



ORIGINAL ARTICLE

Autonomy support in primary care—validation of the German version of the Health Care Climate Questionnaire

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Abstract

Objectives: There is a growing need for studies to measure how patients feel supported in their autonomy. The Health Care Climate Questionnaire (HCCQ) is an instrument to assess the physician's support to motivate the patient to take personal responsibility for his/her health. The aim of this study was to translate the HCCQ into German and validate the translated version, called the HCCQ-Deutschland (HCCQ-D).

Study Design and Setting: In a cross-sectional study, we translated and culturally adapted the HCCQ, then administered the questionnaire to primary care patients from nine general practices in Germany. We used the European Task Force on Patient Evaluations of General Practice questionnaire (EUROPEP) to assess convergent validity. Subsequently, we performed Cronbach α to assess internal consistency and exploratory factor analysis to evaluate the underlying factor structure of the items.

Results: Of 450 questionnaires, we included 351 (78%) in the final analysis. Internal consistency was high, with Cronbach $\alpha = 0.97$. We found one major underlying factor similar to the English version: all items showed a scale correlation above 0.7. The mean values of the HCCQ correlated moderately (-0.5) with those of the EUROPEP.

Conclusion: This study shows similar psychometric properties of the HCCQ-D as of the original English instrument. The HCCQ-D may be appropriate to explore German-speaking patients' perceived autonomy support in primary care settings. © 2011 Elsevier Inc. All rights reserved.

Keywords: Autonomy support; HCCQ; Health Care Climate Questionnaire; German version; Needs support; Validation

1. Introduction

Patient empowerment is a key component of improved chronic care [1]. The Chronic Care Model calls for “productive interactions” between “activated patients” and “proactive care teams.” Active patients take over responsibility for their care and health. Self-determination theory states that a patient's health behavior can be changed in the long term if care relies on a patient's autonomous self-regulation and providers motivate patients with

communication that supports patient autonomy [2,3]. Autonomy support consists of providing patients with effective options for treatment, providing a clear rationale for treatment, supporting patient initiatives, eliciting and considering patients' views, and minimizing control and judgment. The assessment of patients' perceptions of their health care provider's autonomy support has been operationalized in the “Health Care Climate Questionnaire (HCCQ).” After its validation during a weight loss study in 1996 [4], several versions of the questionnaire have been used and adapted in trials on nutrition counseling and physical exercises [5], smoking cessation [6], medication adherence [7,8], and diabetes care [9]. Findings from these studies confirmed that higher scores on the HCCQ resulted in higher levels of autonomous self-regulation and improved health outcomes in comparison to usual care. Until

Competing interests: none.

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What is new?

- This study evaluated similar psychometric properties of the German version of the HCCQ, called the HCCQ-Deutschland (HCCQ-D), as for the original English instrument.
- The HCCQ-D may be appropriate to explore patients' perceived autonomy support from their primary health care provider.
- Based on the HCCQ-D, the included German primary care patients seem to perceive high support in autonomy by their health care providers.

now, no valid German version of the HCCQ has been available to research autonomy supportive communication and its effects on health care and outcomes. The aim of this study was to validate the translated and culturally adapted German version of the HCCQ, called the HCCQ-Deutschland (HCCQ-D).

2. Study design and setting

We conducted a questionnaire validation within the frame of a cross-sectional study of adult patients in German general practices. Ethical approval for the study was obtained from the institutional review board of the Universities of Jena (no. 2540-05/09) and Heidelberg (no. S-098/2009).

3. Recruitment and data collection

We collected data by means of self-rating questionnaires for 50 patients in each of 11 general practices in Central Germany, for a total of 550 patients. We selected the practices as a convenience sample.

Each practice team recruited patients for the trial. The inclusion criteria for the practices were (1) acceptance of all major health plans, (2) provision of a primary care service according to Starfield's definition [10], and (3) management by a family doctor associated with a family medicine academic training program. We excluded practices that had fewer than 25% of the study forms completed.

Questionnaires were given to the patients consecutively between May and September 2009. To be included, patients had to be older than 18 years and on the primary care practice list. We excluded patients who had been in treatment less than 6 months and those with insufficient German language skills to respond to the questions meaningfully.

Health care assistants handed out the questionnaires with opaque envelopes to ensure blinded data entry. The first page of the questionnaire contained information about the

study and a consent form. We provided a financial incentive of €50 for each participating health care assistant.

4. Translation and cultural adaptation

The HCCQ was independently translated into German by two researchers (J.G., T.F.). As recommended by the World Health Organization [11], a professional translator performed a retranslation into English to reveal any potential loss of the original meaning [12]. We held consensus meetings comparing discrepancies between the original and back-translated questionnaires and made refinements in the German translation. To adapt the questionnaire to German culture, the language of the HCCQ-D differs from the original questionnaire wording in a few places. For instance, the German translation of "carefully" was changed to "umsichtig" (item 9) and the meaning of "feel" was modified to "finden" in some items (1, 12, and 15) to better fit the context in German. After those adaptations for the German culture, all items were considered to be appropriate for the final German translation.

5. Measures

The HCCQ consists of 15 items on a seven-point Likert scale ranging from 1 = strongly disagree to 7 = strongly agree. One item, item 13, is reverse coded. The questionnaire exclusively covers perceived support for autonomy, competence, and relatedness. Depending on the issue being examined, the HCCQ can be used to assess a patient's perception of the degree to which his doctor or team of health care providers is supportive of his autonomy. According to the analysis instructions [13], a patient's HCCQ score is calculated by taking the average of the individual item scores to yield a mean score between 1 and 7, after reversing the single reverse-scored item. Higher average scores represent a higher level of perceived autonomy support.

To assess convergent validity, we used the European Task Force on Patient Evaluations of General Practice questionnaire (EUROPEP). EUROPEP is an internationally standardized questionnaire that evaluates patient satisfaction in family medicine. In 1998, after a final item selection process, the EUROPEP has been validated in 23,892 patients all over Europe (for Germany in over 1,000 patients), with good values (Cronbach $\alpha = 0.87-0.96$) for internal reliability [14]. It consists of 23 questions that can be assigned to five dimensions: doctor-patient relationship, medical care, information and support, service organization, and patient access to the assistance facility (family doctor). The first four subscales (items 1-17) are summarized as "clinical behavior" and reflect the concept of patient-centeredness of care [15-17]. All items have their own specific content, so that they are not just indicators for an underlying dimension of general practice care [15].

Each item is scored on a five-point one-dimensional answering scale, ranging from 1 = excellent to 5 = poor, which we expect to be inversely related to the HCCQ. There was an additional answer, 6 = not applicable, which is treated as a missing value according to the analysis instructions [15]. A patient's EUROPEP score is calculated by averaging the individual item scores.

In addition, we obtained demographic variables such as age, sex, level of education, marital status, occupation, and frequency of consultation from the patients.

6. Data analysis

To describe sociodemographic and clinical characteristics, we used mean values and standard deviations (SDs), as well as counts and percentages. We assessed the psychometric properties of the HCCQ-D according to the internationally recommended criteria [18]. We checked for floor and ceiling effects by evaluating the proportion of patients with the lowest and highest possible scores for each item of the HCCQ-D and assessed the proportions of missing values on item level. To assess internal consistency, we used Cronbach α , defining an α of 0.80 as the lowest acceptable value [19,20]. We performed an exploratory factor analysis on the HCCQ-D, using principle component analysis for factor extraction with subsequent varimax rotation because we expect one factor [21,22]. The number of extracting factors was identified by performing a scree plot. We calculated the item-scale correlation to evaluate the relevance of single items for the global measurement. To ensure that the scale items were relevant for principle component analysis, we performed the criteria of sampling adequacy (Kaiser–Meyer–Olkin criterion) before factor extraction [21], regarding a Kaiser–Meyer–Olkin criterion ≥ 0.80 as mandatory for factor analysis [21]. To test convergent validity, we calculated the Spearman rank correlation coefficient between the individual mean sum scores of the HCCQ-D and the EUROPEP, respectively, considering correlations between 0.40 and 0.60 to be “moderate” [20,21]. By performing a scatter plot for the mean scores of HCCQ-D and EUROPEP, we were able to identify subgroups of patients with specific response patterns. Statistical analysis was performed using IBM SPSS 18 for Windows (Chicago, IL, USA).

7. Results

7.1. Description of the practice characteristics

The selected practices were mostly urban or suburban (77.7%). Every practice treats more than 4,000 patients a year. A majority of the practices had multiple providers (66.6%), exceeding the German average of 22.7% group practices in general medicine. There was a mean of 2.6 physicians and approximately five health care assistants per practice.

7.2. Description of the study population

Nine of the 11 invited practices were included in the study. Two practices were excluded to avoid selection bias because of an insufficient return of questionnaires. Of the 450 invited patients (50 from each practice), 359 (79.8%) returned the questionnaire. According to the practice team reports, the 91 nonparticipants did not differ from the participants in any relevant characteristic, such as age or sex. We excluded six forms returned without any values in the HCCQ-D, as well as two patients younger than 18 years (Fig. 1). Most participants (98.5%) were German, 59.8% were female, and the mean age was 52.9 years (SD, 17.9) (Table 1).

Most patients (96.3%) had been treated by their doctor for a year or longer (average treatment time: 10.3 years, range: 1–45 years, SD: 8 years).

7.3. Description of the HCCQ-D

The mean value of the overall HCCQ-D was 5.5 (SD: 1.7) of a possible 7. The proportion of missing values at item level (HCCQ-D) ranged from 0.6% in item 3 to 12.5% in item 13. Two hundred eighty-five patients filled in the forms. A majority of items showed ceiling effects with a mean of 49.5% rated maximal (SD: 8.5%, range: 32.1%–67.0%; Table 2).

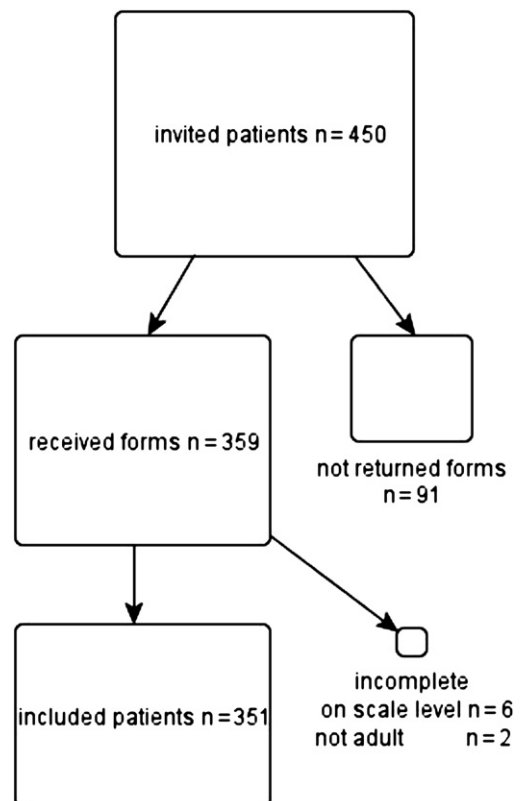


Fig. 1. Flowchart of the study population.

Table 1. Description of the study population ($N = 351$)

Characteristics	<i>n</i> (%)	Missing, <i>n</i> (%)
Mean age (SD), yr	52.9 (17.9)	13 (3.7)
Range of age (minimum–maximum), yr	18–95	
Female	202 (59.8)	13 (3.7)
Employed	170 (53.3)	32 (9.1)
Married	201 (59.1)	11 (3.1)
German nationality	335 (98.5)	13 (3.7)

Abbreviation: SD, standard deviation.

7.4. Internal reliability

The Cronbach α coefficient for the total HCCQ scale of 15 items was high (0.97). The adjusted item-scale correlation using the Spearman correlation coefficient was high, almost above 0.65, except for item 13 (−0.08).

7.5. Factor analysis

The criteria of sampling adequacy showed an adequate correlation of items (Kaiser–Meyer–Olkin criterion = 0.97), which confirmed the prerequisite for the principal component analysis. The principal component analysis of the HCCQ-D identified two principle factors, which accounted for 86.5% of the total variance, a descriptor of a probability distribution (characterizing how far the values lie from the mean). This

means 86.5% of the distributed measured values can be explained by two components. Only item 13 loaded on the second factor, revealing a negative item-scale correlation (−0.08). This item, which asked the patient to rate a negative statement regarding the doctor's manner of talking to the patient, was inverse scaled. According to the analysis instructions, the values of this item were reversed. Forty-seven patients (14.4% of the total sample) rated this item as a “1” the maximum, while also rating most other items as “1,” corresponding to the minimum.

7.6. Convergent validity

The Spearman rank correlation coefficient between the overall mean values of the HCCQ-D and the EUROPEP was −0.50. Analyzing the scatter plot (data not shown), we observed a subgroup of 42 respondents who consistently rated the lowest answering categories in nearly all items of the HCCQ-D (indicating a high dissatisfaction), but at the same time also rated the EUROPEP extremely positive (indicating a high overall satisfaction). The median age within that subgroup (67 years/SD = 17.6) was above the total sample (54 years/SD = 17.9), whereas the percentage employed (33.3%) was below the proportion of total sample (52.9%). Therefore, we assume this subgroup to include a higher proportion of retirees.

Table 2. Description of the HCCQ-D items (text of the original English version)

Item no.	Item	Mean (SD)	Missing values, <i>n</i> (%)	Floor effects, <i>N</i> (%)	Ceiling effects, <i>N</i> (%)
1.	I feel that my physician has provided me choices and options	5.5 (2.0)	21 (6)	25 (7.6)	147 (44.5)
2.	I feel understood by my physician	5.7 (2.0)	4 (1.1)	34 (9.8)	193 (55.6)
3.	I am able to be open with my physician at our meetings	5.9 (2.0)	2 (0.6)	38 (10.9)	234 (67.0)
4.	My physician conveys confidence in my ability to make changes	5.5 (1.9)	18 (5.1)	21 (6.3)	142 (42.6)
5.	I feel that my physician accepts me	5.8 (2.0)	3 (0.9)	35 (10.1)	206 (59.2)
6.	My physician has made sure I really understand about my condition and what I need to do	5.6 (1.9)	8 (2.3)	25 (7.3)	168 (49.0)
7.	My physician encourages me to ask questions	5.5 (1.9)	5 (1.4)	26 (7.5)	145 (41.9)
8.	I feel a lot of trust in my physician	5.7 (2.0)	3 (0.9)	31 (8.9)	184 (52.9)
9.	My physician answers my questions fully and carefully	5.7 (2.0)	6 (1.7)	28 (8.1)	193 (55.9)
10.	My physician listens to how I would like to do things	5.7 (1.9)	8 (2.3)	24 (7.0)	179 (52.2)
11.	My physician handles people's emotions very well	5.6 (1.9)	12 (3.4)	26 (7.7)	150 (44.2)
12.	I feel that my physician cares about me as a person	5.7 (1.9)	7 (2.0)	29 (8.4)	183 (53.2)
13.	I don't feel very good about the way my physician talks to me	5.1 (2.4)	44 (12.5)	47 (15.3)	153 (49.8)
14.	My physician tries to understand how I see things before suggesting a new way to do things	5.1 (2.1)	30 (8.5)	36 (11.2)	103 (32.1)
15.	I feel able to share my feelings with my physician	5.3 (2.2)	20 (5.7)	42 (12.7)	142 (42.9)

Abbreviations: SD, standard deviation; HCCQ-D, German version of Health Care Climate Questionnaire, called the HCCQ-Deutschland.

8. Discussion

This study shows similar psychometric properties of the German version of the HCCQ as of the original English instrument. Our study sample consisted of 351 patients. A sample of 400 patients is needed to perform an appropriate evaluation of a questionnaire [23,24], 300 respondents are recommended to replicate structural analysis [25]. The distribution of patients' major sociodemographic characteristics was comparable to the largest German health plan (WIdO, Scientific Institute of the AOK [Allgemeine Ortskrankenkasse] - international report [26]). About 90% of the German population is covered by a statutory health insurance [26].

As with most other studies, we found relatively high mean values. The first English validation study in obesity patients showed a high mean value of the sum scores (66.5 of possible 75) [4]. Using a five-item version, Fiscella et al. [27] also found high positive means (22 of a possible 25) in 594 American primary care patients. Additionally, Ludman et al. [28] found high mean values of the sum scores (64.8 of a possible 70) in patients with bipolar disorder, using a 10-item version. Only Zeber et al. [8] observed somewhat lower means on item level (between 3.5 and 4.4 of a possible 7) in a similar setting. These consistent high ratings seem to reduce the variability of the questionnaire. For future studies, a two-dimensional scale with 0 (=satisfied) in the center might be considered. In general, differences in number of items and scale points limit exact comparison to other studies. Even in English, a completed analytical description of all 15 items has yet to be published.

The high mean values, as well as the high proportion of ceiling effects, display a high valuation of the primary care service by the patients. This effect is a common limitation in primary care research on patient satisfaction as patients are often reluctant to criticize their family practitioner because of their long-standing relationship [29]. Thus, even a slight reduction in patient satisfaction with care is likely to reflect a significant clinical result.

In Germany, patients have especially close traditional relations to their family practitioners as long-term contact partners. Germany has the highest annual consultation rate per inhabitant in the world (17.7 contacts per year) [30], which may reflect this relationship. In addition, German patients can freely choose their doctors and easily change their physician in case of nonsatisfaction [31]. Furthermore, social desirability may also explain these high ratings. Thus, patients in Germany are likely to perceive high autonomy support from their health care providers.

We found excellent values for the internal reliability of the overall scale, with a Cronbach α coefficient higher than 0.9, similar to previous studies on the English version [4,7,28]. These high values may be also related to the large number of items [32] used in the scale. As in the original version [4], the exploratory factor analysis of the German HCCQ-D indicated a relatively homogenous factor

structure, with almost all items loading on one factor. In accordance with the original questionnaire, we labeled the main factor as "perceived autonomy support." Only one item loaded on the second factor, which might be explained by the fact that only this item was inversely coded. A remarkably high proportion (15.3%) of patients rated this item (item 13) as being "very dissatisfied," whereas rating a similar item on the EUROPEP as being "very satisfied." This suggests that this subgroup did not recognize the inverse coding of the item. Possible solutions to this inverse coding problem could include inverting several other items to call attention to the difference or rephrasing item 13 to be positive, although this would eliminate its control function.

Apart from that item, the separation effect was very high. Because of this homogeneous factor structure and the high interitem correlation, a shortening of the HCCQ-D seems to be acceptable, as others have done with the English version, down to 10 [28], 9 [9], 5 [5,27], or 4 items [6,7].

The correlation between the mean scores of the HCCQ-D and the EUROPEP was "moderate," [19,20] as the questionnaires address comparable dimensions of care. However, the EUROPEP is not based on a corresponding unequivocal construct (see "Measures" section [15]). Furthermore, it includes factors that are influenced by health care assistants, such as accessibility to the practice. We assume that the subgroup of 42 respondents with inconsistent scores between the two questionnaires was confused by the difference in the scales. Excluding these respondents from the sample reveals a higher correlation of -0.7 , which would be regarded as "fairly good" [19]. Looking closely at the descriptive data of this subgroup, older people were more likely to have made this probable error.

The strengths of this study include the structured cultural adaptation process that we used, recommended by the World Health Organization [11], and the high response rate we achieved for a primary care study, which minimizes the risk of selection bias affecting our results. Limitations of this study include the cross-sectional design of the study, the ceiling effect, and a possible selection bias because of the selection of patients by the practice teams and the convenience sample of the practices. We were also unable to assess the retest reliability, as we had only one measurement point. Our findings cannot be generalized beyond primary care because the sample was drawn only from that population. Additional studies in specialty patient populations are needed to validate the HCCQ-D for those groups of patients and practitioners.

9. Conclusions

This study supports that the German version of the HCCQ is an appropriate instrument to explore patients' perceived autonomy support from their primary health care providers. It could be used for further evaluation of the

effects of autonomy supportive care in Germany for different chronic diseases and aspects of health behavior. Applied in intervention studies, the HCCQ-D may provide valid information regarding the mechanisms underlying the improvement of chronic care. Furthermore, this study might be an incitation for translating and validating the HCCQ in other languages as well. Finally other research should explore whether the HCCQ-D can be used to assess autonomy support in other health care providers.

Appendix

Supplementary material

Supplementary material can be found, in the online version, at [10.1016/j.jclinepi.2011.06.003](http://dx.doi.org/10.1016/j.jclinepi.2011.06.003).

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