



Better safe than sorry - Emergency knowledge and preparedness in the German population



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ABSTRACT

Emergency situations require immediate reaction in order to mitigate their negative effects. Being prepared for an emergency entails having preparedness measures present. The present study investigated the impact of socio-demographic and emergency factors (i.e., experience, risk perception, perceived and objective emergency knowledge) on fire and medical emergency related preparedness. A telephone survey was conducted in a representative German sample (N = 2225). Results revealed that both objective and perceived knowledge increased the likelihood not only for adopting preparedness measures but also for their consideration. The impact of socio-demographic variables on preparedness varied among the respective preparedness items with a greater impact of collective factors (e.g. people in the household, children, marital status) as compared to individual factors like age and gender. The need for safety trainings and their repetition is discussed.

1. Introduction

Even small-scale events like accidents at home or house fires can cause severe consequences. For example, in Europe as well as in the United States about 80% of fire deaths occur in domestic settings [1,2]. Since the time between an emergency outbreak and the arrival of a rescue team is crucial [3], being prepared for an emergency cannot only prevent or minimize material loss, but more importantly save lives. Personal emergency preparedness can be defined as a set of knowledge, capabilities, trained behaviour as well as adequate equipment in order to deal with emergencies until professional help is present [4]. Recommendations for proper preparedness for an emergency include for example the availability of a first-aid kit [5]. Fire specific prevention consists of having a fire extinguisher, a fire blanket and smoke detectors [5].

Not only is knowledge a part of preparedness in itself, but it is also a necessary prerequisite for it, albeit far from sufficient [6,7]. Only when preparedness measures are known they can be acquired. Empirical results indicate that there might be a difference between perceived and actual knowledge. Some studies find that subjective knowledge is positively correlated with preparedness or consideration of preventive measures [8,9], others conclude that higher actual fire protection knowledge is positively associated with the awareness for fire related preparedness [10].

Socio-demographic variables explain marginal variance of people's

preparedness level [11–13], but results are inconsistent. There are studies showing better preparedness of men [14,15], but also of women [8,16,17]. Similarly inconsistent results were observed regarding age and educational level [15,16,18,19]. Positive predictors for preparedness are the presence of children in the household [20–22], being married [17,20,21] and homeownership [12,17]. Furthermore, there are positive correlations between one's participation in the civil defence sector and adoption of protective behaviour [11,14].

A direct positive relationship between risk perception and preparedness behaviour, in the sense that higher risk perception leads to more preparedness is controversial [19,23]. Nevertheless, a possible relationship of risk perception and preparedness has been found in cross-sectional designs [19,24]. Prior disaster experience likewise has been found to be positively associated with self-protective behaviour [15,17]. Neither of these variables are the focus of the paper, but since their influence has been shown, they will be included as control factors.

To aid proper preparedness, it is necessary to know about group-specific differences. The aim of this study is therefore to investigate the impact of demographic factors as well as emergency related knowledge on preparedness for house fires and medical emergencies. According to previous research, the following hypotheses are derived:

1. Emergency knowledge (objective and subjective) is positively associated with precautionary measures.

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2. Some socio-demographic factors (being married, homeownership, presence of children in the household) are positively associated with preparedness.

2. Methods

2.1. Design and participants

The data were obtained through computer-assisted telephone interviews (CATI) from September to November 2014 as part of the project “Rettung, Hilfe und Kultur II” (“Rescue, Aid and Culture II”).

Telephone numbers were obtained through implementation of the Gabler-Häder-Design for landlines in Germany [25], mobile phone numbers were obtained through a selection framework offered by GESIS - Leibniz Institute for the Social Sciences. From 28561 contacted valid numbers, 2175 interviews could be completed. This corresponds to a Response Rate 5 of 7.6% as defined by the American Association for Public Opinion Research [26]. On average, an interview lasted 28.5 min. To heighten the percentage of migrants in the sample, an additional 50 persons (26 females and 24 males) with Turkish migration background were recruited, they could answer the survey in Turkish. Participation in the study was voluntary. Participants were granted anonymity and did not receive compensation. In total, 2225 people participated, mean age was 49.81 years (*SD* 16.62).

2.2. Material/measures

2.2.1. Independent variables and control factors

Predictor variables of interest are the socio-demographic factors age, gender, highest educational level, marital status and migration status. The latter was assessed based on the definition of the statistical federal office in Germany [27]. Further questions addressed the current living situation (tenant vs. home owner; number of people living in the household; children in the household vs. not; federal state (old vs. new)) and work in the medical or civil defence sector. In addition, interviewees were asked questions regarding their actual knowledge about medical and fire emergencies summarized as *first aid knowledge* with a maximum of 8.5 points and *fire protection knowledge* with a maximal score of 5 points. Higher values indicated higher knowledge. Perceived knowledge was assessed with a five point rating scale by asking the participants to rate how much knowledge they have with respect to adequate behaviour in a fire (*perceived knowledge behaviour*), fire preparedness (*perceived knowledge preparedness*), adequate behaviour at an accident location (*perceived knowledge accident behaviour*) and first-aid measures (*perceived knowledge first aid*). Emergency experience (“Have you ever experienced a house fire/a medical emergency, for which the ambulance has been called?”) and perceived risk of a house fire and a medical emergency (“In your opinion, how likely will you yourself experience one of the following emergencies in the future in Germany? Please give an approximate estimation in percent.”0%–100%”) were assessed.

2.2.2. Dependent variables

Preparedness items were availability of a first-aid kit, fire extinguisher, a fire blanket and an installed smoke detector in the household. For each item participants were asked if they had it present (*availability*; yes vs. no), if participants replied “no” they were asked whether they had thought about getting the specific preparedness item (*consideration*; yes vs. no).

2.3. Procedure/data analysis

Data were analysed using IBM SPSS 22. Since each preparedness item requires a different amount of financial and timewise effort, they were investigated separately. The impact of socio-demographic factors on preparedness were analysed using logistic regression analyses. For smoke detectors, the Federal State of residence was also integrated due to

legislation differences in different states. All variables were entered by forced entry.

3. Results

The distribution of socio-demographic variables is presented in Table 1. 16.6% of participants stated to be active in the civil defence or medical sector (0.4% missing). On average, two people lived in a household (*M* = 2.49; *SD* = 1.34; 0.8% missing). Table 2 displays the descriptive information of the control and dependent factors.

In Table 3, regression results for the three fire protection items are displayed. Higher fire protection knowledge (objective as well as subjective) increased the likelihood of having the respective preparedness measure at home and, if not yet present, of considering it. Owning one's home made fire preparedness also more likely. With respect to perceived knowledge, only perceived preparedness knowledge increased the likelihood of preparedness and considering these measures, whereas perceived knowledge for adequate behaviour had no impact. With respect to smoke detectors, people living in the old federal states were twice as likely to have a smoke detector installed (*OR* = 2.07), and if not yet installed, they were also more likely to have at least considered it (*OR* = 2.15). In the case of a fire extinguisher, having children living in the household made it less likely to have a fire extinguisher available, but more likely to consider it. If the amount of people in the household was high, the likelihood of having a fire extinguisher was heightened, but the likelihood of considering one was decreased.

Logistic regression results for first aid kits can be seen in Table 3. Since the large majority of this sample had a first aid kit at home (94%), the investigation of people without this measures (i.e., consideration of preparedness) was not possible. Possessing a first aid kit was more likely if first aid knowledge (objective and perceived knowledge concerning accident behaviour) was high, the respondent was of older age, non-migrant, living with children and homeowner.

4. Discussion

Aim of the present study was to investigate the impact of socio-demographic variables on household preparedness for fires and medical emergencies among the German population. In order to answer this question a representative telephone survey with 2225 participants was conducted. The number of people having considered a smoke detector (66%) was much higher compared to the other preparedness measures. This might reflect the influence of statutory requirements for smoke detectors in private households in many German Federal Countries.

Table 1
Descriptive analyses independent variables (N = 2225).

Sociodemographic Variable	n	%	Missing %
<i>Gender</i>			
Female	1149	51.6	
Male	1076	48.4	
<i>Educational Level</i>			0.3
Low	297	13.3	
Medium	655	29.4	
High	1266	56.9	
<i>Marital Status</i>			0.5
Married	1190	53.5	
Not Married	1024	46.0	
<i>Migration Status</i>			0.9
Migrant	294	13.2	
Not Migrant	1910	85.8	
<i>Children living in the Household = yes</i>	605	27.2	0.3
<i>Homeownership</i>			1.7
Owner	1201	54.0	
Tenant	986	44.3	
<i>Federal state</i>			0.1
Old	1687	75.8	
New	535	24.0	

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