



Health-related quality of life among migrants and natives in Hamburg, Germany: An observational study



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ARTICLE INFO

Keywords:

Health-related Quality of Life
Migrants
Natives
Sociodemographics
Socioeconomics

ABSTRACT

Purpose: The aim of this observational study was firstly, to assess the Health-related Quality of Life (HrQoL) among migrants and German natives in Hamburg, Germany, using the SF-12 mental and physical summary scores and secondly, to evaluate the contribution of selected sociodemographic and socioeconomic variables to explain the variance in mental and physical HrQoL separately for migrants and natives.

Methods: Face-to-face interviews were conducted with n=809 participants between May 2018 and July 2019 in six randomly selected statistical districts of Hamburg grouped into four levels of socioeconomic status (SES). The SF-12 questionnaire was used to measure the HrQoL. Socioeconomic (school education, income) and sociodemographic (age, gender, marital status, children) data was recorded, too.

Results: Migrants and natives scored higher in mental (migrants: M=45.77, SD=7.66; natives: M=47.60, SD=6.14) than in physical HrQoL (migrants: M=42.55, SD=5.55; natives: M=42.03, SD=4.71). Natives had a significantly higher ($p<0.001$) SF-12 mental summary score than migrants. There was a positive association between education and mental HrQoL ($\beta=0.248$, $p=2.308$) in the migrant group but not in the native group. Due to limitations of the study the results of the impact of migration on the HrQoL require interpretation.

Conclusion: Differences between migrants and German natives in HrQoL were partially confirmed. Future research should differentiate more strongly between migration contexts as well as other determinants of health (e.g. early life, social support, unemployment) and their policy implications according to the WHO.

1. Introduction

There is an ongoing progress of globalization and the mobility of people rises. People have always migrated, including to Germany. Currently, the German Federal Statistical Office reports that every fourth person in Germany has a migration background. That is to say, about 21 million people of nearly 82 million people living in Germany have a migration status. In terms of official city populations, Hamburg is the second biggest city in Germany and 29.2% of all residents living there have a migration background [1].

In Germany, the administrative term 'migrant' was firstly defined by the German Federal Statistical Office in 2005 [2]. According to this definition, a person does not need to have own migration experience, but at least one parent not acquiring the German citizenship at birth; otherwise we use the term 'non-migrant' or 'native'. People with a mi-

gration background in Germany and in Hamburg predominantly come from Turkey, followed by Poland and the Russian Federation.

According to a systematic review, Health-related Quality of Life (HrQoL) of migrants was generally reported to be poorer compared to natives [3]. The subjective physical and mental HrQoL of Turkish and Polish migrants was shown to be poorer relative to a German norm population. Self-perceived discrimination, school education, gender, as well as age significantly influenced the HrQoL of these migrant groups [4].

Results obtained with the WHOQOL-100 indicated that Turkish migrants living in Sweden showed a moderate HrQoL. Explanatory variables for lower sum scores were age (younger people scored higher than the older age groups except in the dimension of social relationships), marital status (single migrants had better scores for all domains than married or divorced and widowed migrants) and education (more educated migrants reported better HrQoL) [5]. In addition, the HrQoL of

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<https://doi.org/10.1016/j.jmh.2021.100045>

Received 18 November 2020; Received in revised form 3 December 2020; Accepted 10 April 2021

Available online 26 April 2021

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male migrants was higher than that of female migrants. The fact that women's HrQoL is poorer than that of men has been confirmed in various studies [4,6,7]. These gender differences are particularly affected by health inequalities and inequities [8] and a neglect of women's role in past migration [9].

A group of Iraqi migrants reported moderate HrQoL scores which was significantly affected by gender and marital status. Women had significantly lower scores than men in physical HrQoL ($p=0.007$) and married migrants had higher scores in mental HrQoL ($p=0.004$) [10]. The potential of social support in form of distinctive familial network of migrants was discussed in past [11]. In this respect, Baykara-Krumme [12] emphasized the health promoting resources like (grand-) children and friends as well as experiences of familiarity.

The link between a low socioeconomic status (SES) and HrQoL was shown in numerous studies [13,14,15]. Data confirmed that Turkish migrants generally have a much lower monthly net-income than people without migrant background [16,17,18]. The level of education is correlated to health, too, partly because education has an effect on knowledge of health services, health support, the use of prevention and health promotion [18,19]. Therefore, a low educational level among migrants may cause a lack of information concerning health. The group of migrants with a low educational level was reported to be relatively high [20].

Most information about migration (background) and HrQoL has come from studies carried out for one specific migrant group (like migrants from Turkey, from Greece, Iraqi migrants etc.) strive to compare with the native population to determine possible effects of migration on HrQoL. In this regard, there is very little research carried out on the HrQoL aspects of different migration groups living in one city. Therefore, we have seen the necessity to prepare a database of migrants and natives settled in the same city. In addition, research on HrQoL of migrants arose at the beginning of the 90s, continued for nearly 20 years and is currently stagnating. Most studies focus on migrant's HrQoL in a clinical context (of patients with migration background) and there is a rising focus on refugees, who form a different group. Existing research studies in international context and especially in Germany are outdated. Consequently, recent studies on HrQoL of migrants are rare, although migration movements are still ongoing.

We are not aware of any study investigating the HrQoL in migrants and non-migrants in Hamburg, Germany. Thus, we aim to compare HrQoL between these groups using data from six separate culturally diverse districts.

2. Material and methods

2.1. Study design and research question

This is a cross-sectional design with 799 interviews. This is the first observational study exploring HrQoL among migrants and non-migrants and combining two different aspects of HrQoL: the first objective is to assess the mental and physical HrQoL among migrants and German natives living in Hamburg, Germany, and explore possible differences. The second objective is to evaluate associations between selected socioeconomic as well as sociodemographic characteristics and the HrQoL mental and physical sumscores separately for migrants and natives.

The first hypothesis assumes that migrants show poorer HrQoL both in terms of mental and physical HrQoL, compared with natives. The second hypothesis proposes that some determinants (e.g. marital status, having children) might have positive whereas others (e.g. poor school education, low income) have negative influence on HrQoL.

2.2. Place of study

The present study took place in the City of Hamburg, Germany. Hamburg is divided into 941 statistical districts which are areas with up to 6,000 inhabitants. Hamburg has set up a process which is called social

monitoring in order to identify neighbourhoods with a need for further urban development. Therefore, statistical districts were grouped into four levels of SES (very low, low, middle and high) based on seven indicators [21]: (1) children and adolescents with migration background; (2) children of single parent families; (3) recipients of basic social security benefits; (4) unemployed; (5) children receiving basic social security benefits; (6) elderly persons (65 years and older) receiving basic social security benefits, and (7) portion of pupils leaving schools with low educational levels. The selection of these indicators was preceded by an interdisciplinary discussion with the aim of identifying social problems that require special action (e.g. language courses, childcare). For the current study, we randomly selected six statistical districts grouped into four levels of socioeconomic status (SES): Two districts with a very low status, two with a low status, one district with a middle high status and one district with a high status.

2.3. Target population

For each of these six districts we retrieved a list of randomly selected 800 subjects from the city's residents' registration office. Participants in this study were women, men and diverse, aged between 18-80 years, as well as living in one of these selected six districts with different SES. Participants were divided into migrants and non-migrants according to the definition of the statistical office: belonging to the group 'migrant' required at least having one parent not acquiring the German citizenship at birth.

2.4. Procedures

Trained interviewers approached randomly selected participants (using data from the registration office) in their homes (active approach) using a standardized questionnaire. These subjects were invited to participate in a face-to-face interview (30-40 minutes) or to fill out the interview questionnaire themselves if they preferred.

The interviews were carried out by 80 interviewers. These were students, retired persons and volunteers. We considered an evenly distribution between female and male interviewers speaking different languages to account for possible gender, culture and language related barriers. All interviewers were trained in the content and the aim of the project, and in the appropriate ways of addressing participants and conducting an interview. This heterogeneous group of well-educated interviewers in conducting interviews with the focus on minority groups aimed at minimizing selection bias.

People not willing to participate (e.g. due to mistrust, fear and a lack of motivation) in this study, could visit the project team at a weekly offered information point (passive approach). In addition, people were recruited at parks, outside their living places, at food markets and shopping centers (after checking for their names and address matching as a condition for participation). All the participants were informed in advance of the interview of the procedure. During the interviews consisted transparency regarding the procedure existed. This means that participants could ask questions and receive information about the study at any time of interview. This allowed a trustful relationship between interviewer and interviewees and enabled the detection of personal information (e.g. question regarding the income).

Steps to obtain the participants' cooperation included information about the study in general, its content and its aim. Respondents were informed that participation was entirely voluntary and that data obtained from the survey would be analyzed purely anonymously. Participant gave written informed consent and were paid 10 € in compensation for their time and effort. The study protocol was approved by the ethical committee of the Competence Center Health of the Hamburg University of Applied Sciences (Approval from 20.7.2018; DRKS-ID: DRKS00014768). The survey was conducted between May 2018 and July 2019. Overall, $n=4,800$ (800 in each district) habitants were initially planned to interview. After adjusting for neutral losses (reloca-

tion or death), $n=4,498$ have been asked for participation. Out of these $n=809$ (response rate 17.8%) participated.

2.5. Measures

The HrQoL was assessed using the validated Short Form-12 (SF-12; German version) [22]. This is a generic instrument which considers the subjectivity and multidimensionality of HrQoL. It consists of 12 items and eight dimensions (Physical Functioning (PF), Role Physical (RP), Bodily Pain (BP), General Health (GH), Vitality (VT), Social Functioning (SF), Role Emotional (RE) and Mental Health (MH)) which are summarized into a physical and a mental health component. Every item is scaled and participants answer either by a binary (yes-no) option or by rating on a Likert scale. SF-12 mental and physical summary scores were calculated using the manual from Ware [23]. Analyzing the results is straightforward, because it requires basically a calculation of summary scores, which will be transformed into values of between 0 and 100 (with 100 representing the highest and 0 the lowest level of HrQoL). This, consequently, allows the interpretation of the summary scores and comparison between different participants.

Sociodemographic data included age, gender, marital status, children and migration background. Age was assessed by asking for the year of birth, gender was classified in three categories (women, men, diverse), marital status was assessed by asking the question 'what is your marital status?', having children was assessed by the question 'do you have children? If yes: how many?' Migration background was recorded using the question regarding parents ('in which country were your parents born?'). Socioeconomic data included school education (question: 'for how many years did you go to school?') and household income, which was determined according to the self-reported income per household using the following question: 'What is your monthly household net income (after taxes and health and social contributions)?'

To ensure that migrants with poor German language skills could adequately reply to the questions, participants were given the opportunity to answer in the native languages (Turkish or Polish) of the two largest migration populations in Hamburg and in Germany respectively. The German version was therefore translated forward into Turkish and Polish and pre-tested on native speakers with a Turkish and Polish migrant background. Afterwards, native speakers were responsible for back translation and a comparison with the German source version.

2.6. Statistical analyses

Statistical analyses were computed using IBM SPSS Version 22. Descriptive statistics are reported as means \pm standard deviations (SD), absolute frequencies, percentages and 95% confidence intervals (CI). Differences between migrants and natives were analyzed using t-test.

Multiple regression analysis was used to analyze associations between the above mentioned sociodemographic as well as socioeconomic variables and SF-12 physical and mental summary scores. Data was checked for regression assumptions (outliner, linearity, multicollinearity, no-zero-variance, no autocorrelation, homoscedasticity) [24]. Bootstrapping based on 1000 samples was carried out to validate the results. Statistical significance was assessed for $p < 0.05$. Six independent sociodemographic and socioeconomic variables were chosen for regression analysis: age (years), gender (two categories: women and men; 'diverse' was named by only one person), school education (years), household income (monthly net income, absolute numbers), marital status (two categories; dichotomized according to whether the respondent was single or married/cohabiting), children (absolute numbers).

The reasons for selecting these variables are explained by current literature. Since migrants' health is often seen from a problem-based perspective, various factors determining health negatively are considered: the health is negatively related to the socio-economic status (SES) e.g. in form of low income and school education resulting in problems of gaining access to the health-care system or interacting herein [5,25]. How-

ever, health of migrants should not be seen only from a problem-based perspective, but from a resources-orientated perspective, too. Particularly, there are determinants that have a positive influence on migrants' health such as strong familial and ethnic networking and a relationship to own children [26].

3. Results

Sociodemographic and socioeconomic data could be computed for $n=755$ participants (see Table 1). Natives with a mean age of 51.6 were slightly older than migrants. Women were slightly overrepresented in both groups. A higher percentage of respondents with migration background reported living with another person like a child or grandchild. The socioeconomic data illustrates that more natives reported receiving a monthly income higher 3,500€ compared to migrants. There weren't significant results between both groups regarding gender and their school education. The majority of migrants had predominantly at least one parent (mother or father) from Turkey, followed by Poland and Russia (see Table 2).

Summary scores of HrQoL could be computed for $n=252$ migrants and $n=413$ natives. As seen in Figure 1, both migrants and natives scored higher in mental (migrants: $M=45.77$, $SD=7.66$; natives $M=47.60$, $SD=6.14$) than in physical (migrants: $M=42.55$, $SD=5.55$; natives: $M=42.03$, $SD=4.71$) HrQoL. There were significant differences in mental health summary scores between migrants and natives.

Figure 2 illustrates HrQoL according to migration background, age and gender. T-test showed no significant differences between women and men in mental as well as in physical summary scores separately for migrants and natives. Both groups score lower in physical HrQoL with an increase of age.

After running forward regression analysis with six sociodemographic and socioeconomic independent variables separately for migrants and natives, the results showed only school education to play a significant role for mental HrQoL in the migrant group: mental HrQoL increases with an increase of school education. In contrast, for natives, none of the included variables contributed significantly to mental HrQoL.

Regarding physical HrQoL, only age was found to be significant in both groups. Reasonably, physical HrQoL decreased with an increase of age (Tables 3 and 4).

4. Discussion

To summarise the results of this study: First, migrants scored lower in mental HrQoL than natives, but not in physical HrQoL. This can be seen in accordance with Morawa and Erim [4] for example, who reported poorer mental HrQoL of Polish and Turkish migrants compared with Germans. They explained this as resulting from significantly higher discrimination experiences. More precisely, especially Turkish migrants felt significantly more discriminated in the neighbourhood, in grocery stores and in agencies. Studies on the relationship between psychological stress and mental health of migrants were mostly discussed in the context of acculturation stress, discrimination and a lack of identification with the society [27]. Brand et al. [28] assessed the association between acculturation as a concept of social integration and SF-8 HrQoL between $n=1,226$ Turkish migrants and Germans with a mean age of 42 years. They found that separation (a form of low acculturation process in the host country) was significantly associated with lower mental summary scores.

A previous study suggested that migrants' premigratory expectation of future life at the destination may have an important effect on their postmigratory mental health. This means, that an overoptimistic or unrealistic premigratory expectation may lead to mental health problems post migration [29].

The feeling of emptiness for psychological health, was assessed among Turkish migrants in Germany using a dataset with $n=4045$ Turkish participants aged 18–80 [30]. The aim was to assess whether sex,

Table 1

Background demographics and socioeconomic status of migrants and natives. M=Mean, SD=standard deviation.

	Migrantsn = 284	Nativesn = 471	p-value*
Age (years)	n = 257	n = 457	< 0.001
M (SD) ¹	39.6 (14.1)	51.6 (16.8)	
Gender	N (%)	N (%)	0.271
Female	166 (58.5)	259 (55.0)	
Male	116 (40.8)	210 (44.6)	
Diverse	1 (0.4)	-	
Not specified	1 (0.4)	2 (0.4)	
German mother language	N (%)	N (%)	< 0.001
Yes	68 (23.9)	463 (98.3)	
No	211 (74.3)	6 (1.3)	
Not specified	5 (1.8)	2 (0.4)	
Marital status	N (%)	N (%)	0.03
Single	73 (25.7)	104 (22.1)	
Partnership or Married	172 (60.6)	293 (62.6)	
Separated/Divorced	22 (7.8)	41 (8.7)	
Widowed	8 (2.8)	22 (4.7)	
Not specified	9 (3.2)	11 (2.3)	
Living situation	N (%)	N (%)	< 0.001
Alone	26 (9.2)	98 (20.8)	
Partner/Husband/Wife	119 (41.9)	272 (57.7)	
With another person (e.g. children)	119 (41.9)	86 (18.3)	
Not specified	20 (7.0)	15 (3.2)	
School education	N (%)	N (%)	0.406
Not at all/none	3 (1.1)	-	
1-5 years	9 (3.2)	6 (1.3)	
6-10 years	67 (23.6)	181 (38.4)	
11-13 years	81 (28.5)	125 (26.5)	
> 13 years	72 (25.4)	127 (27.0)	
Not specified	52 (18.3)	32 (6.8)	
Household income. net	N (%)	N (%)	0.001
< 1,000€	37 (13.0)	39 (8.3)	
1,000€ ≤ 1,500€	34 (12.0)	49 (10.4)	
1,500€ ≤ 2,000€	17 (6.0)	46 (9.8)	
2,000€ ≤ 2,500€	23 (8.1)	34 (7.2)	
2,500€ ≤ 3,000€	16 (5.6)	38 (8.1)	
3,000€ ≤ 3,500€	19 (6.7)	47 (10.0)	
3,500€ ≥	31 (10.9)	100 (21.2)	
Not specified	107 (37.6)	118 (25.1)	

* Significance testing: chi-square test for nominal data, Mann-Whitney-U-test for ordinal data, t-test for numeric variables.

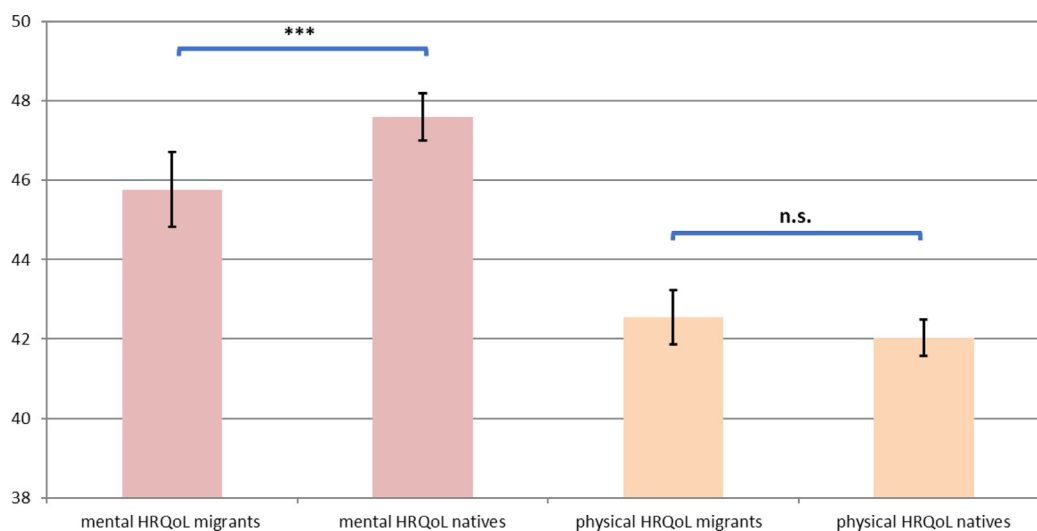


Fig. 1. Physical and Mental HrQoL with 95% CI. Comparison between migrants (n=252) and natives (n=413). Differences in means (t-test) significant at p<0.001 *** n.s.=not significant

Further testing: There were no significant differences for migrants and natives in physical and mental HrQoL after adjusting for age. There were no significant differences for migrants and natives in physical and mental HrQoL after adjusting for age and gender.

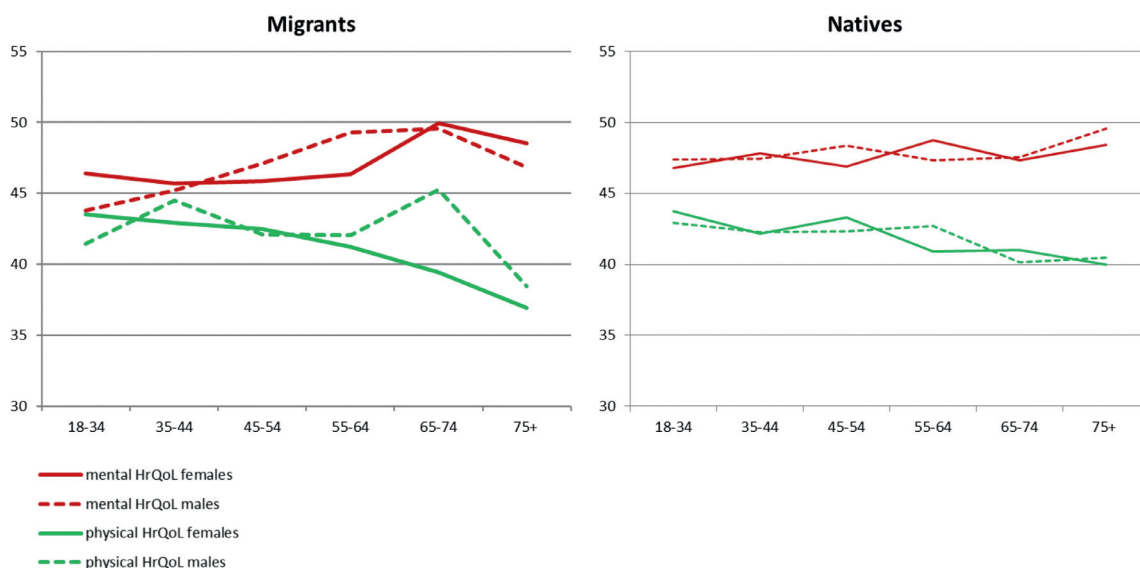


Fig. 2. Physical and Mental HrQoL summary scores according to gender and age groups. Comparison between migrants (n=252) and natives (n=413)

Table 2
Background demographics of migrants (n=284) by country of origin.

	Background MotherN (%)	Background FatherN (%)
Turkey	62 (21.8)	68 (23.9)
Poland	33 (11.6)	30 (10.6)
Russia	22 (7.7)	21 (7.4)
Kazakhstan	11 (3.9)	11 (3.9)
Afghanistan	12 (4.2)	11 (3.9)
Ghana	8 (2.8)	8 (2.8)
Other or n.a.	148 (52.0)	149 (52.5)

age, SES and social network could predict a feeling of emptiness. The author concluded that first-generation migrants (born in Turkey), both male and female, in all age groups experienced a higher risk of having feelings of emptiness than did the general population, and that these risks declined when SES and age were adjusted for.

Migration is seen as a critical life process that can trigger certain stressors [31]. Spallek, Zeeb and Razum [25] named various conditions in the host country as influencing migrants' health: feeling foreign, separation from family, racism, language and comprehension problems, different cultural and traditional ways of life. But in addition, they concluded that lower educational status and social standing may influence migrant's health negatively. This could explain our second result that school education was significantly associated with mental HrQoL within

the group of migrants. There was no association between household income and HrQoL and our results according to the socioeconomic data show migrants not being disadvantaged according to their monthly income.

This could be explained by receiving financial support or unemployment benefits [32].

A possible negative effect of low school education was also supported by Bayram et al. [5]. Migrants should, due to these stressors, receive support from health systems and medical staff. However, low education level of migrants could lead to low participation in prevention programs and become an apparent risk for mental health problems. The problem may be explained by a lack of German language skills, which inhibits direct communication with medical staff. Moreover, difficulties to obtain knowledge of available prevention programs and to identify appropriate entry points into the system are present [25].

It should be considered that many migrants did not have the opportunity to receive adequate school education in their home countries. Additionally, at the time of recruitment for example of guest workers in the 1950s and 1960s, mainly workers were hired for tasks with low skill requirements [33]. Therefore, generally people with a low educational level came to Germany in that period, did not plan to stay in Germany for long, and could not imagine making use of a higher educational level. This phenomenon can be described as an initial plan to return [34] and might explain a low educational level and income as well as poorer mental HrQoL scores due to missing return decisions.

Table 3
Multiple linear regression: independent variables and mental HrQoL. Separate analyses for migrants and natives. Lines with significant variables are printed in red.

Group	Independent variable	R ² Adj. R ²	Unstandard. Coefficient (b)	Standard. Coefficient (Beta)	t	p-value
migrants n = 252	gender	0.206	0.760	0.054	0.545	0.587
	age	0.150	0.041	0.071	0.661	0.511
	school education	p = 0.003	0.385	0.248	2.308	0.023
	household income		0.438	0.147	1.306	0.195
	marital status		3.194	0.195	1.791	0.077
natives n = 413	children		-0.868	-0.151	-1.365	0.176
	gender		0.216	0.019	0.238	0.812
	age	0.017	0.031	0.082	0.851	0.396
	school education	0.015	-0.115	-0.084	-1.012	0.313
	household income	p = 0.792	0.182	0.067	0.700	0.485
marital status		-0.421	-0.034	-0.392	0.696	
children		0.707	0.126	1.280	0.202	

Table 4

Multiple linear regression: independent variables and physical HrQoL. Separate analyses for migrants and natives. Lines with significant variables are printed in red.

Group	Independent variable	R ² Adj. R ²	Unstandard. Coefficient (b)	Standard. Coefficient (Beta)	t	p-value
migrants n = 252	gender	0.090	0.357	0.032	0.304	0.762
	age	0.025	-0.109	-0.241	-2.087	0.040
	school education	p = 0.229	0.080	0.066	0.570	0.570
	household income		-0.092	-0.039	-0.325	0.746
	marital status		-0.485	-0.038	-0.323	0.747
natives n = 413	children		0.630	0.140	1.177	0.242
	gender	0.051	0.132	0.014	0.178	0.859
	age	0.020	-0.076	-0.245	-2.593	0.010
	school education	p = 0.134	0.025	0.022	0.276	0.783
	household income		0.019	0.008	0.089	0.929
	marital status		1.209	0.117	1.381	0.169
children		-0.652	-0.140	-1.449	0.149	

According to our third finding (there was a significant association between age and physical HrQoL of migrants and natives), Baykara-Krumme and Hoff [12] confirmed age being associated with HrQoL, which was seen as a consequence of limitations in daily life with an increase of age. They compared the general living conditions of elderly migrants (aged between 40 and 85) with that of elderly natives. Physical Functioning (such as running, moderate activities, moving a table, lifting or carrying groceries) reflected daily restrictions due to health problems along with increasing age.

4.1. Limitations

The present study used a cross-sectional study design, thus, the interpretation of the impact of migration on the HrQoL is restricted. A longitudinal approach would lead to more conclusive information, but is difficult to perform, and has been impossible within the temporal and economic constraints of this project. Therefore, this study design doesn't allow for the interpretation of the effect of migration on HrQoL over a long period and a generalisation is limited.

Although participants have been randomly selected and the questionnaire has been translated and all interviewers have been well educated in conducting interviews with the focus on minority groups, the possibility cannot be excluded that a selection bias occurs as participants may have refused due to fear and mistrust or a lack of motivation. The nonresponse rate in this study is high. This could lead to a lack of representativeness. We could calculate the lowest response rate in the district with the lowest SES and the highest number of habitants with migration background.

Both the dependent and the independent variables were measured using a self-report instrument. It could thus have come to bias in the self-report, e.g. when respondents answered so as to please the interviewers (social desirability bias).

5. Conclusions

Differences in HrQoL were confirmed between migrants and German natives, particularly in the chances of high or poor mental health. We also found a significant effect of school education on HrQoL. Future research should differentiate more strongly between migration contexts in terms of home countries and acculturation as well as social determinants of health (e.g. early life, social support, unemployment) and their policy implications according to the recommendations of the WHO [35].

These results have theoretical and practical implications for the health and HrQoL of migrants. The results reported should be investigated in other studies with other (minority) groups living in other cities than Hamburg. In particular, migration and gender-specific relationships between different variables and HrQoL should be further addressed and clarified. Migrants are heterogeneous in terms of their

(cultural) background, lifestyles, social situation, health behaviour and health risks. Therefore, qualitative research methods, such as focus groups, expert interviews etc., are needed in more detail to understand different concepts of health within groups with different cultural backgrounds. In practice, it is necessary to consider group-specific factors in disease prevention and health promotion. These results have some implications for policy makers as health promoting initiatives should not only address on disadvantages of migrant groups. Besides policies to support the integration of migrants, they should be actively involved in the design and implementation of health promoting interventions aimed at improving their mental HRQoL.

Declaration of Competing Interests

The authors declare that they have no competing interests.

Acknowledgments

We thank David Cebulla for his support in editing the article.

Funding

This work was supported by the Free and Hanseatic City of Hamburg, Germany [grant number: LFF-FV 50].

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