**Background**

Back pain (BP) is a universal experience\(^1\) with a point prevalence of between 30 and 40%, at least in industrialized Western countries. The ‘rest of the world’\(^2\) now seems to catch up; comparably high frequencies of BP have recently been reported from rural Tibet,\(^3\) both urban\(^4\) and rural Nigeria,\(^5\) urban Turkey\(^6\) and rural China.\(^7\) However, while focusing on occurrence rates from whole populations we may have failed to notice and analyse differences between closely related regions, adjacent territories or neighbouring countries. Such differences have been observed between Great Britain and Germany (up to 20%),\(^8\) East and West Germany in the early 1990s (up to 16%)\(^9\) and more recently between 16 European countries (maximally 18%).\(^1^0\)

The aetiology of BP often remains elusive (‘non-specific back pain’). Though mostly based on obsolete data from the 1960s,\(^1^1\) specific causes (such as idiopathic inflammation, tumour, trauma, nerve root entrapment and compression fracture) are said to account for probably not >15% of all BP cases presenting to general practice.\(^1^2\) Seldom BP seems to be the result of a contagious disease, i.e. the consequence of a viral or bacterial infection. But it may be communicable, if ‘communicable’ implies the notion of something being transmitted by sharing or exchanging information.

Against this background, we report on the change of BP prevalence rates in the two parts of Germany between 1991 and 1992, i.e. early after their reunification, and 2003, the year of the so far last All German Health Survey.
The two populations share genes and history (the latter from 1871 till 1945) and have afterwards been divided for >40 years by diverging political, economical, social security, health care systems, socio-cultural developments, material life conditions, working conditions and media scenes.

Associated with these differences were health disparities, e.g. in life expectancy (males in 1990: West 72.6 vs East 69.1 years; females 79 vs 76.2 years) and health behaviours (e.g. smoking, obesity and alcohol consumption; generally, more prevalent in the former German Democratic Republic GDR).

The unexpected and swift political processes, which in October 1990 culminated in Germany’s reunification, lead to the actual incorporation of the former GDR into the Federal Republic of Germany (FRG). The five new Federal States and East Berlin abruptly had to introduce the Western political, economic, health care, social security and labour market system. The media scene changed from a uniform and centrally regulated to a highly competitive colourful market.

One could expect cultural orientations, social perceptions, (health related) behaviours and health status indicators follow the sudden shifts, however, at a slower pace. This assumption proved, at least partly, true: the gap between, for instance, life expectancy among males and females dropped to 1.5 and 0.5 years, respectively in 2002. This is mainly attributed to improvements in material life conditions, health behaviours and health care. Here, east followed west.

The interesting and so far unanswered question is whether this process applies as well to BP as a health disorder with an initially lower prevalence in East Germany. Around 1991–92 prevalence rates of back and other musculoskeletal pains (adjusted for sex and age) differed between East and West Germany by >10% with consistently lower rates from the East.

Sources of data, methods
After 1990, in Germany several local, regional and national BP surveys were conducted. To study the change of East–West prevalence differences over time, we reanalysed five surveys allowing for four direct East–West comparisons (Table 1, ‘Methods’ refers to type and wording of questions).

The first comparison is based on results from two nearly concurrent population-based surveys, one representative for the territory of the former GDR (N = 2617 adults aged 18–79, response rate 70%), the other local covering the City of Luebeck in North West Germany (N = 3109 adults aged 25–74, response rate 81%). The first included a set of questions on BP identical to that from the Luebeck survey.

The second comparison uses German data from the European Vertebral Osteoporosis Study (EVOS). Representative samples from the adult population (aged 50–79 years) were drawn from four separate urban regions in East (response rate 65%) and four in West Germany (response rate 73%; in total 5082 valid responses).

The third comparison refers to data from the first All German Health Survey 1998–99. It included representative samples of the two subpopulations (aged 18–79 years old, ratio West: East about 2 : 1) and resulted in response rates of 60% (West) and 64% (East), with together 7124 responders. Methods and instruments were identical.

This is also the case with the most recent nationwide computer-assisted telephone survey (fourth comparison) among more than 8000 adults (aged 18–79, overall response rate 59%) from East and West Germany. Here, chronic BP was defined as daily or nearly daily pain lasting for >3 months (ever and/or within past 12 months).

The differences of survey methods and instruments between the four strata are profound, however, this does not seem to impair comparability within each stratum given methods and statistics are comparable (it is thus impossible to compare a prevalence rate of e.g. 69% for BP ever in East Germany from stratum 1 with the corresponding rate from stratum 2 (83%) and take the difference as evidence for a rapid change within 1 year).

We report prevalence rates directly standardized on age (decades) and sex with the German population

Table 1 Back pain surveys in East and West Germany (1991–2003)

<table>
<thead>
<tr>
<th>Study/year</th>
<th>Age</th>
<th>East Germany</th>
<th>West Germany</th>
<th>Methods</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1991–92</td>
<td>East: 18–79, West: 25–74</td>
<td>Representative questionnaire</td>
<td>Local (Luebeck) postal questionnaire</td>
<td>Mostly identical</td>
</tr>
<tr>
<td>2. 1992–93</td>
<td>50–79</td>
<td>Four cities postal questionnaire</td>
<td>Four cities postal questionnaire</td>
<td>Identical</td>
</tr>
<tr>
<td>3. 1998–99</td>
<td>18–79</td>
<td>Representative questionnaire</td>
<td>Representative questionnaire</td>
<td>Identical</td>
</tr>
<tr>
<td>4. 2003</td>
<td>18–79</td>
<td>Representative telephone interview</td>
<td>Representative telephone interview</td>
<td>Identical</td>
</tr>
</tbody>
</table>

Overall response 59%

*Self administered.

The local postal survey focused on back pain; the East German questionnaire and examination study was a general health survey including the Luebeck questions on musculoskeletal pains.
strata 1, 4) or the entire sample (strata 2, 3) as reference. Additionally, confidence intervals around rates and differences are given using BIAS for Windows, version 8.3.7.19,20

Data on days off work are derived from work disability statistics (‘Krankheitsartenstatistik’) published annually by Germany’s major statutory health insurance scheme AOK (an acronym for ‘Allgemeine Ortskrankenkasse’ or General Regional Health Insurance).21 The scheme insured about 40% of all German residents and their families with a traditionally high proportion of blue-collar workers. Data displayed (Figure) refer to the average yearly number of disability days per 10 000 statutory members due to BP (lines) and its proportion of the annual total of this statistic (columns).

Results

During the early 1990s, prevalence differences between East and West approached and exceeded 10% points; they decreased to virtually zero towards the end of the observation period (Table 2).

Additional evidence comes from work disability statistics described earlier. Figure 1 displays the number of days of work disability per 10 000 statutory members and year due to BP from 1991 to 2005 and its proportion of the yearly total.

In 1991, the East German population started at a considerable lower level and rapidly made up ground till 1996 thus narrowing the gap. It then follows both a parallel and declining course on a still lower niveau. Since 1996, the proportion of work disability days due to BP has remained more or less stable after a phase of rapid increase.

Discussion

Prevalence data from two independent sources collected immediately after Germany’s reunification showed marked differences in BP prevalence rates for adults. Most differences tend to level off as time progresses. The most recent survey observed virtually identical frequencies for BP ‘yesterday’ and (chronic) BP within the past 12 months in East and West Germany, whereas the second last survey resulted in a still detectable discrepancy.

Questions, response rates and results from the four different ‘pairs’ of surveys are clearly not directly comparable. Methods and instruments changed from study generation to study generation. In our context, this seems of minor relevance. We do not aim at analysing the epidemiological trend of BP over time.

Table 2 Age- and sex-adjusted back pain (BP) prevalence rates from different surveys

<table>
<thead>
<tr>
<th>Survey</th>
<th>Type of BP</th>
<th>North</th>
<th>East Germany (E)</th>
<th>West Germany (W)</th>
<th>Difference prevalence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 1991–92</td>
<td>BP today</td>
<td>East: 2209b</td>
<td>27% (25.2–28.9)</td>
<td>39% (37.3–40.8)</td>
<td>12% (9.5–14.6)</td>
</tr>
<tr>
<td></td>
<td>BP past 12 months</td>
<td>West: 3109</td>
<td>63% (60.6–64.7)</td>
<td>75% (73.4–76.5)</td>
<td>13% (9.5–14.5)</td>
</tr>
<tr>
<td></td>
<td>BP ever</td>
<td></td>
<td>69% (66.5–70.4)</td>
<td>84% (82.7–85.3)</td>
<td>16% (12.7–17.3)</td>
</tr>
<tr>
<td>2. 1992–93</td>
<td>BP today</td>
<td>East: 2064</td>
<td>36% (33.6–37.8)</td>
<td>43% (41.3–45.4)</td>
<td>7% (4.7–10.6)</td>
</tr>
<tr>
<td></td>
<td>BP past 12 months</td>
<td>West: 2213</td>
<td>73% (71.3–75.1)</td>
<td>74% (71.9–75.6)</td>
<td>1% (−2.1–3.2)</td>
</tr>
<tr>
<td></td>
<td>BP ever</td>
<td></td>
<td>83% (81.4–84.7)</td>
<td>87% (85.1–88.0)</td>
<td>4% (1.3–5.6)</td>
</tr>
<tr>
<td>3. 1998–99</td>
<td>BP last 7 days</td>
<td>East: 1409</td>
<td>32% (29.2–34.1)</td>
<td>37% (36.1–38.7)</td>
<td>5% (3.8–9.3)</td>
</tr>
<tr>
<td></td>
<td>BP past 12 months</td>
<td>West: 5539</td>
<td>53% (50.7–55.9)</td>
<td>61% (59.5–62.0)</td>
<td>8% (4.6–10.4)</td>
</tr>
<tr>
<td>4. 2003</td>
<td>BP yesterday</td>
<td>East: 1540</td>
<td>22% (20.5–24.7)</td>
<td>22% (21.3–23.2)</td>
<td>0% (−2.0–2.6)</td>
</tr>
<tr>
<td></td>
<td>BP past 12 months</td>
<td>West: 6777</td>
<td>62% (59.3–64.3)</td>
<td>62% (60.6–62.9)</td>
<td>0% (−2.7–2.7)</td>
</tr>
<tr>
<td></td>
<td>Chronic BP past 12 months</td>
<td></td>
<td>18% (15.8–19.7)</td>
<td>19% (17.9–19.8)</td>
<td>1% (−0.9–3.3)</td>
</tr>
</tbody>
</table>

aBP indicates back pain.
bOnly responders aged 25–74.
95% confidence interval in parenthesis.
What actually matters is the comparability of data pairs concurrently collected in East and West German cities, regions or territories. At least three problems have to be discussed: different sampling frames in stratum 1, inconsistency of the general pattern in stratum 2 and variable response rates.

The first two studies, both representatives in itself, obviously addressed different population segments, in East Germany the entire, in West Germany a local population. This impairs comparability. Though Luebeck cannot be seen as representative for the whole of West Germany, data from the German part of EVOS show that regional differences within the West of Germany were less pronounced than differences between East and West. Additionally, we adjusted prevalence rates for sex and age, thereby increasing comparability.

In stratum 2, the difference of the two rates for BP within the past year was unexpectedly low. Detailed analyses reveal an even negative difference for women aged 70 or more. We are so far not able to clarify this finding.

Overall, response rates seem not too different though we do not have detailed information for stratum 4 and found a rather large difference (11%) in stratum 1. Evidence from the South Manchester Back Pain Survey and own data show that late and non-responders report BP less often than responders. Thus, lower response rates usually lead to over-estimating the true prevalence rate. For comparison 1, this most probably results in an artificially low East–West difference.

As the absolute prevalence rates are, due to methodological differences, not directly comparable, it is not totally excluded that narrowed gaps are the consequence of generally increasing rates in the East, decreasing rates in the West or a combination of both. The only evidence that the level of BP has not markedly changed in West Germany over the last 10 years comes from a repeat survey in the Luebeck region. In 2003, and among 2441 German residents aged 25–74 (response rate 59%), we found a point prevalence rate (adjusted for age and sex and school education on the merged sample) of 38% (in 1993: 39%). This makes a substantial change in the West of Germany unlikely.

These are the data, but how the convergence of BP experience and/or reporting can be explained, we presently do not know. The population’s genetic make-up has certainly not changed; life and work conditions were obviously less favourable in the former GDR. While the reunification put unknown strain on and caused considerable frustration within the East German population, the (perceived) life and work conditions have gradually been levelling off. The Socio Economic Panel (SOEP) is a representative longitudinal study of private households in Germany. In 1990, it was expanded to cover the area of the former GDR. Between 1991 and 2003, the data show a slow increase of both general life satisfaction and job satisfaction in the East and a continually slow decrease in the West.

Which further risk factors are to be considered: obesity (still more frequent in the East with a slight increase in East German men and decrease in East German women), smoking (still more frequent in East German males, increase in East German women), unemployment (with a steep increase up to 20% in the East vs slow increase to about 10% in the West). Especially, unemployment may have acted as a contributory factor since it negatively affects social status and social status seems to be a very strong risk indicator of BP occurrence and severity.

Finally, selective migration could play a role; between 1990 and 2005 about 9% of the former East German population has moved to West Germany. The net loss amounted to 1.4 million. The drain is highly selective and affects mainly young well qualified persons who are less prone to suffer from BP.

In summary, though some developments (especially unemployment) can be seen as factors contributing to rising prevalence rates in the East, others clearly cannot. This leaves room for additional hypotheses including that of BP as a communicable disease.

The hypothesis raises questions on relevant senders, channels of information and content of messages. In West Germany, BP was and still is widely addressed in the media (especially in the numerous magazines) with mostly negative connotations: it is said to be frequent and unavoidable, a rising tide, mostly due to physical wear and tear, a diagnostic and therapeutic enigma in need of careful medical attention, a leading and acceptable cause of work disability and medical rehabilitation. The above messages are in sharp contrast to what is actually seen as appropriate information and education, i.e. that prognosis may be positively influenced by activity and exercise, optimistic expectations held by patients and health care providers, and good work place support as opposed to being off work for protracted periods of time.

To our knowledge there are no data on beliefs about BP, its causes, prognosis and impact for the former GDR. However, it is clear that after reunification all ‘back myths’ and misconceptions about BP pervasive in Western societies were immediately disseminated in East Germany.

The relevance of social influences for health-related perceptions and behaviours has elegantly been shown only recently by analysing the spread of obesity in social networks in Framingham. Christakis and Fowler suggest, ‘that the psychosocial mechanisms of the spread of obesity may rely less on behavioural imitation than on a change in ego’s general perception of the social norms regarding the acceptability of obesity’ (p. 377). This clearly speaks against
any ‘meme’-concept,\(^3\text{2,33}\) i.e. the more or less automatic transmission (‘replication’) of unaltered ideas, beliefs, behaviours etc from one individual and group to another.

It is obviously impossible to test the ‘back pain as a communicable disease’-hypothesis in a planned ‘inoculation’-experiment. However, Buchbinder et al. have given quasi-experimental evidence that a populations’ BP-related perceptions and amount of work disability can be favourably changed by an intensive state-wide and multimodal intervention.\(^3\text{4,35}\) If psychosocial decontamination seems possible why not contamination? If information can be protective why can’t it be virulent and noxious? The answers may shed new light on an ailment that has been much too long understood mainly in biomedical terms.

**Conflict of Interest:** None declared.

### References


With the lifetime prevalence approaching 100%, virtually all of us have at some point been affected by low back pain (LBP). Although recovery from a LBP episode is generally rapid, the risk of recurrence within 6 months has been reported to be as high as 40%. LBP is the leading cause of work disability in many countries. The search for a specific diagnosis is often frustrating; in 80–90% of cases it is not possible to give a precise pathoanatomical diagnosis despite advanced imaging studies. This has led to the recognition that a simple biomechanical approach to treatment of LBP is futile. Patients’ attitudes and beliefs have been recognized as important in the development and persistence of back-related disability. LBP is therefore best understood through the lenses of the biopsychosocial model of illness.

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Commentary: When East meets West—comments on ‘back pain as a communicable disease’

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