

# Spirituality, religiosity, and dealing with illness in Arabic and German patients

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## ABSTRACT

**Objectives:** To investigate the impact of spirituality and religiosity (SpR) in Arabic patients with a Muslim background as compared to patients from Western Germany.

**Methods:** A total of 66 Arabic patients with hypertension were recruited between November 2005 and June 2006 consecutively at Al-Razi Hospital and Khalil Sulaiman Hospital in Jenin (Palestine) and completed the translated SpREUK questionnaire (SpREUK is an acronym of the German translation of spiritual and religious attitudes in dealing with illness). One hundred and eighty German patients were matched according to age, marital status, gender, and chronic diseases.

**Results:** Arabic patients with a Muslim background had significantly higher scores for all 4 SpREUK scales than German patients, namely, "Search for meaningful support", "Trust in higher source", "Positive interpretation of disease", and "Support in relations of life through SpR".

**Conclusion:** For Muslims, the "spiritual causes" of disease are regarded much more as given by Allah, but this does neither impair faith as observed in German patients nor the positive interpretation of disease. It is of high importance to acknowledge these differences due to individuals with different SpR attitudes significantly differ in the way they find meaning in disease and hold in their spiritual source.

*Saudi Med J 2007; Vol. 28 (6): 933-942*

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*Received 5th September 2006. Accepted 27th December 2006.*

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Religiosity and spirituality are important aspects for patients suffering from severe diseases. In fact, life threatening diseases confront patients with the question of the meaning and purpose of life and therefore religiosity respectively, spirituality can be a source to rely on in such times of need, for example, to relieve stress, retain a sense of control and maintain hope and sense of meaning and purpose in life.<sup>1</sup> Within the last 20 years, an increasing number of published studies, commentaries, and reviews examined the connection between spirituality-religiosity (SpR), health and quality of life and its potential to prevent, heal, or cope with diseases.<sup>1-5</sup> Given the importance of spiritual well-being to seriously ill patients, integrating systematic assessment of such needs into medical care is crucial. Several studies have shown that religious involvement and spirituality are associated with better health outcomes, coping skills, and health-related quality of life, as well as with lower rates of anxiety, depression, and suicide,<sup>1-14</sup> and that addressing the spiritual needs of the patient may enhance recovery from illness.<sup>11</sup> Moreover, research has confirmed that spiritual well-being is positively-associated with quality of life, fighting-spirit, but also fatalism, yet negatively-correlated with helplessness-hopelessness, anxious pre-occupation, and cognitive avoidance.<sup>15</sup> There is less doubt that values and goals are important contributors to life satisfaction, physical, and psychological health, and that goals are what gives meaning and purpose to people's lives.<sup>16</sup> However, there is, as yet, only limited understanding of how patients themselves view the impact of spirituality on their health and well-being, and whether they are convinced that spirituality may offer some beneficial effects. A crucial point in addressing these issues in patients with chronic diseases is the measurability and operationability of a multi-dimensional construct such as SpR. Several of the instruments designed to 'measure' religiosity respectively, spirituality mix up different convictions, attitudes, forms and frequency of distinct forms of spiritual practices; and several of them refer to a highly restricted concept of religiosity. Moreover, although spirituality and religiosity in several cases were used as interchangeable terms,

the underlying concepts are quite different. It is well established to divide religiosity into 3 sub-constructs: intrinsic, extrinsic, and quest religiosity,<sup>17-20</sup> while the construct spirituality was divided into the following sub-constructs: cognitive orientation towards spirituality, experiential-phenomenological dimension of spirituality, existential well-being, paranormal beliefs, and religiousness.<sup>21</sup> Intrinsic religiosity identifies religion as an end in itself. Strong personal convictions, beliefs, and values are what matter, while the social aspects of religion are not that important.<sup>17-20</sup> In contrast, the motifs of extrinsic religiosity are based on social or external values and beliefs; religion is used to gain social standing and endorsement.<sup>17-20</sup> The quest orientation is founded on a willingness to question complex ideas; the persons are open to the exploration of existential questions and they are open to new information and doubts.<sup>17-20</sup> Spirituality can be viewed as an opposite to religion, or as a vital aspect of religiosity. We have recently differentiated 7 aspects of spirituality, which enrolls more personal, more individualistic views, namely, "prayer, trust in God and shelter", "insight, awareness and wisdom", "transcendence conviction", "compassion, generosity and patience", "conscious interactions", "gratitude, reverence and respect," and "equanimity."<sup>22</sup> Thus, as we have to assume a complex interconnection of various existing views, attitudes and concepts, an oversimplification of spiritual concerns is not appropriate. Therefore, we have developed the SpREUK questionnaire (German translation of spiritual and religious attitudes in dealing with illness) which was originally designed to measure SpR attitudes of patients dealing with chronic diseases, regardless of their distinct religious convictions and affiliations.<sup>23-28</sup> By avoiding restrictive terms such as God, Allah, JHW, Buddha, church, mosque, synagogue, temple, and so forth, the questionnaire can be used in multi-cultural projects. To evade the above mentioned intermix of attitudes and convictions with different forms of SpR practice, we provided an additional instrument, the SpREUK-P questionnaire, which measures different forms and the frequency of distinct SpR practices.<sup>28,29</sup> For our research, we conceptualized spirituality as an attitude of search for meaning, and religiosity as an attitude of reference, trust and hold.<sup>24,25</sup> Several patients argued that they regard their illness as a 'hint' (namely, by God or Allah) to change their life, to behave differently, and so forth.<sup>23,24</sup> "We focused on the question, which groups of patients regard SpR as helpful in their life", are in search of a spiritual source, have ground and trust, and are convinced that their illness can be regarded as a reappraisal, a hint to behave differently, to change their life ('message of disease'). A similar interpretation can be found in the Qur'an

(illness as given by Allah to remember and redirect) or in the Bible (healing connected with the imperative to change life, to behave differently). Both SpREUK questionnaires were extensively tested and optimized in patients with different disease, such as cancer, multiple sclerosis, and several other chronic diseases. Most of the tested individuals were Christians, albeit not all of them would describe themselves as spiritual (or even religious). Additionally, we tested the questionnaires in a large fraction of patients without any religious or spiritual interest. Unfortunately, our sample did not include the group of Arabic Muslim patients due to too small a group in Germany. Thus, we decided to test the SpREUK instrument in a sample of Palestine patients suffering from chronic hypertension. The primary aim of this investigation was to test whether our item pool is appropriate for Arabic patients, whether the resulting main factors are stable, and whether the results are comparable with those from Christian patients from Germany. The purpose is to identify the diversity of religious or spiritual interests across medical patients and sensitize medical physicians to the fact that many patients with chronic or life-threatening diseases have spiritual and religious needs that should be addressed as part of their medical care.

**Methods. Patients.** All tested individuals from Germany and Palestine were informed regarding the purpose of the study, were assured of confidentiality, and gave an informed consent to participate. Arabic patients were recruited between November 2005 and June 2006, at the outpatient clinic of the Al-Razi Hospital and Khalil Sulaiman Hospital in Jenin, Palestine. All of them were positively diagnosed with chronic hypertension and treated by the medical doctors at the respective centers. All subjects completed the questionnaire by themselves; however, several with the assistance of medical students or a psychologist. The Christian patients from Germany were recruited at the Community Hospital Herdecke, Department of Internal and Integrative Medicine at the Essen-Mitte Clinics and at a medical ward in Wuppertal. All subjects completed the questionnaire by themselves without any assistance. In Jenin, the mean age of 66 recruited patients was  $54.3 \pm 10.1$  years; 17 were female, 49 were male, and all were married. The demographic data are depicted in **Table 1**. Among those patients, 97% had hypertension as their main diagnosis, while secondary diagnoses were myocardial infarction (14%), diabetes mellitus (11%), and rheumatic diseases (3%). To make the groups more comparable, according to demographic characteristics we adjusted the German patients to the Arabic patients. The main adjustment criteria were chronic diseases (except cancer and multiple sclerosis), age groups, and marital status,

while for the matched pair analysis, gender was another adjusting parameter. The mean age of the German patients was  $54.8 \pm 12.1$ ; 141 were females, 39 were males, and all were married. Most of them had a chronic pain syndrome such as arthrosis or arthritis, rheuma, fibromyalgia, migraine or headache, lumbago, and so forth (70%), and several other diseases; but only 3% with hypertension, 3% with heart disease, 1% myocardial infarction, and 2% with diabetes mellitus. Based on the matched pair criteria, we were able to pair the patients with respect to gender, marital status, and age (**Table 1**). The number of patients with a secondary school level education was higher in the German patients, while the number of individuals without any school education was higher in the patients from Jenin. As expected, all patients from Jenin were Muslims (100%), while most German patients had a Christian affiliation (86%), and 10% had none.

**Measures and statistical analysis.** The items of the SpREUK questionnaire<sup>27,28</sup> were translated into Arabic language and checked for consistency. The item pool consisted of the previously established set of items.<sup>26-28</sup> As some of the questions require a positive attitude towards SpR, the respective items (item pool 2) were separated from item pool 1. All data were treated as ordinal data. Each subject's total score, and the sum of the scale scores of all items, was used to depict the degree of the respective SpR aspect. Cronbach's coefficient alpha was used to evaluate the reliability of our questionnaire and inter-item correlation, and was published previously.<sup>27,28</sup> Items were scored on a 5-point scale from disagreement to agreement (0 - does not apply at all; 1 - does not truly apply; 2 - don't know; 3 - applies quite a bit; 4 - applies very much). The SpREUK scores are referred to a 100% level (4 "applied very much" = 100%). To provide reliable results and guarantee structure stability, we first tested the item pools in the Arabic patients and later on in both, German and Arabic patients. Each inventory underwent reliability and factor analysis according to the standard procedures.<sup>27,28</sup> In order to eliminate items from the item pool that were not contributing to the questionnaire reliability, the reliability of each scale and the distinct sub-scales were evaluated with internal consistency coefficients, which reflect the degree to which all items on a particular scale measure a single (unidimensional) concept. To combine several items with similar content, we relied on the technique of factor analysis, which examines the correlations among a set of variables, in order to achieve a set of more general "factors". The VARIMAX-factor analysis was repeated rotating different numbers of items in order to arrive at a convergent solution embodying both the simplest structure and the most coherent. Differences in the given

**Table 1 -** Demographic data of patients with chronic diseases from Jenin and Germany.

Demographic date	Matched pairs		Similar matching criteria (gender, family status and age)	
	Jenin n = 46	Germany n = 46	Jenin n = 66	Germany n = 180
<b>Gender (%)</b>				
Male/Female	63/37	63/37	74/26	22/78
<b>Family status (%)</b>				
Married	100	100	100	100
<b>Age groups (%)</b>				
<30 years	2	0	2	0
30-49	15	13	22	16
50-69	65	67	65	58
>70 years	17	20	12	26
<b>Educational level (%)</b>				
Secondary school	56	72	48	67
High school	34	28	45	33
None	9	0	7	0
<b>Religious affiliation (%)</b>				
Muslims	100	0	100	1
Christians	0	86	0	87
Others	0	5	0	6
None	0	10	0	6
<b>Spiritual attitude (%)</b>				
R+S+	83	22	80	22
R+S-	7	29	5	35
R-S+	2	2	2	7
R-S-	9	47	14	37

SMS - search for meaningful support, THS - trust in higher source,  
PID - positive interpretation of disease,  
SLSpR - support in relations of life through SpR

scores were tested using analysis of variance (ANOVA) and Chi-square. We judged  $p < 0.05$  significant, and  $p < 0.05$   $p < 0.10$  as a trend. All statistical analyses were performed with SPSS for Windows version 12.0.

**Results. Arabic patients (SpREUK-Arab).** As shown in **Table 2**, the items derived from the SpREUK item pool 1 had good quality when tested in the Muslim population (Cronbach's  $\alpha = 0.929$ ). Only item 2.5 "trust in higher power" had to be eliminated due to a weak corrected item - total correlation, while item 3.1 "trust in inner power", which was not present in the SpREUK 1.2, had a good quality, and thus was chosen as an item candidate. The item difficulty (3.14 [mean value] / 4) is 0.78; 7 items exceeded

**Table 2** - Mean values of Arabic patients with chronic diseases (n = 66) and reliability parameters of the SpREUK-Arab questionnaire.

Item-Pool 1		Mean values ± SD	Difficulty index	Factor loading	Corrected item-total correlation	Alpha if item deleted	SpREUK 1.2 scale
<b>1. SpR convictions and trust in higher source</b>							
1.1	Spiritual individual	2.82 ± 0.52	0.71	0.827	0.700	0.924	SMS
2.6	Religious individual	2.85 ± 0.50	0.71	0.792	0.732	0.924	THS
39	Death is not an end	3.73 ± 0.57	0.93	0.736	0.561	0.927	THS
1.5	Finding access to a SpR source can have a positive influence on illness	3.05 ± 0.69	0.76	0.679	0.670	0.924	SMS
38	Connected with a higher source	3.35 ± 0.72	0.84	0.671	0.703	0.923	THS
2.5	Trust in higher power	3.19 ± 0.77	-	-	-	-	-
<b>2. Search for access to SpR and support</b>							
1.7	Others might teach and help to develop SpR	3.17 ± 0.65	0.79	0.842	0.504	0.928	SMS
1.6	Searching for an access to SpR	3.03 ± 0.74	0.76	0.839	0.525	0.928	SMS
1.9	Urged to SpR insight, whether it diminishes difficulties in life or not	3.28 ± 0.65	0.82	0.655	0.778	0.922	SMS
1.8	Looking for purpose and meaning	3.24 ± 0.58	0.81	0.591	0.676	0.924	SMS
1.4	Renewed interest in SpR questions	2.73 ± 0.94	0.68	0.588	0.584	0.927	SMS
<b>3. Reappraisal: Positive interpretation of disease</b>							
3.4	Illness has meaning	3.33 ± 0.60	0.83	0.790	0.625	0.925	PID
3.5	Chance for own development	3.21 ± 0.72	0.80	0.707	0.594	0.926	PID
3.3	Encourages to get to know yourself better	3.17 ± 0.68	0.79	0.658	0.677	0.924	PID
3.2	Hint to change life	3.12 ± 0.70	0.79	0.614	0.646	0.925	PID
2.1	Have no influence on life, it is fixed by fate	3.30 ± 0.68	-	-	-	-	-
2.2	Accept illness and bear it calmly	3.23 ± 0.58	-	-	-	-	-
<b>4. Stability and trust</b>							
3.6	Real being is not affected by disease	3.08 ± 0.85	0.77	0.781	0.608	0.926	PID
37	Faith in spiritual guidance in life	3.34 ± 0.69	0.84	0.664	0.613	0.925	THS
3.7	Reflect on what is essential in life	3.09 ± 0.78	0.77	0.664	0.675	0.924	PID
3.1	Trust in inner strength	2.82 ± 0.93	0.71	0.631	0.594	0.927	-
<b>Item-Pool 2</b>							
<b>4. Support in the exposure to illness and life</b>							
4.6	SpR persuasions help to see disease as a challenge beneficial for development	3.33 ± 0.51	0.83	0.809	0.543	0.805	SLSpR
4.4	SpR helps to cope better with illness	3.36 ± 0.52	0.84	0.698	0.594	0.800	SLSpR
4.8	Experience and deepen SpR when practicing with others	3.38 ± 0.52	0.85	0.670	0.476	0.812	SLSpR
4.3	SpR helps to manage life more consciously	3.38 ± 0.49	0.85	0.655	0.561	0.804	SLSpR
4.5	People who share SpR attitudes are important	3.44 ± 0.53	0.86	0.599	0.566	0.803	SLSpR
4.2	Deeper connection with neighbors and the world around through SpR	3.34 ± 0.48	-	-	-	-	SLSpR
4.1	Practice of SpR plays a major role in life	3.44 ± 0.53	-	-	-	-	SLSpR
<b>5. Support in the restoration of health and inner peace</b>							
4.9	Experience and deepen SpR when practicing alone and in silence	3.40 ± 0.56	0.85	0.787	0.487	0.811	SLSpR
4.7	SpR helps restore to mental and physical health	3.54 ± 0.54	0.89	0.730	0.492	0.810	SLSpR
5.1	Feeling of inner peace through SpR	3.33 ± 0.54	0.83	0.674	0.427	0.817	SLSpR
4.10	SpR is stimulated at distinct places	3.59 ± 0.50	-	-	-	-	SLSpR
<b>6. External source and inner strength</b>							
5.3	SpR refers to a higher power	3.29 ± 0.56	0.82	0.824	0.390	0.821	SLSpR
5.2	SpR promotes inner strength in everyday life	3.38 ± 0.55	0.85	0.740	0.570	0.802	SLSpR
5.4	SpR refers to an inner power	1.13 ± 0.82	-	-	-	-	SLSpR

Item pool 1: Varimax rotation with Kaiser normalization (rotation converged in 7 iterations); 18 items explain 70.1% of variance; Kaiser-Meyer-Olkin = 0.860; Cronbach's alpha = 0.929. SMS - search for meaningful support, THS - trust in higher source, PID - positive interpretation of disease, Item pool 2: 10 items explain 64.4% of variance; Kaiser-Meyer-Olkin = 0.771; Cronbach's alpha = 0.824. SLSpR - Support in relations of life through SpR

**Table 3** - Mean values of German (n = 180) and Arabic patients (n = 66) with chronic diseases and reliability parameters of the SpREUK 1.2b questionnaire.

Item-Pool 1		Mean values ± SD	Difficulty Index	Factor loading	Corrected Item-Total Correlation	Alpha if Item deleted	SpREUK 1.2 scale
<b>1. Search for meaningful support <math>\alpha = 0.936</math>; 56.1 % of variance</b>							
1.7	Others might teach and help to develop SpR	2.16 ± 1.37	0.54	0.805	0.840	0.954	SMS
1.6	Searching for an access to SpR	1.87 ± 1.42	0.47	0.777	0.855	0.954	SMS
1.9	Urged to SpR insight, whether it diminishes difficulties in life or not	2.05 ± 1.45	0.51	0.774	0.871	0.953	SMS
1.5	Finding access to SpR source can have a positive influence on illness	2.00 ± 1.35	0.50	0.723	0.873	0.954	SMS
1.4	Renewed interest in SpR questions	1.83 ± 1.48	0.46	0.702	0.638	0.959	SMS
1.1	Spiritual individual	2.01 ± 1.26	0.50	0.668	0.810	0.955	SMS
1.8	Looking for purpose and meaning	2.63 ± 1.21	0.66	0.562	0.641	0.958	SMS
<b>2. Reappraisal: Positive interpretation of disease <math>\alpha = 0.879</math>; 7.8 % of variance</b>							
3.3	Encourages to get to know yourself better	2.71 ± 1.06	0.68	0.804	0.654	0.958	PID
3.7	Reflect on what is essential in life	2.79 ± 1.02	0.70	0.748	0.594	0.958	PID
3.2	Hint to change life	2.51 ± 1.13	0.63	0.706	0.734	0.956	PID
3.5	Chance for own development	2.12 ± 1.34	0.53	0.612	0.772	0.955	PID
3.4	Illness has meaning	2.02 ± 1.41	0.51	0.597	0.790	0.955	PID
3.1	Trust in inner strength	2.53 ± 1.06	-	-	-	-	-
3.6	Real being is not affected by disease	2.60 ± 1.08	-	-	-	-	PID
<b>3. Trust in higher source <math>\alpha = 0.884</math>; 5.9 % of variance</b>							
2.6	Religious individual	2.53 ± 1.21	0.63	0.795	0.559	0.958	THS
3.9	Death is not an end	2.98 ± 1.24	0.75	0.775	0.715	0.956	THS
3.7	Faith in spiritual guidance in life	2.52 ± 1.31	0.63	0.689	0.825	0.954	THS
3.8	Connected with a higher source	2.28 ± 1.46	0.57	0.623	0.854	0.954	THS
2.5	Trust in a higher power	2.66 ± 3.01	-	-	-	-	THS
2.1	Have no influence on life, it is fixed by fate	2.13 ± 1.33	-	-	-	-	-
2.2	Accept illness and bear it calmly	2.19 ± 1.29	-	-	-	-	-
<b>Item-Pool 2</b>							
<b>4. Support in relations of life through SpR <math>\alpha = 0.971</math>; 68.8 % of variance</b>							
4.3	SpR helps to manage life more consciously	2.86 ± 1.15	0.72	0.899	0.890	0.967	SLSpR
4.4	SpR helps to cope better with illness	2.68 ± 1.24	0.67	0.878	0.891	0.967	SLSpR
5.2	SpR promotes inner strength in everyday life	2.80 ± 1.18	0.70	0.874	0.890	0.967	SLSpR
4.2	Deeper connection with neighbors and the world around through SpR	2.82 ± 1.16	0.71	0.859	0.883	0.967	SLSpR
5.1	Feeling of inner peace through SpR	2.79 ± 1.19	0.70	0.841	0.842	0.968	SLSpR
5.3	SpR refers to a higher power	2.80 ± 1.22	0.70	0.837	0.867	0.968	SLSpR
4.5	People who share SpR attitudes are important	2.82 ± 1.26	0.71	0.837	0.863	0.968	SLSpR
4.7	SpR helps restore to mental and physical health	2.54 ± 1.30	0.64	0.815	0.798	0.968	SLSpR
4.6	SpR persuasions help to see disease as a challenge beneficial for development	2.44 ± 1.26	0.61	0.814	0.827	0.969	SLSpR
4.8	Experience and deepen SpR when practicing with others	2.44 ± 1.37	0.61	0.797	0.767	0.970	SLSpR
4.9	Experience and deepen SpR when practicing alone and in silence	2.72 ± 1.25	0.68	0.791	0.785	0.970	SLSpR
4.1	Practice of SpR plays a major role in life	2.43 ± 1.41	0.45	0.696	0.848	0.968	SLSpR
4.10	SpR is stimulated at distinct places	2.81 ± 1.26	-	-	-	-	SLSpR
5.4	SpR refers to an inner power	1.65 ± 1.27	-	-	-	-	SLSpR

Item pool 1: Varimax rotation with Kaiser normalization rotation converged in 7 iterations; 16 items explain 69.8% of variance; Kaiser-Meyer-Olkin = 0.934; Cronbach's alpha = 0.958; Item pool 2: 12 items explain 68.9% of variance; Kaiser-Meyer-Olkin = 0.943; Cronbach's alpha = 0.971  
 SMS - search for meaningful support. PID - positive interpretation of disease. THS - trust in higher source. SLSpR - support in relations of life through SpR

the acceptable range of 0.2-0.8 (particularly item 39 “death is not an end”, which points to ceiling-effects of several items in the Arabic study population. Factor analysis (**Table 2**) revealed a Kaiser-Meyer-Olkin value of 0.860, which is a measure for the degree of common variance, indicates that the item-pool seems to be suitable for a factorial validation. In addition, Barlett’s test for non-sphericity was highly significant ( $p < 0.001$ ). As depicted in **Table 2**, item pool 2 had a good quality (Cronbach’s  $\alpha = 0.824$ ). Primary factor analysis of the 18-item pool pointed to a 4-factor solution, which explains 70.1% of variance.

The first 3 factors are more or less similar to the factors of the SpREUK 1.2. The first factor “trust in higher source and SpR convictions” shares 3 of 5 items of the factor “trust in higher source” of the SpREUK 1.2, and 2 items from the SpREUK 1.2 factor “search for meaningful support”, namely, items 1.1 “spiritual individual” and 1.5 “finding access to a SpR source can have a positive influence on illness”. The second factor “search for an access to SpR and support” shares 5 out of 7 items from the SpREUK 1.2 factor “search for meaningful support”, while the third factor “positive interpretation of disease” (namely, patients reflect what is essential in life, are convinced that illness has meaning, regard illness as a chance for development and as a hint to change life, and so forth) shares 4 of 6 items of the SpREUK 1.2 factor with the same label. The fourth factor of the SpREUK-Arab “stability and trust” is made up by 2 items from the SpREUK 1.2 factor “positive interpretation of disease”, one item from the SpREUK 1.2 factor “trust in higher source”, and one item that was originally designed to be added to the “trust in higher source” scale. The item pool 2, which requires a positive SpR attitude, was tested independently. As depicted in **Table 2**, the items had good quality (Cronbach’s  $\alpha = 0.824$ ). However, 4 out of 14 items had to be eliminated when tested in the Muslim population, namely, 4.1 (practice of SpR plays a major role in life), 4.2 (deeper connection with neighbors and the world around through SpR), 4.10 (SpR is stimulated at distinct places) and 5.4 (SpR refers to an inner power). The item difficulty (3.38 [mean value] / 4) is 0.85, and thus exceeded the acceptable range and again points to ceiling-effects of these items in the Arabic population. Factor analysis (**Table 2**) revealed a Kaiser-Meyer-Olkin value of 0.771. Thus, the item-pool seems to be suitable for a factorial validation. In addition, Barlett’s test for non-sphericity was highly significant ( $p < 0.001$ ). Due to the elimination of 4 out of 14 items, the primary structure of the item pool changed to a 3-factor solution, which explains 64.4% of variance. The first

factor “support in the exposure to illness and life” had 5 items, the second factor “support in the restoration of health or inner peace” consists of 3 items, while the third factor “external source or inner strength” included just 2 items. Taken together, due to testing in a distinct population, the primary structure of the scales made up by the item pool 1 slightly changed the direction of the scales (with the exception of positive interpretation of disease), although the main structure remained stable. In contrast, the structure of the item pool 2, which deals with the topic of “support of relations in life through SpR”, resulted in 3 unique scales, which changed the main characteristic of the original SpREUK factor.

*Arabic and German patients (SpREUKA2.b).* As it was our main intention to work with a questionnaire which is valid in different religious or non-religious groups, and to compare SpR attitudes and convictions on a more general level, we tested the item pools in both, German ( $n=180$ ) and Palestine ( $n=66$ ) patients with chronic diseases (**Table 3**). As expected, the new validation resulted in a version termed SpREUK 1.2b, which is in congruence with the previously described version 1.2. Due to the answers of the Arabic patients, we reduced the item number and eliminated 6 items. In detail, with Cronbach’s  $\alpha = 0.958$  the item pool 1 had a good quality (**Table 3**). As described above, item 2.5 “trust in higher power” was eliminated due to a weak corrected item-total correlation, and also item 3.6 “real being is not affected by disease”. The item difficulty (2.31 [mean value] / 4) is 0.58; none of the items exceeded the acceptable range of 0.2-0.8. Factor analysis (**Table 2**) revealed a Kaiser-Meyer-Olkin value of 0.934, which as a measure for the degree of common variance indicates that the item-pool seems to be suitable for a factorial validation. In addition, Barlett’s test for non-sphericity was highly significant ( $p < 0.001$ ). Primary factor analysis of the 16-item pool pointed to a 3-factor solution, which explains 69.8% of variance. All factors are identical with the factors of the SpREUK 1.2. However, 2 items from the factor “positive interpretation (3.4: “illness has meaning” and 3.5: “chance for own development”) could be attributed also to factor “search for meaningful support” (both with a loading  $> 0.5$ ). Also, the items from item pool 2 had a good quality (Cronbach’s  $\alpha = 0.971$ ). However, the size of the 16 item sample could be reduced due to the elimination of 4 items with a weak corrected item-total correlation, namely 4.1 “practice of SpR plays a major role in life”, 4.9 “experience and deepen SpR when practicing alone and in silence”, 4.10 “SpR is stimulated at distinct places” and 5.4 “SpR refers to an inner power”. The item

difficulty (2.68 [mean value] / 4) is 0.67; all values were in the acceptable range. Factor analysis (**Table 2**) revealed a Kaiser-Meyer-Olkin value of 0.943. Thus, the item-pool was suitable for a factorial validation. Also, Barlett's test for non-sphericity was highly significant ( $p < 0.001$ ). As described for the previous version 1.2, the current factor analysis revealed just one factor, which explains 68.9% of variance. Thus, the structure of the SpREUK was stable when tested in Christian respectively, atheistic patients from Germany, and Muslim patients from Palestine. Moreover, we enhanced the quality by reducing the number of items, and thus made it more applicable for comparative investigations.

**SpR attitudes and convictions.** Compared to the German population, we found the population of patients with chronic diseases from Jenin had significantly higher scores on the 4 SpREUK scales, namely, "search for meaningful support", "trust in

higher source", "positive interpretation of disease" (reappraisal), and "support in relations of life through SpR" (**Table 4**). There were no significant gender-associated differences within the populations with similar matching criteria, while we found a significant difference in the Arabic population of the matched pair sample with respect to "support in relations of life through SpR", here, women had a somewhat lower score than men ( $F=4.340$ ;  $p=0.043$ ; ANOVA). With respect to the educational level there were no significant differences in the Arabic patients, while in the German population the "search for meaningful support" was significantly higher in patients with a higher educational level ( $F=3.112$ ;  $p=0.0028$ ; ANOVA). Although one may suppose that the religious affiliation alone may define the religious resp. spiritual attitude, we noticed from our previous research<sup>25-28</sup> that this is not true, particularly in Germany. Among the patients with

**Table 4** - Spirituality and religiosity attitudes and convictions in patients with chronic diseases from Jenin and Germany.

Attitudes and Convictions	Matched pairs		Similar matching criteria (gender, family status and age)	
	Jenin	Germany	Jenin	Germany
<i>All</i>	<b>n = 46</b>	<b>n = 46</b>	<b>n = 66</b>	<b>n = 180</b>
Search for meaningful support	78.3 ± 10.0	40.3 ± 27.0*	76.3 ± 12.7	42.6 ± 27.7*
Reappraisal: positive interpretation of disease	82.4 ± 10.7	50.2 ± 27.0*	79.2 ± 14.0	54.4 ± 24.8*
Trust in higher source	86.3 ± 8.6	50.5 ± 32.4*	82.9 ± 12.8	56.8 ± 32.4*
Support in relations of life through SpR	85.2 ± 7.1	52.8 ± 26.4*	84.6 ± 7.8	52.8 ± 26.4*
<i>Men</i>	<b>n = 29</b>	<b>n = 29</b>	<b>n = 48</b>	<b>n = 39</b>
Search for meaningful support	79.5 ± 9.0	38.8 ± 25.5*	76.3 ± 13.2	41.7 ± 26.8*
Reappraisal: positive interpretation of disease	82.1 ± 11.9	51.5 ± 26.4*	78.0 ± 15.3	54.2 ± 25.2*
Trust in higher source	87.3 ± 8.6	47.4 ± 32.2*	82.2 ± 14.1	49.7 ± 31.9*
Support in relations of life through SpR	86.8 ± 7.2	55.1 ± 24.7*	85.5 ± 8.3	53.7 ± 27.0*
<i>Women</i>	<b>n = 17</b>	<b>n = 17</b>	<b>n = 17</b>	<b>n = 132</b>
Search for meaningful support	76.3 ± 11.5	43.1 ± 30.2*	76.3 ± 11.5	42.9 ± 28.0*
Reappraisal: positive interpretation of disease	82.9 ± 8.6	47.9 ± 28.7*	82.9 ± 8.6	54.4 ± 24.8*
Trust in higher source	84.7 ± 8.6	56.1 ± 33.1*	84.7 ± 8.6	58.8 ± 29.0*
Support in relations of life through SpR	82.5 ± 6.1	49.5 ± 29.7*	82.5 ± 6.1	58.8 ± 28.4*
<i>R+S+ attitude</i>	<b>n = 38</b>	<b>n = 10</b>	<b>n = 52</b>	<b>n = 38</b>
Search for meaningful support	80.5 ± 8.7	67.0 ± 24.0*	80.0 ± 9.1	70.8 ± 19.4*
Reappraisal: positive interpretation of disease	83.2 ± 9.3	67.8 ± 32.3†	82.5 ± 9.2	71.4 ± 23.1*
Trust in higher source	88.4 ± 6.6	85.0 ± 12.9	86.8 ± 7.2	86.1 ± 13.9
Support in relations of life through SpR	86.3 ± 6.8	72.2 ± 14.5*	85.8 ± 7.0	75.3 ± 16.2*
<i>R-S- attitude</i>	<b>n = 4</b>	<b>n = 21</b>	<b>n = 9</b>	<b>n = 62</b>
Search for meaningful support	61.6 ± 9.8	22.9 ± 20.9†	56.1 ± 14.7	22.8 ± 19.8*
Reappraisal: positive interpretation of disease	68.8 ± 17.0	39.9 ± 22.9†	56.5 ± 17.5	44.0 ± 21.7
Trust in higher source	68.8 ± 8.8	24.2 ± 24.9*	59.5 ± 16.4	28.9 ± 21.6*
Support in relations of life through SpR	75.0 ± 6.6	16.5 ± 13.2*	71.3 ± 9.2	22.4 ± 22.1*

The differences between both populations were statistically significant (\* $p < 0.01$ ; † $p < 0.05$ ; ANOVA). There were no significant gender-associated differences within the populations with similar matching criteria (data not shown), while we found significant differences in the Arabic population of the matched pair sample with respect to SLSpR ( $p=0.043$ ; ANOVA). ANOVA - analysis of variance

**Table 5** - Correlation analysis among patients with similar primary matching criteria.

SPREUK factors	Agreement accept illness and bear it calmly		Agreement no influence on life, it is fixed by fate	
	Arabic patients n=65 (95%)	German patients n=126 (36%)	Arabic patients n = 56 (94%)	German patients n = 126 (21%)
Search for meaningful support	0.555*	0.118	0.366*	0.120
Reappraisal: Positive interpretation of disease	0.653*	-0.002	0.409*	-0.046
Trust in higher source	0.471*	0.144	0.306†	0.123
Support in relations of life through SpR	0.320†	-0.081	0.298†	-0.079

Correlations are significant with \* $p < 0.01$  (2-tailed); † $p < 0.05$ , SpR - spirituality and religiosity.

a Christian affiliation, we had 24% which would regard themselves as both religious and spiritual (R+S+), 38% which would describe themselves as religious but not spiritual (R+S-), 5% which are spiritual but not religious, and 33% which would report themselves as neither religious nor spiritual (R-S-). Moreover, within the German population, 10% reported no religious affiliation at all, and consequently 2/3 were R-S-. Within the group of Arabic patients which all were Muslims, 78% report themselves as R+S+, 6% as R+S-, 1% as R-S+, and 15% as R-S-. Consequently, one should compare the results with respect to the SpR attitude groups. In fact, as shown in **Table 4**, patients from Germany with an R+S+ attitude had significantly higher SpREUK scores as compared to the whole German sample, which reflects positive agreement. Particularly with respect to “trust in higher source” the results did not differ between German and Arabic patients, while all other SpREUK aspects remained much higher in the Arabic patients. However, if the focus was set on patients with an R-S- attitude (which are of course, only few in the Arabic population), it became evident that the SpREUK scores of Arabic patients reflect a level of “neither interest nor rejection”, while the SpREUK scores of German patients reflect a strong rejection of these SpR topics.

**Fate and fatalism.** Although the items 2.1 “I have no influence on my life, it is fixed by fate” and 2.2 “I accept my illness and bear it calmly”, which are relevant for this topic are not part of the SpREUK tool, both items, however, would load on the scale “interpretation of disease” of the SpREUK-Arab. But, due to the fact that we intended to score a positive “message of disease” and not a fatalistic view, both were used as marker items. We found that 95% of the Muslim patients “accept illness and bear it calmly” (just one patient rejected this statement), which is in sharp contrast to 36% of

German patients (53% rejected this statement). This difference is statistically significant ( $p < 0.0001$ ; Chi<sup>2</sup>). As suggested, 94% of Arabic patients argued that they “have no influence on life, as it is fixed by fate” (3% rejected this statement), while 54% of German patients disagreed (just 21% agreed with this statement). Again, the difference between both study populations was statistically significant ( $p < 0.0001$ ; Chi-square). Correlation analysis (**Table 5**) of agreement respectively, disagreement with the statement “I accept illness and bear it calmly” and “I have no influence on my life, it is fixed by fate” and the SpREUK scores yielded evidence that these items are unique markers for Arabic patients. While agreement significantly correlates with all 4 SpREUK scales, particularly with “positive interpretation of disease”, the statement does not correlate with the scales in German patients.

**Discussion.** One of the outstanding differences between the SpR convictions of our patients from Germany and Palestine is the fact that for the Muslims the differentiation between a spiritual and a religious attitude is inappropriate, while it is of conceptual importance in Western Europe. When tested for the German population, the items 1.1 “spiritual individual” and 2.6 “religious individual” load on different factors which represent a spiritual “search for meaningful support” a religious “trust in a higher source” (God or Allah). When tested for the Arabic population, both items load on the same factor. For Arabic Muslims, a spiritual, and a religious attitude strongly correlates ( $r = 0.886$ ,  $p < 0.001$ ), while for German persons both do correlate, but to a much weaker content ( $r = 0.526$ ;  $p < 0.001$ ). This is in congruence with the observation that in Islam “there is no distinction between religion and spirituality.”<sup>30</sup> For a Muslim, “Allah’s unity must be maintained spiritually, intellectually, and practically in all facets of life,”<sup>30</sup> and thus illness is regarded as part

of life and a test from Allah. Moreover, "illness is one of the forms of experience by which humans arrive at a knowledge of Allah" as cited by Rassool.<sup>30</sup> However, in Western Europe the Reconnaissance has significantly affected the trust in institutional religion and God,<sup>31</sup> changed ethical norms,<sup>32</sup> and thus, we have to notice a decline of interest in religiosity and even praying.<sup>28,29</sup> While the "relation" to Allah is vital in Arabic countries, we have to notice a disturbance of this vertical connection in Western countries.

It is a fact that a large fraction of patients in Germany regard themselves as neither religious nor spiritual, or at least spiritual but not religious.<sup>23-29</sup> Also, in this investigation we have to state that more than one third of German patients regard themselves as not religious, while in the Arabic population somewhat more than one sixth would describe themselves as not religious. The majority of the Palestine patients are R+S+, while German patients are R+S+ or R+S-. It is of high importance to acknowledge these (not only conceptual) differences, due to these SpR attitude groups significantly differ in the way they find meaning in disease and hold in their spiritual source.<sup>24-28</sup>

For Muslim patients the "spiritual causes" of disease may be regarded much more as "given by Allah" (namely, Al-Baqarah 2:155-156<sup>33</sup>): "We will most certainly try you with somewhat of fear and hunger and loss of property and lives and fruits; and give good news to the patient. Who, when a misfortune befalls them, say: Surely we are Allah's and to Him we shall surely return."; Sahih Bukhari Book 71, No. 665<sup>34</sup>: Narrated Abu Huraira: "The Prophet said, 'No 'Adha (namely, no contagious disease is conveyed to others without Allah's permission); nor (any evil omen in the month of) Safar; nor Hama.[restless wandering ghost].'" and a matter of less faith and trust (namely, Sahih Bukhari Book 71, 630<sup>34</sup>): "Narrated 'Aisha: (the wife of the Prophet) that she asked Allah's Apostle about plague, and Allah's Apostle informed her saying, "plague was a punishment which Allah used to send on whom He wished, but Allah made it a blessing for the believers.") or as a trial (namely, Al-Hagg 22; 53<sup>33</sup>): "So that He may make what the Shaitan casts a trial for those in whose hearts is disease and those whose hearts are hard". However, most Western Europe patients would reject this point of view. In fact, the marker items 2.1 ("I have no influence on my life, it is fixed by fate") and 2.2 ("I accept my illness and bear it calmly") reflect unique and distinct views of Arabic patients, as they correlate with all SpREUK scales in the Arabic population, particularly with "Positive interpretation of disease", but not in the German patients. Illness might be due to Allah, and thus one has to accept it, but this does neither impair faith as observed in German patients

nor the positive interpretation of disease. Because of this distinct view, it is quite clear that Muslims have much more trust in a "higher power" (item 2.5), which carries through than patients in Western Europe (85% agreement and 3% disagreement as compared to 50% agreement and 33% disagreement in German patients;  $p < 0.0001$ ;  $\chi^2$ ). This clearly will impact the course of how patients deal and cope with their illness. For Arabic Muslims, we found a strong "positive interpretation of disease" (hint to change life), while for German patients with chronic diseases (but not cancer) there was just a moderate positive interpretation. This again falls back to the different perspectives, as for a Muslim, "disease is largely attributed to lack of attention to the spiritual dimension of human beings, and to estrangement from the will of Allah."<sup>35</sup> Preliminary results point to the fact that Arabic patients regard their illness as a "challenge" and a "value", and to a lower extent as an "enemy".

The significant differences in the SpR convictions and attitudes of Arabic and German patients can be explained of course with cultural differences, but also with distinct religious perspectives. Faith in Allah (Shahadah) and regular worship (salat) are 2 of the 5 major concepts of the Islamic faith and Muslims will cling on it. Both concepts are highly relevant for Christians too, but due to the changing social and religious structure of Western society, you may state that you have no interest in religiosity at all, or may set up an individual "religious patchwork", using various existing esoteric and religious resources, to provide meaning, sense and hope, and there is no social disqualification. The opposite might be true for several Arabic countries, and this could be a bias. Thus, for further studies we have to enroll patients from different Arabic countries and with different diseases.

Taken together, the SpREUK A2.b is applicable in Arabic Muslim patients with chronic diseases and can be used as a unique research tool on SpR issues in Arabic countries. Of course, there is a need to increase the sample size of Muslim patients to compare their attitudes and convictions with those of Christians from Arabic countries and those from Western countries. Nevertheless, the observed differences between German and Palestine patients were so strong that one may rely on it. This of course can only be regarded as a first step in an ongoing respectful trans-cultural process to share values and beliefs, and thus to improve health care of patients with chronic diseases. With this research tool it is also possible to investigate recovery of patients with respect to their SpR convictions and practices, and to evaluate the impact of an integration of SpR in daily life on health and disease coping of Eastern and Western patients. One of the next steps is to correlate the SpREUK scales with different adaptive coping styles,<sup>28</sup>

appreciated SpR values,<sup>22</sup> different aspects of quality of life resp. and satisfaction of life. Thus, collaborations are intended and highly encouraged.

**Acknowledgment.** We are grateful to Deutscher Akademischer Austauschdienst (DAAD) for the financial support of research meetings. Moreover, thanks to the patients that completed the questionnaire.

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