora, but also
changes to diet, lifestyle and travelling patterns [12-14].

The results of the German Health Update show that
about one third of adults aged between 18 and 79 years
assess themselves as suffering from an allergic condi-
tion. The higher prevalence of allergies among women
than men and in individuals with the highest levels of
education is well-known [15].

Although there was no assessment of single allergic
conditions, the results still demonstrate a considerable
potential for disease. It can be assumed that each posi-
tive response to the study’s question on allergies was
also linked to a certain level of psychological strain and
Approximately one third of women but only one quarter of men are currently affected by allergies other than allergic asthma.

(at the very least, symptomatic) medical treatment. However, it has to be noted that laypeople (due to their lack of medical training) often have difficulties in differentiating allergies from ‘pseudo-allergies’ (particularly food intolerances), since both can produce similar symptoms. This is one of the reasons why large-scale national and international epidemiological studies ask questions about specific allergic diseases and often include questions about whether these diseases have been diagnosed by a doctor. Such questions were included in the European ECHRS study (European Community Respiratory Health Survey) and DEGS1 (German Health Interview and Examination Survey for Adults), a representative study of the German adult population, for example. From data of DEGS1, which was conducted between 2008 and 2011 using computer-assisted medical interviews, a 12-month prevalence of nearly 20% for the presence of at least one of seven queried (medically diagnosed) allergies including asthma was estimated [5]. However, estimates of prevalence based on reported medical diagnoses tend to be lower than those ascertained through self-assessments, as many sufferers who have mild symptoms do not visit a doctor.

With respect to time trend in the 12-month prevalence based on self-assessments among adults in Germany, data from three surveys are available for allergic rhinitis.

<table>
<thead>
<tr>
<th>Women</th>
<th>% (95%-CI)</th>
<th>Men</th>
<th>% (95%-CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women total</td>
<td>31.6 (30.5-32.7)</td>
<td>Men total</td>
<td>24.5 (23.4-25.7)</td>
</tr>
<tr>
<td>18 – 29 Years</td>
<td>38.7 (36.4-41.0)</td>
<td>18 – 29 Years</td>
<td>31.4 (28.8-34.1)</td>
</tr>
<tr>
<td>Low education</td>
<td>36.2 (30.6-42.2)</td>
<td>Low education</td>
<td>29.4 (23.5-36.0)</td>
</tr>
<tr>
<td>Medium education</td>
<td>39.8 (36.8-42.9)</td>
<td>Medium education</td>
<td>32.3 (28.7-36.1)</td>
</tr>
<tr>
<td>High education</td>
<td>37.9 (33.2-42.9)</td>
<td>High education</td>
<td>32.0 (26.4-38.1)</td>
</tr>
<tr>
<td>30 – 44 Years</td>
<td>34.8 (32.5-37.1)</td>
<td>30 – 44 Years</td>
<td>28.2 (25.9-30.6)</td>
</tr>
<tr>
<td>Low education</td>
<td>25.5 (19.6-32.4)</td>
<td>Low education</td>
<td>24.8 (18.2-32.8)</td>
</tr>
<tr>
<td>Medium education</td>
<td>35.3 (32.3-38.5)</td>
<td>Medium education</td>
<td>26.4 (23.5-29.5)</td>
</tr>
<tr>
<td>High education</td>
<td>38.5 (35.0-42.2)</td>
<td>High education</td>
<td>33.2 (29.9-36.7)</td>
</tr>
<tr>
<td>45 – 64 Years</td>
<td>32.4 (30.7-34.2)</td>
<td>45 – 64 Years</td>
<td>23.6 (22.1-25.3)</td>
</tr>
<tr>
<td>Low education</td>
<td>32.6 (28.4-37.0)</td>
<td>Low education</td>
<td>21.6 (17.5-26.4)</td>
</tr>
<tr>
<td>Medium education</td>
<td>31.2 (29.0-33.5)</td>
<td>Medium education</td>
<td>22.1 (19.9-24.5)</td>
</tr>
<tr>
<td>High education</td>
<td>36.4 (33.6-39.4)</td>
<td>High education</td>
<td>27.3 (24.9-29.9)</td>
</tr>
<tr>
<td>≥ 65 Years</td>
<td>23.3 (21.2-25.5)</td>
<td>≥ 65 Years</td>
<td>16.2 (14.6-18.0)</td>
</tr>
<tr>
<td>Low education</td>
<td>21.5 (18.4-24.9)</td>
<td>Low education</td>
<td>15.0 (11.5-19.2)</td>
</tr>
<tr>
<td>Medium education</td>
<td>24.8 (21.8-28.1)</td>
<td>Medium education</td>
<td>15.9 (13.5-18.6)</td>
</tr>
<tr>
<td>High education</td>
<td>24.1 (20.1-28.7)</td>
<td>High education</td>
<td>17.5 (15.0-20.2)</td>
</tr>
<tr>
<td>Total (women and men)</td>
<td>28.1 (27.3-29.0)</td>
<td>Total (women and men)</td>
<td>28.1 (27.3-29.0)</td>
</tr>
</tbody>
</table>

Table 1: The 12-month prevalence of allergies among 18- to 79-year-old adults, according to gender, age and educational background (n=23,342) Source: GEDA 2014/2015-EHIS

CI = Confidence interval
The 12-month prevalence of allergic disease is higher among adults under 65 than among those over 65 years of age.

Allergic disease is more often reported from adults with the highest levels of education compared to those with lower levels.

(hay fever) [4, 16]. These data demonstrate that the 12-month prevalence almost doubled between 1990/1992 and 2008/2011. Approximately 12.3 million adults in Germany declare to suffer from allergic rhinitis.

Due to the large number of people they affect, allergic diseases are highly relevant to public health. In addition to continuous allergy monitoring and further research on potential risk and protective factors, more efforts are needed to ensure early diagnoses and to develop appropriate forms of care for allergy sufferers. This is not only important for the quality of life of those affected; it is also essential from an economic perspective [8].

References
www.bfr.bund.de/de/präsentationen_zu_den_vortrãgen_vom_27_märz_2015-194044.html (As at 22.11.2016)
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