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ORIGINAL ARTICLE

# Health care utilization among first and second generation immigrants and native-born Germans: a population-based study in Germany

**Heide Glaesmer · Ulla Wittig · Elmar Braehler · Alexandra Martin · Ricarda Mewes · Winfried Rief**

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**Abstract**
*Objectives* There are contradictory findings on health care utilization (HCU) of immigrants compared to native-born populations. Our study focuses on this topic using a population-based approach and differentiates generational cohorts of immigrants.
*Methods* In a representative population survey in Germany ($N = 2{,}510$), immigrant background/generational cohort and HCU in the preceding 12 months were screened by means of self-rating instruments.
*Results* 11.1% (7.0% first and 4.1% second generation) of the sample are immigrants. No differences have been detect with regard to subjective state of health, satisfaction with life and with health and functional disabilities. First generation immigrants contacted a medical specialist less likely, but they more frequently use general practitioners (GPs) than the native-born Germans and the second generation immigrants.
*Conclusions* First generation immigrants show remarkable differences in HCU compared to the native-born Germans and the second generation immigrants. Their HCU seems to be focused on primary care, and access to secondary care might be complicated. It seems relevant to especially pay attention to HCU of first generation immigrants and to support equal access to care for this subgroup.

**Keywords** Immigrants · Native population · Health care utilization · Outpatient care · Inpatient care · Generational cohorts approach

## Introduction

15.3 million (18.6%) people with an immigrant background are living in Germany (Statistisches Bundesamt 2006). The growing extent of migration worldwide has reshaped societies and generated new requirements in many areas, especially in health care. Nonetheless, there are few methodically heterogeneous—and unsatisfactory—studies about health status and HCU of immigrants in comparison with native-born populations (Claassen et al. 2005). It is assumed that the experience of migration has an impact on health status of immigrants, even though the type and direction of this relationship is very complex, and there is no clear evidence on it so far (Schenk 2007; McKay et al. 2003; Bhugra et al. 2004). In any case, immigrants are a group of users in the health care system supposedly having different needs (different morbidity, utilization patterns, subjective theories about health and illness etc.) than natives.

Health care consumption is a complex pattern, and immigration possibly influences HCU via multiple pathways. Immigrants show manifold differences (subjective and objective morbidity, access to care, income, education, cultural difference in coping with health problems etc.)

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H. Glaesmer (✉) · U. Wittig · E. Braehler
Department of Medical Psychology and Sociology, University of Leipzig, Leipzig, Germany
e-mail: Heide.Glaesmer@medizin.uni-leipzig.de

A. Martin
Department of Psychosomatics and Psychotherapy, University of Erlangen-Nuernberg, Erlangen, Germany

R. Mewes · W. Rief
Department of Clinical Psychology, Phillips-University Marburg, Marburg, Germany

compared to the native-born populations. Not the least because of this complexity, present empirical findings on health and HCU of immigrants are controversial (Kandula et al. 2004, Norredam et al. 2009). The following compilation of several empirical findings underpins this statement. The US National Health Interview Survey (NHIS) showed that the immigrant health care expenditures are 55% less than those of the native-born population (Mohanty et al. 2005). In the Spanish National Health Survey (NHS), the percentage of immigrants hospitalized in the preceding 12 months was observed to be higher than that of the Spanish population, but the immigrant population consumed fewer medical drugs than the Spanish population (Carrasco-Garrido et al. 2007). In the Swedish Survey on Living Conditions, some groups of immigrants were more likely to consult a physician than native-born Swedes, but this difference is primarily explained by less satisfactory self-reported health status (Hjern et al. 2001). An insurance register study in the Netherlands proved an increased use of general practitioners, of prescribed drugs and of hospital services in particular groups of immigrants compared to the native-born population (Stronks et al. 2001). The English health survey of 1999 showed an extended health care use among immigrants aged 2–20 years compared to the native-born population, but this was better explained by health status than by ethnicity (Saxena et al. 2002). A Swedish study in diabetic patients found no overall differences in health status and HCU, but native-born Swedes reported a higher use of home-care than immigrants in Sweden (Hjelm et al. 1997). A Canadian study showed no differences in average number of medical services of immigrants compared to the native-born population. Immigrants only made more visits to specialists in private offices (Blais and Maiga 1999). And, lastly, a German study found higher utilization rates for some indicators in the native-born population compared to immigrants (e.g., primary care, preventive care) (Blais and Maiga 1999; Zeeb et al. 2004). Findings from the systematic review of Norredam et al. (2009) including 21 European studies, suggest that immigrants tend to have lower attendance and referral rates to preventive screening interventions, more contacts per patient to GPs, and some higher levels of use of specialist care as compared to the non-migrants. For hospitalization, the systematic review revealed contradictory findings. The review illustrates the lack of appropriate epidemiological data. Valid cross-country comparisons are challenging, since the health care systems and categorization of immigrants differ. Nevertheless, systematic variations in somatic healthcare utilization between immigrants and native-born populations are summarized by Norredam et al. (2009).

Recent literature discusses that immigrants are a heterogeneous group with a great variety of experiences, which should be considered in research on health status and health care utilization of immigrants (Kao 2009; Rumbaut 2004). As a consequence, functional indicators need to be implemented in this field of research. The generational cohort approach which distinguishes between foreign-born immigrants (first generation) and second generation immigrants (at least one parent is foreign-born) is one of these indicators. It can be understood as a proxy of immigrant's acculturation in the hosting country (Kao 2009; Rumbaut 2004). According to this approach, the second generation is supposed to have a higher level of acculturation and thus shows health care utilization patterns more similar to the native-born population than the first generation immigrants (Rumbaut 2004). A couple of empirical studies have confirmed this hypothesis (Kao 2009; Steinhausen et al. 2009; Burgos et al. 2005; Rumbaut 2004; Leclere et al. 1994).

The present study was conducted in Germany. Since the specific features of the health care system figure the health care utilization, some information on it might be useful for the interpretation of the findings. In Germany, a general compulsory health insurance is established. The prevailing proportion of the population (including all legal immigrants) is affiliated with this compulsory system. In case of contact with a health professional, one has to pay a quarterly charge (10 Euro). Other services are free at the point of delivery. It is encouraged to visit the GP first, before visiting medical specialists ("gatekeeper function"). Direct consultation of specialists is possible, but results in an additional fee of 10 Euro. The general health care system covers 95%; while about 5% of the population have private insurance (e.g., upper income groups) with a cost reimbursement system and a free choice of doctors.

To underpin the controversial scientific and public debates about HCU of immigrants, reliable empirical evidence is essential. The following study uses a population-based access to investigate the following research questions:

1. Are there significant differences with regard to functional disability, life satisfaction and self-rated health in first and second generation immigrants compared to native-born Germans?
2. Is the immigrant background/generational cohort (first and second generation immigrants compared to native-born Germans) related to the probability and frequency of HCU?

## Methods

### Subjects

A representative sample of the German general population was selected with the assistance of a demographic

**Table 1** Sociodemographic characteristics of the two subsamples

| | Native population ($N = 2,161$) | Immigrants (1st generation) ($N = 171$) | Immigrants (2nd generation) ($N = 100$) |
|---|---|---|---|
| Female gender[n.s.] | 54.8% ($N = 1,185$) | 54.4% ($N = 93$) | 47.0% ($N = 47$) |
| Age (Mean/SD) (years)** | 48.6/17.7 | 46.4/18.3 | 37.9/16.5 |
| 14–34 | 23.1% ($N = 500$) | 32.7% ($N = 56$) | 51.0% ($N = 51$) |
| 35–60 | 48.4% ($N = 1,045$) | 42.1% ($N = 72$) | 39.0% ($N = 39$) |
| 61–93 | 28.5% ($N = 616$) | 25.1% ($N = 43$) | 10.0% ($N = 10$) |
| Unemployment* | 6.0% ($N = 130$) | 11.1% ($N = 19$) | 13.0% ($N = 13$) |
| Education** | | | |
| Basic education | 43.4% ($N = 938$) | 61.4% ($N = 105$) | 37.0% ($N = 37$) |
| Secondary school | 42.5% ($N = 918$) | 19.3% ($N = 33$) | 50.0% ($N = 50$) |
| A-level/university etc. | 14.1% ($N = 305$) | 19.3% ($N = 33$) | 13.0% ($N = 13$) |
| Marital status** | | | |
| Married | 54.1% ($N = 1,150$) | 63.7% ($N = 109$) | 40.0% ($N = 40$) |
| Single | 25.1% ($N = 543$) | 17.5% ($N = 30$) | 49.0% ($N = 49$) |
| Divorced | 10.9% ($N = 235$) | 8.2% ($N = 14$) | 9.0% ($N = 9$) |
| Widowed | 10.8% ($N = 233$) | 10.5% ($N = 18$) | 2.0% ($N = 2$) |
| Household income[n.s.] | | | |
| Up to 1,250 €/month | 22.9% ($N = 471$) | 25.6% ($N = 43$) | 27.6% ($N = 27$) |
| 1,250 € to 2,500 €/month | 50.9% ($N = 1,048$) | 55.4% ($N = 93$) | 42.9% ($N = 42$) |
| Over 2,500 €/month | 26.2% ($N = 538$) | 19.0% ($N = 32$) | 29.6% ($N = 29$) |

* $p < 0.01$; ** $p < 0.001$ ($\chi^2$ tests); *n.s.* not significant

consulting company (USUMA, Berlin, Germany). The area of Germany was separated into 258 sample areas representing the different regions of the country. Households of the respective area and one member of this household fulfilling the inclusion criteria (age at or above 14, able to read and understand the German language) were selected randomly by Kish-selection-grid technique. The Kish-selection-grid technique is aimed to sample individuals on the doorstep among household residents. The system is devised so that all individuals in a household have an equal chance of selection. The sample was designed to be representative in terms of age, gender, and education. A first attempt was made for 4,205 addresses, of which 4,055 were valid. If not at home, a maximum of three attempts was made to contact the selected person. All subjects were visited by a study assistant, informed about the investigation (covering several research questions), and self-rating questionnaires were presented. The assistant waited until participants answered all questionnaires and offered help if persons did not understand the meaning of questions. A total of 2,510 people between the ages of 14 and 93 years agreed to participate and completed the self-rating questionnaires (participation rate: 61.9% of valid addresses) in May and June 2007.

Immigrant background was assessed according to the recommendations of Schenk et al. (2006) including country of origin of both parents, duration of stay in Germany, knowledge of the German language and residence status. If at least one parent was born abroad, subjects were classified as having an immigrant background ($N = 271$; 11.1%). For linguistic simplification, subjects with immigrant background are denoted as immigrants in the following text. For our analyses, we differentiated between first generation (foreign-born) and second generation (with at least one parent who immigrated to Germany) immigrants (Rumbaut 2004). In 78 subjects (3.1%), information about the country of origin of one parent was missing. These subjects were excluded from the following analyses. Table 1 gives an overview of sociodemographic characteristics. Immigrants, especially second generation immigrants, are younger and more often unemployed. First generation immigrants show an increased proportion of basic education and of married people compared to the native-born Germans. There are no differences between the subgroups with regard to gender and household income.

## Assessment instruments

### *HCU*

Subjects were asked to rate if and how frequently they visited 17 different doctors during the previous 12 months (general practitioners, medical specialists, psychiatrists and psychotherapists). The total number of doctor visits in the

prior 12 months was calculated by adding up the frequencies. In a second step, the probability to visit a doctor (yes/no) and—if there was at least one contact—the number of visits was evaluated. Moreover, sick leave (number of days) and hospitalization (number of nights staying in hospital) were assessed. All items on HCU are assessed according to the German National Health Interview and Examination Survey (Bergmann and Kamtsiuris 1999).

*Disability*

Functional disability was assessed with a modified Pain Disability Index (PDI) (Pollard 1984; Dillmann et al. 1994; Mewes et al. 2009), which measures disability by somatic symptoms in seven areas of daily living (family/home responsibilities, recreation, social activities, occupation, sexual behaviour, self-care, life-support activity). Response categories ranged from 0 ("no disability") to 10 ("total disability"), the total score ranged from 0 to 70.

*Self-reported state of health*

Subjects were asked to rate their general state of health on a visual analogue scale from 0 (worst imaginable health status) to 100 (best imaginable health status) according to the EQ-5D (Brooks et al. 2003).

*Life satisfaction*

The self-rating scale on Life Satisfaction-General Life Satisfaction-module ($FLZ^M$) was used to screen for life satisfaction (Henrich and Herschbach 2000). This questionnaire shows good internal consistency ($\alpha = 0.82$) and validity (Henrich and Herschbach 2000). Subjects were asked to rate their satisfaction with eight areas of life (friends/acquaintances, leisure time/hobbies, health, income/financial security, occupation/work, housing/living conditions, family life/children, partner relationship/sexuality). Response categories ranged from 'dissatisfied' (1) to 'very satisfied' (5), the total score ranging from 8 to 40.

*Statistical analyses*

Statistical analyses were made with SPSS 15.0. The research question 1 was investigated using analyses of variance including age, gender and generational cohort/immigrant background as factors. To examine the differences between native-born Germans and the two subgroups of immigrants', post-hoc-tests were performed. Research question 2 was investigated by means of linear resp. logistic regression models including age, gender, and immigrant background/generational status as predictors. Considering immigrant background and generational status, the sample was divided into native-born Germans, first and second generation immigrants. In the regression analyses, a dummy coding was used for the variable immigrant background/generational status. The native-born subsample was defined as the reference category.

## Results

### Characteristics of the immigrant subsamples

Table 2 shows detailed information of both immigrant subgroups. 36.9% of the immigrants belong to the second generation of immigrants. The prevailing proportion of the first generation remained in Germany for a long time. Only 28.7% have lived in Germany less than 15 years. Most of

**Table 2** Characteristics of the subsamples of immigrants

| | Immigrants (1st generation) ($N = 171$) % ($N$) | Immigrants (2nd generation) ($N = 100$) % ($N$) |
|---|---|---|
| Knowledge of German language | | |
| First language | 26.9 (46) | 76.0 (76) |
| Very good | 20.5 (35) | 18.0 (18) |
| Good | 31.6 (54) | 5.0 (5) |
| Fair | 17.5 (30) | 1.0 (1) |
| Little | 2.3 (4) | – |
| Duration of stay in Germany | | |
| Up to 14 years | 28.7 (49) | – |
| 15–30 years | 47.4 (81) | – |
| Over 30 years | 24.0 (41) | – |
| Since birth | – | 100.0 (100) |
| Residence status | | |
| German citizenship | 64.7 (110) | 82.0 (82) |
| Open-ended permit to stay | 32.4 (55) | 18.0 (18) |
| Temporary permit to stay | 2.9 (5) | – |
| Country of origin of the parents[a] | | |
| Both Balkans | 7.0 (12) | 6.0 (6) |
| Both early EU-countries | 7.6 (13) | 6.0 (6) |
| Both Eastern Europe | 20.5 (35) | 8.0 (8) |
| Both former Soviet Union | 26.9 (46) | 3.0 (3) |
| Both Turkey | 11.1 (19) | 23.0 (23) |
| Both other countries | 20.5 (35) | 7.0 (7) |
| Parents from different countries | 1.7 (3) | 2.0 (2) |
| Only mother immigrated | 1.2 (2) | 16.0 (16) |
| Only father immigrated | 3.5 (6) | 29.0 (29) |
| Binational (total) | 4.7 (8) | 45.0 (45) |

[a] Balkans (former Yugoslavia, Bosnia-Herzegovina, Kosovo, Croatia, Macedonia, Serbia); early EU-members (France, Greece, Austria, Spain, Italy); former Soviet Union (Russia, Ukraine, Belarus, Kazakhstan)

the immigrants, especially of the second generation, are citizens of Germany. 26.9% of the first generation immigrants, but 76.0% of the second generation immigrants, indicate German as their first language. The countries of origin show a typical distribution for Germany; in the second generation immigrants with Turkish origin are the largest subgroup.

### Functional disability, life satisfaction and self-rated health in first and second generation immigrants and the native-born Germans

The factor immigrant background/generational cohort has no overall significant effect on functional disability, overall life satisfaction, satisfaction with health and self-rated health in the analyses of variance additionally including age and gender. (see Table 3).

### HCU in first and second generation immigrants compared to the native-born Germans

Tables 4, 5 summarize the HCU characteristics of the subsamples. Every subject had at least one visit to a doctor in the previous 12 months. In a first step, the probability to visit a doctor was investigated by logistic regression analyses (see Table 4). First generation immigrants are significantly less likely to contact a specialist compared to second generation immigrants and to native-born Germans even when controlling for age and gender. No significant differences in the probability to visit general practitioners and in hospitalization and sick leave days were found.

In a second step, the frequency of consultations in the subjects with at least one visit of particular doctors were analyzed by the analyses of variance (see Table 5). If first generation immigrants are visiting general practitioners, they have a significantly higher frequency of consultations than second generation immigrants and the native-born Germans. First generation immigrants had significantly extended hospitalization compared with the native-born Germans and second generation immigrants.

## Discussion

The population-based study compared health status and HCU of first and second generation immigrants and native-born Germans. No differences between first and second generation immigrants and native-born Germans with respect to self-reported health, satisfaction with life, satisfaction with health and functional disabilities were found. The analyses of the HCU data yielded some differences: first generation immigrants consult specialists less often, but show a higher frequency of visits to general practitioners than the second generation immigrants and the native-born population. In summary, first generation immigrants showed remarkable differences in health care utilization compared to the native-born population and the second generation immigrants. Their health care utilization seems to be focused on primary care and access to secondary care might be complicated. This fact might be partially explained by lower educational status and lower household income as socioeconomic factors associated with the lower health care utilization. To access secondary care, knowledge about the health care system and its mechanisms of delivery is useful. First generation immigrants might be less informed about the system, and a restricted knowledge of German language (which is more common in first generation immigrants) might prevent this subgroup from participating in the health care system actively. The inverse care law (Hart 1971) describes that good medical care is more likely to be delivered to where it is most profitable and less likely where it is most needed. Immigrants might have special needs, but they are certainly not the most profitable target group in health care. Thus, the inverse care law conceptualizes mechanisms not attributable to individual factors (knowledge about the system or linguistic competence) of the immigrants. It focuses on market mechanisms in health care which might be considered too.

Moreover, the extended duration of hospitalization in first generation immigrants is striking. In depth analyses on the reasons that led to this durations are needed, because, on the basis of our data, it is impossible to find out if it is an effect of morbidity, of different (culturally influenced)

**Table 3** Functional disability, life satisfaction and self-rated health in the subsamples

| | Native-born Germans ($N = 2{,}161$) | Immigrants (1st generation) ($N = 171$) | Immigrants (2nd generation) ($N = 100$) | Analyses of variance[a] |
|---|---|---|---|---|
| | M (SD) | M (SD) | M (SD) | $F^{immigr.}$ |
| Self-rated health | 79.9 (19.4) | 78.8 (18.7) | 86.6 (16.1) | (2,2379) = 2.15, n.s. |
| Satisfaction with life (total) [$FLZ^M$] | 30.7 (5.8) | 30.7 (5.9) | 31.6 (85.9) | (2,2246) = 2.48, n.s. |
| Satisfaction with health [$FLZ^M$] | 3.8 (1.1) | 3.9 (1.1) | 4.1 (1.1) | (2,2407) = 0.05, n.s. |
| Functional disability [PDI] | 7.0 (11.7) | 7.3 (12.1) | 4.8 (9.8) | (2,2388) = 0.46; n.s. |

[a] Including age, gender and generational cohort/immigrant background as factors

**Table 4** Probability of HCU and sick leave of first and second generation immigrants and native-born Germans

| Yes/no within the last 12 months | Probability of utilization[a] | | | Logistic regression[b] OR (CI)[immigr.] |
|---|---|---|---|---|
| | Immigrants (1st generation) % (*N*) | Immigrants (2nd generation) % (*N*) | Native-born Germans (NBG) % (*N*) | |
| Outpatient care | | | | |
| Doctor visits (total) | 100 (171) | 100.0 (100) | 100 (2,161) | – |
| GP | 67.8 (116) | 64.0 (64) | 74.3 (1,606) | n.s. |
| Psychiatrists | 6.4 (11) | 1.0 (1) | 2.9 (63) | –[d] |
| Psychotherapists | 2.9 (5) | – | 2.5 (54) | –[d] |
| Specialists | 75.4 (129) | 78.0 (78) | 84.3 (1,822) | NBG: Ref. |
| | | | | 1st G: 0.575 (0.396–0.834)** |
| | | | | 2nd G: 0.748 (0.454–1.232) |
| Hospitalization (yes) | 11.1 (19) | 8.0 (8) | 8.2 (177) | n.s. |
| Sick leave[c] (yes) | 36.6 (30) | 34.4% (21) | 30.2 (304) | n.s. |

*NBG* native-born Germans, *1st G* first generation immigrants, *2nd G* 2nd generation immigrants

** $p < 0.01$; *n.s.* not significant

[a] Percentage of persons with at least one contact

[b] Logistic regression analyses including factors immigration group (first, second generation and native-born Germans coded as dummy variables, native-born Germans as reference category), gender and age

[c] 1,187 native-born Germans and 101 first generation and 74 second generation immigrants full or part time working included in these analyses

[d] Not tested because of the small sample sizes in the subgroups

**Table 5** Frequency of HCU and sick leave of first and second generation immigrants and native-born Germans

| Number of visits within the last 12 months | Frequency of utilization[c] | | | Analyses of variance[a] | |
|---|---|---|---|---|---|
| | Immigrants (1st generation) Mean (SD) | Immigrants (2nd generation) Mean (SD) | Native-born Germans (NBG) Mean (SD) | $F^{immigr.}$ | Post-hoc-tests[immigr.a] |
| Outpatient care | | | | | |
| Doctor visits (total) | 10.35 (14.9) | 7.55 (9.7) | 8.65 (10.2) | 2.51 | n.s. |
| GP | 5.04 (5.6) | 3.76 (3.4) | 3.99 (4.9) | 3.57* | NBG < 1st G |
| Psychiatrists | 4.73 | – | 3.11 (3.1) | –[d] | –[d] |
| Psychotherapists | 14.60 | – | 10.2 (13.5) | –[d] | –[d] |
| Specialists | 6.06 (7.5) | 5.03 (5.5) | 5.38 (6.7) | 1.31 | n.s. |
| Hospitalization (nights) | 21.42 (26.9) | 5.75 (4.5) | 11.8 (12.6) | 6.97** | NBG, 2nd G < 1st G |
| Sick leave[b] (days) | 10.7 (7.6) | 7.76 (6.2) | 16.4 (41.3) | 0.34 | n.s. |

*NBG* native-born Germans, *1st G* first generation immigrants, *2nd G* 2nd generation immigrants

* $p < 0.05$; ** $p < 0.01$; *n.s.* not significant

[a] Analyses of variance including factors immigration group, age and gender; results of the post-hoc-tests for the differences between the groups first generation, second generation and native-born Germans (NBG)

[b] 1,187 native-born Germans and 101 first generation and 74 second generation immigrants full or part time working included in these analyses

[c] Means for the persons with at least one contact

[d] Not tested because of the small sample sizes in the subgroups

health behaviour or different social circumstances. Nevertheless, in the present study no differences between first and second generation immigrants and native-born Germans with regard to subjective state of health were found.

According to the generational cohorts approach (Rumbaut 2004), which understands the cohorts as a proxy of immigrant's acculturation, second generation immigrants are expected to have a higher degree of acculturation and

thus show more similar HCU (compared to the native-born Germans) than the first generation immigrants. Our findings underpin this hypothesis, showing significant differences between the first generation immigrants and the two other groups, whereas second generation immigrants showed very similar patterns to the native-born Germans.

Under methodological aspects, it has to be mentioned that our study includes immigrants who have a good knowledge of the German language, have been living in Germany for years or since their birth, and who mostly have a stable residence status. Here, the study provides information about "unexceptional immigrants" in the German society and not about refugees or immigrants who have recently arrived or are unable to speak German and understand the German language. The immigrants which are included in our study are the biggest group of immigrants in Germany on the one hand, but this group might not be the one with the biggest lack of appropriate health care on the other hand. The findings determined by this population-based approach deliver information in the main and do not consider the possible problems in special subgroups of immigrants.

Our population-based approach has some advantages (e.g., size; representativeness of the sample of native-born Germans according to age, gender and education; possibility of comparing native-born Germans and immigrants). On the other hand, the subsample of immigrants is not very big, and it has to be considered that this fact restricts the possibility of detecting significant differences between first and second generation immigrants.

Moreover, as mentioned above, immigrants are a heterogeneous group, and the generational cohorts approach is only a first step scrutinizing subgroups characteristics. A more extensive operationalization of this heterogeneity would be useful. As named earlier, our study sample includes prevailingly "unexceptional immigrants" for Germany, and thus heterogeneity might be downsized. Nevertheless, a broader operationalization of acculturation would be useful, but considering the sample size of our study, it was not feasible.

Considering the results of the present study, it has to be summarized that generational cohorts and their impact on health care utilization of immigrants in Germany are substantive. Second generation immigrants show similar patterns of HCU compared to the native-born Germans. First generation immigrants have less access to secondary care compared to the native-born Germans and the second generation immigrants. Thus, it seems relevant to pay special attention to health and health care utilization of first generation immigrants and to support equal access to care for this subgroup.

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