Int J Public Health (2017) 62:95–102
DOI 10.1007/s00038-016-0904-y

ORIGINAL ARTICLE

(Non-)utilization of pre-hospital emergency care by migrants and non-migrants in Germany

Diana Kietzmann · Daniela Knuth · Silke Schmidt

Received: 21 January 2016 / Revised: 10 September 2016 / Accepted: 16 September 2016 / Published online: 22 September 2016

Abstract
Objectives This study was designed to explore the utilization and non-utilization of pre-hospital emergency care by migrants and non-migrants, and the factors that influence this behaviour.
Methods A cross-sectional representative German survey was conducted in a sample of 2.175 people, 295 of whom had a migration background. An additional sample of 50 people with Turkish migration background was conducted, partially in the Turkish language. Apart from socio-demographics, the utilization of emergency services and the reasons for non-utilization were assessed.
Results Migrants had a higher utilization rate of pre-hospital emergency care (RR = 1.492) than non-migrants. Furthermore, migrants who were not born in Germany had a lower utilization rate (RR = 0.793) than migrants who were born in Germany. Regarding non-utilization, the most frequently stated reasons belonged to the categories initial misjudgment of the emergency situation and acting on one's own behalf, with the latter stated more frequently by migrants than by non-migrants.
Conclusions To prevent over-, under-, and lack of supply, it is necessary to transfer knowledge about the functioning of the medical emergency services, including first aid knowledge.

Keywords Pre-hospital emergency care · Utilization · Non-utilization · Migration background

D. Kietzmann (✉) · D. Knuth · S. Schmidt
Department Health and Prevention, Institute of Psychology, Ernst-Moritz-Arndt-University Greifswald, Robert-Blum-Str. 13, 17487 Greifswald, Germany
e-mail: diana.kietzmann@uni-greifswald.de

Introduction

Due to the recent socio-political changes, the topic of migration has become increasingly relevant in Europe. In 2014, almost 20.3 % of the German population are first and second generation migrants, the largest group of which has a Turkish background (Statistisches Bundesamt 2015). Actual immigration flows, however, suggest that the number of migrants in Germany will increase quite substantially in the near future. Although the associated cultural and linguistic diversity brought by migrants is a societal enrichment, it also brings challenges, in particular to pre-hospital emergency care as an essential part of the health care system.

The German Emergency Medical Service is based on the Franco-German model, which treats victims of sudden and life-threatening injuries or emergencies by first responders and/or physicians at the scene. This concept of "bringing the hospital to the patients" contrasts with the Anglo-American model of "rapidly bringing patients to the hospital with little pre-hospital intervention" (Al-Shaqsi 2010). To further ensure an extensive, adequate and high quality pre-hospital emergency care, it needs to be adjusted to the growing diversity of people, including the prevention of over- and under-supply and lack of supply. To make the adjustment as effective as possible, empirical data are needed, including data on migrants' (non-)utilization of pre-hospital emergency services.

Studies on the utilization of emergency care usually focus on the emergency department. So far, particular emphasis has been placed on the influence of socio-demographic factors of the patient, such as gender, age and ethnicity (Aminzadeh and Dalziel 2002; Anson et al. 1991; Borde and David 2003; Correa-Velez et al. 2007; Hjern et al. 2001; Li et al. 2007; Norredam et al. 2004; Rue et al.

2008). Studies on the influence of gender gave different results. Anson et al. (1991) found that more men than women visited the emergency department, whereas Li et al. (2007) reported women to have a slightly higher emergency department utilization rate than men. Regarding the influence of age, studies have shown a higher age to be associated with an increased emergency department use (Aminzadeh and Dalziel 2002; Li et al. 2007).

Regarding ethnicity, previous findings have indicated higher utilization rates of emergency departments by migrants compared to non-migrants (Borde and David 2003; Correa-Velez et al. 2007; Hjern et al. 2001; Norredam et al. 2004; Rue et al. 2008). Possible explanations for this difference refer to a lack of knowledge about the structure of the health care system, a deficient primary health care, and a lower satisfaction with primary health care of migrants compared to non-migrants (Borde and David 2003; Norredam et al. 2004).

The utilization of pre-hospital emergency care, on the other hand, has not received much attention so far. Compared to the emergency department, pre-hospital care is complicated by limited diagnostic capabilities and the smaller number of personnel (first responders and/or physicians) present at the scene (Killinger 2009). The little available data suggest different factors that influence the utilization of pre-hospital emergency care for migrants and the non-migrants. In a comparison of access paths to an emergency department, it was found that non-migrants were more often delivered to the emergency department by emergency medical services, while migrants were brought more often by relatives (Borde and David 2003). However, these studies do not try to explain these differences. The literature on the utilization of emergency departments suggests that language barriers are the reason for the differences between migrants and non-migrants, which make it difficult to explain the emergency case on the telephone (Norredam et al. 2007). Ong et al. (2012) report specific barriers, stated by members of a Chinese community with limited English proficiency: expected fees for calling the medical emergency service; the lack of or negative past experiences; and their belief to be able to manage the situation on their own. However, this study was conducted in the context of the Anglo-American model of "rapidly bringing patients to the hospital with little pre-hospital intervention" (Al-Shaqsi 2010) and may not be comparable to the German situation. Another explanation for the possible differences in the utilization of pre-hospital emergency care between migrants and non-migrants is reported in relation to certain structures in the country of origin. A study on newly arrived refugees in Australia has shown that they will not call an ambulance out of fear that the police will come with, or instead of, the ambulance (Sheikh et al. 2011).

In summary, all these findings suggest that pre-hospital emergency care needs to be adjusted to meet the needs of the increasingly diverse population. As the small available number of studies dealing with pre-hospital emergency care utilization by migrants provides limited information on the factors that influence the use of pre-hospital emergency care, the present study attempts to answer the following research questions:

1. Does the utilization of pre-hospital emergency care differ between migrants and non-migrants, and what other factors are relevant for the utilization of pre-hospital emergency care?
2. What are the reasons for non-utilization of pre-hospital emergency care by migrants and non-migrants?

Methods

Data collection

The data were obtained by computer-assisted telephone interviews (CATI) in September and November 2014 as part of the project "Rescue, Aid and Culture—Intercultural Competence in Civil Protection II" (funded by the Federal Office of Civil Protection and Disaster Assistance, Germany; Grant-Number: BBK-III. 1-413-10-00-396). It was approved by the Ethics Commission of the University of Greifswald (17/12/2013).

Landline telephone numbers were obtained by implementing the Gabler-Häder-Design for landlines all over Germany (Gabler and Häder 2002), while mobile phone numbers were acquired by means of a selection framework provided by the GESIS—Leibniz Institute for Social Sciences. From the 28.561 contacted valid telephone numbers, 2.175 (7.6 %) resulted in a completed interview. Most of the other people who answered the phone refused to participate (77.9 %). 0.5 % of the participants terminated the interview prematurely, whereas the remaining 14 % of interviews could not be conducted for a variety of reasons (e.g., bad connection; busy line; no interview after $\geq$5 contact attempts). On average an interview lasted 28.5 min.

Participation in the study was voluntary, anonymous and did not involve any financial compensation. After consenting to the interview, participants were guided through the questionnaire by the interviewers. The inclusion criterion was a minimum age of 18 years.

The sample of 2.175 people who participated in this study included 295 migrants. The migration status was assessed based on the definition of the statistical federal office in Germany (Statistisches Bundesamt 2015): participants were classified as migrants if either they or at least one of their parents had, or had had, a non-German

nationality. Since the migrant sample was too small and heterogeneous, an additional sample of 50 people with Turkish migration background was obtained. The aim was to include a bigger sample of the largest migrant group in Germany. To reach those with poor German skills, the opportunity to answer the questions in Turkish language was offered. Therefore, the questionnaire was translated into Turkish according to the Translation Review Adjudication Pretesting Documentation (TRAPD) principles (Harkness 2008). As prescribed in the TRAPD approach, and analogous to the development of the German version of the questionnaire, the translations were adjusted after testing their practicability and the level of difficulty of the items in Turkish.

Migrants of the main and the additional samples are grouped together in the following analyses.

Measures

Questions in the telephone interview were self-reported and included information on the following items: (1) socio-demographic characteristics such as age, gender, level of education, marital status, children living in the household and occupation, as well as language skills for the additional sample of Turkish participants (*How would you rate your present knowledge of the German language?—I do speak German/I do not speak German*); (2) participants' and participants' parents' places of birth and citizenships, to determine their migrant status (Schenk and Neuhauser 2005; Statistisches Bundesamt 2015); and (3) health status, which was measured by asking how often participants had needed medical help in the past 5 years.

Moreover, participants' knowledge about the emergency call procedure was assessed by the following open question: *Which information should be communicated when making an emergency call?* Answers were checked for the information also known in Germany as the "five Ws": Where is the emergency? What happened? How many people are injured? What kind of injuries are there? Wait for further questions! 0.5 points were counted for each correct answer. The question on what the emergency number in Germany is was not evaluated, as only migrants were asked this question. The pilot study revealed that for non-migrants, this question was a reason to abandon the study, as they felt ridiculed by it, since the answer was that clear.

Utilization of pre-hospital emergency care was assessed by asking the participants whether they had called emergency medical services (for themselves or for others) in the past 5 years. The time frame of 5 years was chosen because of the 5-year reporting period on the number of operations by the emergency medical services published by the Federal Health Monitoring System. In the case of non-utilization of pre-hospital emergency care, participants were asked: *Have you had any situations in the last 5 years where you thought about calling the emergency service but you didn't do this in the end? How many situations? Why did you decide not to do this?—Please name the main reason.*

To ensure content validity of the questions, a multidisciplinary approach was utilized. After item generation based on content of first aid courses, 22 experts from the field of civil protection (e.g., fire fighter, emergency personnel) evaluated the questions with respect to feasibility, clarity and importance. Furthermore, the questions were pre-tested by a sample of 239 students, and in a randomized telephone sample consisting of 30 participants.

Data analyses

Analyses were performed using SPSS 22.0 (2013). Descriptive statistics were used to analyse socio-demographic data. T tests and χ^2 tests were run to establish whether socio-demographic characteristics differed between migrants and non-migrants. These group comparisons were confirmed by non-parametric Mann–Whitney U tests. Poisson regression was performed to determine the relevant factors of the utilization rates of pre-hospital emergency care. The analysis of the answers referring non-utilization was based on the approach of inductive category development according to the principles of qualitative content analysis by Mayring (2010). Based on the open question mentioned above, two raters independently deduced preliminary categories, including a description of these categories. Within several feedback loops those categories were revised and if required, reduced. Finally, the answers to the open question were assigned to the final categories and counted within each category.

Results

Participants' socio-demographic characteristics

The results regarding factors influencing utilization only include those participants of the overall sample who answered all relevant questions and who did not work in the medical field. These exclusion criteria resulted in 206 migrants (12.2 %) and 1.477 non-migrants (87.8 %) who were integrated in the analyses described above. 31 of the 50 people with Turkish backgrounds answered the questionnaire in Turkish.

Regarding non-utilization, 516 participants (17.3 % migrants and 82.7 % non-migrants) answered the question: *Have you had any situations in the last 5 years where you*

thought about calling the emergency medical service but you didn't do this in the end? with "yes" and stated reasons for not calling the emergency medical services.

The most frequent citizenships among migrants who only had a foreign citizenship were Turkish (44.8 %), Italian (6.0 %) and other (16.4 %). The 'other' citizenships were mostly North-American and Iranian. Of those migrants who had a German and a second citizenship (38.8 %), 22.4 % were Turkish and 11.8 % Russian. 71 (34.5 %) migrants were born in Germany, while 135 (65.5 %) named the year of arrival in Germany. The duration of stay of migrants who were not born in Germany ranged from zero to 69 years, with a mean duration of $M = 28.53$ (SD = 14.76).

χ^2 tests showed that migrants and non-migrants did not differ significantly in terms of gender, level of education, marital status and children under 18. Regarding occupation, χ^2 test was significant, but no effect is shown. Mann–Whitney U test indicate no significant difference between migrants and non-migrants in terms of occupation. A t test for independent groups revealed that migrants and non-migrants differed significantly in age. Regarding health status, migrants indicated to have used medical services zero to 250 times in the past 5 years, whereas the non-migrants had sought medical help for a maximum of 500 times. However, they did not differ in health status (Table 1).

Utilization of pre-hospital emergency care

Table 2 displays the results from the Poisson regression analysis. Migrants had a higher utilization rate of pre-hospital emergency care (RR = 1.492) than non-migrants over the period of the last 5 years. Furthermore, migrants who were not born in Germany had a lower utilization rate (RR = 0.793) than migrants who were born in Germany.

Other relevant factors for the utilization of pre-hospital emergency care shown in Table 2 are marital status, education and knowledge about the emergency care procedure. Unmarried (RR = 1.265) and divorced participants (RR = 1.475) made more use of pre-hospital emergency care than participants that were married. Participants with a low/medium education had higher utilization rates than participants with a high education (RR = 1.292).

Finally, a higher knowledge about the emergency call procedure resulted in an increased utilization rate (RR = 1.201). The means of this factor were $M = 1.35$ (SD = 0.51) in the migrant group and $M = 1.44$ (SD = 0.46) in the non-migrant group. A t test for independent groups revealed that the two groups differed significantly in their knowledge about the emergency call procedure (t (1681) = 2.348, $p < 0.05$, $g_{\text{Hedges}} = 0.192$). Regarding the emergency number, of the 206 migrants that answered the question, 90 % could name the right number (which is 112).

Reasons for non-utilization of pre-hospital emergency care

Regarding non-utilization, eight distinguishable categories were generated based on the statements of the participants. Most statements referred to an 'initial misjudgment of the emergency situation': 27.3 % of migrants and 31.0 % of non-migrants stated that the "condition of the affected person improved", or "the necessity for calling the ambulance was no longer seen", amongst others. Other frequently stated reasons for not calling the emergency medical services belonged to the category 'acting on one's own behalf'. 31.8 % of migrants and 26.0 % of non-migrants gave reasons such as "driving to the emergency department by her/his own/with the affected person". This statement was mentioned more often by migrants than by non-migrants. Furthermore, 8.0 % of migrants and 9.8 % of non-migrants stated that 'the affected person didn't want the emergency medical services to be called', without providing any further details. Another category was 'uncertainties and doubts about the seriousness of the emergency', which included statements such as "uncertainty regarding responsibilities" or "uncertain whether this was an emergency situation or not" by 9.1 % of migrants and 6.7 % of non-migrants. Moreover, 6.2 % migrants and 3.4 % non-migrants said that 'a third person had already placed the emergency call'. 'Medical help of third persons' (i.e., qualified personnel that was coincidentally already on the scene) was another reason for not calling the ambulance by migrants (1.3 %) and non-migrants (3.8 %). Only 0.7 % of migrants and 1.1 % of non-migrants mentioned 'fear of being financially burdened' as a reason to not call the emergency services. Finally, the category 'other statements' included reasons such as "bad previous experiences" or "no phone was nearby".

Discussion

Utilization of pre-hospital emergency care

The results of this study have shown a higher utilization rate of pre-hospital emergency care by migrants than by non-migrants. Studies on the utilization rates of in-hospital emergency care have had similar results, as migrants were found to make more use of emergency departments than non-migrants (Borde and David 2003; Correa-Velez et al. 2007; Hjern et al. 2001; Norredam et al. 2004; Rue et al. 2008). The reasons for migrants' higher utilization rates of the emergency department are thought to be their lack of

Table 1 Socio-demographic characteristics of the sample ($N = 1.683$). The study was conducted in Germany in 2014

	Non-Migrants		Migrants					
			Migrants (total)		Migrants (main sample)		Migrants (additional sample)	
	($N = 1.477$)		($N = 206$)		($N = 169$)		($N = 37$)	
	N	%	*N*	%	*N*	%	*N*	%
Gender[a]								
Male	728	49.3	113	54.9	95	56.2	18	48.6
Female	749	50.7	93	45.1	74	43.8	19	51.4
Marital status[b]								
Married	813	55.0	124	60.2	95	56.2	29	78.4
Unmarried	400	27.1	55	26.7	51	30.2	4	10.8
Widowed	107	7.2	7	3.4	6	3.6	1	2.7
Divorced	157	10.6	20	9.7	17	10.1	3	8.1
Level of education[c]								
High	851	57.6	121	58.7	109	64.5	12	32.4
Low/medium	626	42.4	85	41.3	60	35.5	25	67.6
Children under 18[d]								
No	1102	74.6	141	68.4	112	66.3	29	78.4
Yes	375	25.4	65	31.6	57	33.7	8	21.6
Occupation[e]								
Unemployed	99	6.7	20	9.7	16	9.5	4	10.8
Employed	925	62.6	133	64.6	116	68.6	17	45.9
Student	47	3.2	12	5.8	9	5.3	3	8.1
Retired	406	27.5	41	19.9	28	16.6	13	35.1
	M	SD	*M*	SD	*M*	SD	*M*	SD
Age[f]	51.66	16.22	45.83	17.13	44.19	17.05	53.35	15.60
Health status[g]	16.26	36.70	12.84	33.79	13.93	33.52	26.89	47.81

Low and medium education are combined due to the small number of participants with low education

Low education no or primary school level, *medium education* secondary intermediate school level, *high education* higher secondary education or university degree

[a] $\chi^2(1) = 2.240$, $p > 0.05$, Cramer's $V = 0.036$

[b] $\chi^2(3) = 4.965$, $p > 0.05$, Cramer's $V = 0.054$

[c] $\chi^2(1) = 0.093$, $p > 0.05$, Cramer's $V = 0.007$

[d] $\chi^2(1) = 3.558$, $p > 0.05$, Cramer's $V = 0.046$

[e] $\chi^2(3) = 9.935$, $p < 0.05$, Cramer's $V = 0.077$/U = 149,619.5, $p > 0.05$

[f] $t\ (1681) = -4.792$, $p < 0.001$, $g_{\text{Hedges}} = 0.357$

[g] $t\ (1681) = -1.347$, $p > 0.05$

knowledge about the structure of the health care system, their lower satisfaction with primary health care and a deficient primary health care (Borde and David 2003; Norredam et al. 2004). However, these reasons may not apply to pre-hospital emergency care, as the conditions for utilization are different here: making an emergency call to get pre-hospital care (at the scene) vs. visiting the (in-hospital) emergency department. More research is, therefore, necessary to examine the reasons for the higher utilization rate of pre-hospital emergency care by migrants.

Migrants furthermore, differed from non-migrants in their emergency call knowledge: non-migrants could provide significantly more information to be communicated when making an emergency call ("five Ws") than migrants could. This difference in knowledge is most likely due to the fact that the majority of the German population learns the "five Ws" at school in (optional) first aid classes, or at the latest when taking driving lessons, where they are included in the obligatory first aid training. Participating migrants may not have obtained this specific knowledge, as only 71 of them

Table 2 Rate ratios (with 95 % confidence intervals) of utilization of pre-hospital emergency, obtained from Poisson regression

Factor	Rate ratios (95 % CI)
$N = 1.683$ (non-migrants and migrants)	
Gender	
Male	1
Female	0.923 (0.831–1.025)
Age	0.997 (0.992–1.003)
Marital status	
Married	1
Unmarried	1.265 (1.092–1.467)**
Widowed	1.030 (0.833–1.274)
Divorced	1.475 (1.211–1.796)***
No children under 18	1
Children under 18	0.926 (0.819–1.047)
Level of education	
High education	1
Low/medium education	1.292 (1.165–1.432)***
Occupation	
Unemployed	1
Employees	0.961 (0.782–1.180)
Students	1.170 (0.772–1.773)
Retirees	1.034 (0.802–1.333)
Health status	1.001 (1.000–1.002)
Knowledge about emergency call procedure	1.201 (1.071–1.347)**
Migration-specific factors	
Non-migrant	1
Migrant	1.492 (1.224–1.819)***
$N = 206$ (migrants)	
Born in Germany	1
Immigrated	0.793 (0.629–1.000)**

The study was conducted in Germany in 2015

* $p < 0.05$

** $p < 0.01$

*** $p < 0.001$

(34.5 %) were born in Germany. Our results have furthermore shown that a higher emergency call knowledge is associated with an increased utilization rate of pre-hospital emergency care. As this finding seems to contradict our result that migrants make more use of pre-hospital emergency care, future researchers might investigate the relationship between knowledge about the emergency call procedure and utilization of pre-hospital emergency care by migrants. However, we assume knowledge about the emergency call procedure to be relevant because it helps prevent delays in seeking care and treatment.

Within the migrant sample, migrants who were not born in Germany were found to have a lower utilization rate of pre-hospital emergency care than migrants who were born in Germany. Barriers to making the emergency call for the former group need to be further explored, as the barriers stated by migrants in previous studies (Ong et al. 2012; Sheikh et al. 2011) are only partially comparable with the present one: while Sheikh et al. (2011) involved a sample of newly arrived refugees in Australia, and Ong et al. (2012) interviewed members of a Chinese community in the United States, who had limited English proficiency, the majority of migrants in the present study spoke fluent German. As the language barriers found in previous studies do not apply here, further research is required to uncover the reasons for the different utilization rates of pre-hospital emergency care among migrants.

Finally, this study has shown that patients' age and gender do not significantly affect the utilization of pre-hospital emergency care. This finding contrasts with studies on the utilization of in-hospital emergency care, where age (Aminzadeh and Dalziel 2002; Li et al. 2007) and gender (Anson et al. 1991; Li et al. 2007) were found to be associated with emergency department use, although the association with gender showed contradicting findings. Concerning age, in previous studies, 'older' emergency department patients were assumed to be 65 years of age and over (Aminzadeh and Dalziel 2002; Li et al. 2007). The significantly lower average age of the participants in the present study [50.94 years (SD 16.44)] might be the reason for the non-significant association between age and utilization of pre-hospital emergency care.

Non-utilization of pre-hospital emergency care

The reasons for not calling the emergency services in a potentially serious situation were diverse. The most frequently stated reasons were 'initial misjudgments of the emergency situation', 'acting on one's own behalf' and 'the affected person did not want the emergency services to be called'. Measured by the number of statements within the categories, migrants and non-migrants did not differ much in their reasons for not calling the emergency medical services. Some slight differences occurred within the category 'acting on one's own behalf', where for example "driving to the emergency department on one's own behalf" was mentioned more often by migrants than by non-migrants. Parallels with previous findings such as 'expected fees for calling the medical emergency services' (Ong et al. 2012) are shown by the category 'fear of being financially burdened'. Irrespective of this rarely mentioned category by migrants and non-migrants, these parallels seem to be regardless of the model of medical pre-hospital

emergency care (Franco-German-/Anglo-American model) provided.

Since almost 20.3 % of the population of Germany consists of first and second generation migrants (Statistisches Bundesamt 2015), the number of migrants in this study (12.2 %) is lower than the percentage distribution of migrants in Germany. Lower migrant participation rates have also been found in other studies (Blohm and Diehl 2001; Hussain-Gambles et al. 2004; Schenk 2002). Various reasons for the reduced participation have been suggested, such as lack of information, limited language proficiency, negative experiences with health research studies, and a lack of interest (Dingoyan et al. 2012; Hussain-Gambles et al. 2004; Schenk 2002). On the other hand, it has been reported that migrants are more cooperative during an interview than non-migrants (Koch 2008), and that they are positively impressed by the interest in their opinions (Allerbeck and Hoag 1985).

Conclusions

This study has highlighted some areas in need of improvement regarding the utilization of pre-hospital emergency care by migrants. To prevent over-, under- and a lack of supply, it is necessary to transfer knowledge about the information that should be communicated when making an emergency call. Mnemonics in other languages equivalent to the German "five Ws" should be created that are easy to understand. Furthermore, tailored education events on the general functioning of the German Emergency Medical Service should be provided, as well as information on when to make use of the medical emergency services, and on the distribution of lifesaving emergency measures. In view of the current socio-political changes and immigration flows, this knowledge should be included in the integration courses for newly arrived immigrants and refugees. Apart from providing information, the education sessions might also contribute to the confidence of migrants in utilizing the pre-hospital emergency care. Moreover, they might be helpful for the cultural opening of pre-hospital emergency care.

Limitations of the study

As mentioned, the migrant population was not representative of the overall German migrant population. An additional sample of 50 people with Turkish migration background was obtained to include a bigger sample of the largest migrant group in Germany. However, in general it can be criticized that a minority of migrants included in the study ($N = 31$) had limited German language skills. Further studies are, therefore, needed that are representative of the migrant population, including subsamples with/without own migration experiences, as different experiences may lead to different ideas about what is important for appropriate pre-hospital emergency care. Moreover, further studies are necessary to identify additional factors that may be associated with utilization of pre-hospital emergency care, such as "having a telephone for an emergency call" or the "availability of a car". Especially the latter may be important, as one reason for not calling the emergency services in the present study—"driving to the emergency department oneself/with the affected person"—depends on the availability of a car.

Funding The study was conducted as part of the project "Rescue, Aid and Culture—Intercultural Competence in Civil Protection II" and funded by the Federal Office of Civil Protection and Disaster Assistance, Germany (Grant-Number: BBK-III. 1-413-10-00-396).

Compliance with ethical standards

All procedures performed in the study involving human participants were in accordance with the ethical standards of the institutional research committee (Ethics Commission of the University of Greifswald; 17/12/2013) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Conflict of interests We declare that we have no conflict of interest.

Informed consent Informed consent was obtained from all individual participants included in the study.

References

Allerbeck KR, Hoag WJ (1985) Wenn deutsche Ausländer befragen. Zeitschrift für Soziologie 14:241–246

Al-Shaqsi S (2010) Models of international emergency medical service (EMS) systems. Oman Med J 25:320–323

Aminzadeh F, Dalziel WB (2002) Older adults in the emergency department: a systematic review of patterns of use, adverse outcomes, and effectiveness of interventions. Ann Emerg Med 39:238–247

Anson O, Carmel S, Levin M (1991) Gender differences in the utilization of emergency department services. Women Health 17:91–104

Blohm M, Diehl C (2001) Wenn Migranten Migranten befragen. Zum Teilnahmeverhalten von Einwanderern bei Bevölkerungsbefragungen. Zeitschrift für Soziologie 30:223–242

Borde T, David M (2003) Gibt es Besonderheiten bei der Inanspruchnahme klinischer Notfallambulanzen durch Migrantinnen und Migranten? In: Borde T, David M (eds) Gut versorgt?. Migrantinnen und Migranten im Gesundheits- und Sozialwesen, Mabuse

Correa-Velez I, Sundararajan V, Brown K, Gifford SM (2007) Hospital utilisation among people born in refugee-source countries: an analysis of hospital admissions, Victoria, 1998–2004. Med J Aust 186:577–580

Dingoyan D, Schulz H, Mosko M (2012) The willingness to participate in health research studies of individuals with Turkish migration backgrounds: barriers and resources. Eur Psychiatry 27(Suppl 2):4–9

Gabler S, Häder S (2002) Idiosyncrasies in telephone sampling-the case of Germany. Int J Pub Opin Res 14:339–345

Harkness JA (2008) Comparative survey research: goals and challenges. In: de Leeuw JJ, Hox JJ, Dillmann DA (eds) International handbook of survey methodology. Lawrence Erlbaum Associates, New York, pp 56–77

Hjern A, Haglund B, Persson G, Rosen M (2001) Is there equity in access to health services for ethnic minorities in Sweden? Eur J Pub Health 11:147–152

Hussain-Gambles M, Atkin K, Leese B (2004) Why ethnic minority groups are under-represented in clinical trials: a review of the literature. Health Soc Care Community 12:382–388

Killinger E (2009) Die Besonderheiten der Arzthaftung im medizinischen Notfall. Springer, Berlin

Koch G (2008) Zur Entwicklung Interkultureller Kompetenz im Studium. Theoretische und pragmatische Ansatzpunkte. In: Bahl A (ed) Kompetenzen für die globale Wirtschaft Begriffe—Erwartungen—Qualifikationsansätze. Bertelsmann Verlag, Bielefeld, pp 189–207

Li G, Lau JT, McCarthy ML, Schull MJ, Vermeulen M, Kelen GD (2007) Emergency department utilization in the United States and Ontario, Canada. Acad Emerg Med 14:582–584

Mayring P (2010) Qualitative Inhaltsanalyse: Grundlagen und Techniken. Beltz, Weinheim

Norredam M, Krasnik A, Sorensen TM, Keiding N, Michaelsen JJ, Nielsen AS (2004) Emergency room utilization in Copenhagen: a comparison of immigrant groups and Danish-born residents. Scand J Pub Health 32:53–59

Norredam M, Mygind A, Nielsen AS, Bagger J, Krasnik A (2007) Motivation and relevance of emergency room visits among immigrants and patients of Danish origin. Eur J Pub Health 17:497–502

Ong BN, Yip MP, Feng S, Calhoun R, Meischke HW, Tu SP (2012) Barriers and facilitators to using 9-1-1 and emergency medical services in a limited English proficiency Chinese community. J Immigr Minor Health 14:307–313

Rue M, Cabre X, Soler-Gonzalez J, Bosch A, Almirall M, Serna MC (2008) Emergency hospital services utilization in Lleida (Spain): a cross-sectional study of immigrant and Spanish-born populations. BMC Health Serv Res 8:81

Schenk L (2002) Migrantenspezifische Teilnahmebarrieren und Zugangsmöglichkeiten im Kinder- und Jugendgesundheitssurvey. Gesundheitswesen 64:59–68

Schenk L, Neuhauser H (2005) Methodische Standards für eine migrantensensible Forschung in der Epidemiologie. Epidemiologie und Gesundheitsberichterstattung 48:279–286

Sheikh M, Nugus PI, Gao Z, Holdgate A, Short AE, Al Haboub A, Macintyre CR (2011) Equity and access: understanding emergency health service use by newly arrived refugees. Med J Aust 195:74–76

Statistisches Bundesamt (2015) Bevölkerung und Erwerbstätigkeit. Bevölkerung mit Migrationshintergrund—Ergebnisse des Mikrozensus 2014. Statistisches Bundesamt, Wiesbaden