

Validation of the Polish version of the Duke University Religion Index (PoDUREL)

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Introduction Religiosity has been recognized as an important psychosocial health factor. Correlations between religiosity and health indicate that religious involvement helps patients cope with illness and affects their quality of life, health behaviors, and disease outcomes.¹ Many research tools have been developed to measure religiosity and its correlation with different aspects of health. However, most of these measures have been developed in American and Christian contexts. Poland has had a long tradition in this research field. The first scale that was published by Prezyna in 1968 (*Scale of Religious Attitudes*)² is still used,³ along with numerous scales developed by foreign authors (ie, Huber, Pargament, Hutsebaut) and validated and adapted to Polish populations.⁴ No measures, particularly in Poland, have yet been developed specifically for assessing religious involvement in medical professionals (anticipating future research in this population examining relationships to health).

One of the best known and widely used scales is the Duke University Religion Index (DUREL) developed by Koenig et al^{5,6} in 1997 in the United States for use in epidemiological research. The DUREL has been validated in populations of different religions and ethnicities around the world. It has been translated into 15 languages including Spanish, Portuguese, German, Norwegian, Danish, Dutch, Romanian, Japanese, Chinese, Farsi, Thai, Malay, Ukrainian, Tagalog, and Arabic.⁶⁻⁸ The DUREL is a brief and easy-to-use scale, and its usefulness has been proved in a number of studies examining health outcomes in the context of both psychological and physical symptoms.^{9,10}

The aim of the present study was to examine the reliability and validity of the Polish version

of the DUREL (PoDUREL) for use by medical professionals.

Patients and methods The DUREL is a 5-item questionnaire designed to assess 3 main aspects of religiosity: organized religious activities (ORAs; 1 item), nonorganized religious activities (NORAs; 1 item), and intrinsic religiosity (IR; 3 items). ORAs mean public religious activities such as attending religious services or participating in other group-related religious activities (eg, prayer groups). NORAs consist of religious activities performed in private, such as prayer, study of the Holy Scripture, or listening to religious radio. IR assesses personal religious commitment or motivation.⁶

ORAs and NORAs are scored on a 6-point Likert scale, while the IR items are scored on a 5-point Likert scale. The total score is between 5 and 27 points. The authors recommend analyzing 3 subscale scores independently in separate regression models when their correlation to health is examined.⁶

The scale has high test-retest reliability (intraclass correlation, 0.91), high internal consistency (Cronbach's α , 0.78–0.91), and high convergent validity with other measures of religiosity (r 's, 0.71–0.86).⁶

Study participants The study was conducted in March 2016. The PoDUREL questionnaire was distributed among students of the Medical University of Lublin, Poland. A total of 416 fully completed questionnaires were accepted for analysis. Students represented various medical faculties of the first 3 years of studies (1–3). Most of them stated that they were Catholics (334; 80.2%).

According to the Institute of Catholic Church, religiosity of inhabitants of Lublin represented

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TABLE 1 Students' scores in the Polish Version of the Duke University Religion Index items by sex

PoIDUREL		Men		Women		Total
		n	%	n	%	%
Item 1 (ORA)	never	5	6.2	16	4.8	5.0
	once a year or less	5	6.2	16	4.8	5.0
	a few times a year	28	34.6	69	20.6	23.3
	a few times a month	14	17.3	51	15.2	15.6
	once a week	25	30.9	166	49.6	45.9
	more than once/week	4	4.9	17	5.1	5.0
Item 2 (NORA)	rarely or never	36	44.4	93	27.8	31.0
	a few times a month	11	13.6	41	12.2	12.5
	once a week	5	6.2	17	5.1	5.3
	two or more times/week	5	6.2	60	17.9	15.6
	daily	19	23.5	107	31.9	30.3
	more than once a day	5	6.2	17	5.1	5.3
Item 3 (IR1)	definitely <i>not</i> true	8	9.9	22	6.6	7.2
	tends <i>not</i> to be true	8	9.9	14	4.2	5.3
	unsure	22	27.2	48	14.3	16.8
	tends to be true	16	19.8	108	32.2	29.8
	definitely true of me	27	33.3	143	42.7	40.9
Item 4 (IR2)	definitely <i>not</i> true	10	12.3	28	8.4	9.1
	tends <i>not</i> to be true	13	16.0	32	9.6	10.8
	unsure	19	23.5	67	20.0	20.7
	tends to be true	22	27.2	133	39.7	37.3
	definitely true of me	17	21.0	75	22.4	22.1
Item 5 (IR3)	definitely <i>not</i> true	18	22.2	40	11.9	13.9
	tends <i>not</i> to be true	14	17.3	41	12.2	13.2
	unsure	16	19.8	78	23.3	22.6
	tends to be true	26	32.1	129	38.5	37.3
	definitely true of me	7	8.6	47	14.0	13.0

the average of the Polish population in 2015, and it seemed to be a good region to validate the PoIDUREL.

Students were informed about the objectives of the study and research procedure. They were assured that participation in the study was voluntary and anonymous. Questionnaires were given to those who consented to take part in the study. All collected questionnaires were coded in an anonymous fashion. Data were input to the Microsoft Excel program (Microsoft Corporation, Redmond, Washington, United States) and then subjected to statistical analysis in the IBM SPSS Statistics for Windows (IBM Corporation, Armonk, New York, United States).

Procedure of adaptation After obtaining permission from the author, the original English version of the DUREL was separately translated by 2 philosophers working on religiosity/spirituality in the health context. Then, the 2 translations were compared. Any doubts which appeared during comparison were consulted with an English language interpreter. As a result, one coherent version was accepted and translated back to English.

The questionnaire was distributed in a convenience sample of 50 students to examine face validity. Vague words and statements were changed, and the final Polish-translated version was created (Supplementary material online, *Annex 1*). The PoIDUREL was examined for internal consistency and for test-retest reliability. For the latter, the questionnaire was distributed among a convenience sample of 50 students at baseline and again 3 weeks later.

Statistical analysis The Cronbach's α was used to assess the internal consistency of the PoIDUREL. Values greater than 0.7 were considered acceptable. Intraclass correlation coefficients (ICCs) were used to measure the test-retest reliability of the scale.

Construct validity of the PoIDUREL was assessed by the principal component analysis (PCA) with a varimax rotation with Kaiser normalization. Eigenvalues greater than 1.0 and item loadings equal to or greater than 0.5 were the criteria for factor assessment (so called Kaiser criterion). To assess the validity of the scale, the Cattell's scree test was also applied. The discriminatory power of positions was measured.

Spearman correlation (distribution of variables is not standard normal distribution) was used to assess the relationship between the subscales of the PolDUREL, age, and general result of the PolDUREL. The Mann–Whitney test was used to evaluate the relationships between categorical variables.

Results Participants were medical students in years 1–3. Age ranged from 19 to 28 years (mean age, 21.0 ±1.5); 81.5% of the sample (n = 335) were women; and 56.7% (n = 236) were from urban areas. Responses to the PolDUREL stratified by sex are presented in TABLE 1. The mean scores of the 5 items of the PolDUREL (ORA [Item 1], NORA [Item 2], IR [Items 3, 4, 5]) in the total sample were: 4.07 ±1.24, 3.18 ±1.78, 3.92 ±1.20, 3.52 ±1.21, and 3.22 ±1.24, respectively.

Internal consistency and reliability The internal consistency of the PolDUREL was examined using the Cronbach's α . The α value for the full sample was 0.90 (95% confidence interval, 0.88–0.91; $P < 0.001$). After removing individual items on the scale, the Cronbach's α values ranged from 0.86 to 0.91.

The Cronbach's α coefficient for the items that constitute the IR subscale was also examined and it was 0.91. The PolDUREL is internally consistent, and the results of the Cronbach's α are satisfactory. The correlations between items and general result were high (0.69 and 0.83).

The test-retest reliability (assessed by the ICCs) of individual items and total scale score after 3 weeks ranged from 0.90 to 0.99 for individual items and it was 0.98 for the total score (n = 50). Thus the test-retest reliability of each item is satisfactory and the test-retest reliability of the total score is satisfactory. The *t*-test comparisons for dependent samples did not show significant differences between the means of the total scores ($t = 1.57$; $P > 0.05$)

Factor structure The value of the Kaiser–Meyer–Olkin measure of sampling adequacy was 0.888. The Bartlett test of sphericity was statistically significant ($\chi^2 = 1400,065$; $P < 0.001$). These findings indicated the lack of correlations between variables and the factor analysis could be performed. The results indicate that the 1-factor solution fits the data. One factor was identified, with an eigenvalue of 3.70 and the percentage of explained variance of 73.92%. The loadings of items 1 to 5 on this factor (PCA, varimax rotation) were 0.676, 0.634, 0.767, 0.795, and 0.824, respectively.

Women had significantly higher scores on each subscale (ORAs = -2.837 , $P = 0.005$; NORAs = -2.522 , $P = 0.012$; IR = -2.633 , $P = 0.008$). Rural residents scored significantly higher than urban residents (ORAs = -4.238 , $P < 0.001$; NORAs = -4.012 , $P < 0.001$; IR = -3.766 , $P < 0.001$).

Spearman's correlations between ORAs and age were very low and negative but significant. In the case of NORA, IR, and DUREL, the total

correlations were not significant. There was a significant positive correlation among different PolDUREL subscales and total scores, which showed an overlap between scales.

Discussion This study assessed the psychometric properties of the PolDUREL. The scale was originally developed for research assessing relationships between religiosity and health outcomes.^{5,6} Based on the present study and other studies in medical populations, the DUREL can be used when assessing religiosity of health professionals and its influence on health and clinical decision making in this population (particularly now in Poland).¹¹ While the present study focused on medical students, it is likely that the PolDUREL findings reported here are also generalizable to physicians in general internal medicine.

The internal consistency of the PolDUREL was 0.90, which is higher than the Cronbach's α reported by other investigators examining the psychometric properties of the DUREL (eg, Spanish [0.66],⁸ Portuguese [0.73],¹² and Farsi [0.86]).⁷ The internal consistency of the IR scale (items 3, 4, and 5) of the PolDUREL was 0.91, which is higher than in the original study by Koenig et al and for the validation study in Spanish-speaking (0.77) and Brazilian populations (0.75).^{5,8,12}

The 3-week test-retest correlation was 0.98, which is comparable to the 2-week test-retest reliability of 0.91 reported by Storch et al.¹³ In the Farsi version validation study of the DUREL, the 4 week test-retest correlation was 0.93.⁷ Coefficients of correlations between items of the subscales and the total score ranged from 0.69 to 0.83 in the present study.

The factor analysis showed that the PolDUREL had one factor, which is consistent with other studies.^{6,13} The eigenvalue was 3.70 and the percentage of explained variance was 73.92, which is in line with other validation studies.^{6,7}

Subscale scores were significantly higher in women compared with men, which is similar to previous findings.^{7,12} Rural residents were also more likely to score high in the PolDUREL than urban residents.

Our results are limited by the population studied, affecting the generalizability of the results. Participants were students recruited from one university in eastern Poland, and the vast majority were Catholics.

Conclusions The PolDUREL is a culturally appropriate, reliable, and valid scale that can be used in research examining the relationship between religiosity and health in Polish populations. There is a need for research on religious involvement and health in medical professionals, particularly in the field of internal medicine. In the present study, the PolDUREL was validated in a group of medical students; however, it is also likely to be useful for studying the associations between health and decision making

in a group of practising internal medicine physicians. However, further research is needed to determine whether these results can be generalized beyond a student population.

Supplementary material online Supplementary material is available with the online version of the article at www.pamw.pl.supplementary-material online.

REFERENCES

- 1 Koenig HG, Kind D, Carson VB. *Handbook of Religion and Health*. New York, NY: Oxford University Press; 2012.
- 2 Prezyna W. [Scale of Religious Attitudes]. *Annals of Philosophy*. 1968; 16: 75-89. Polish.
- 3 Pawlikowski J, Sak J, Marczewski K. Physicians religiosity and attitudes towards patients. *Ann Agric Environ Med*. 2012; 19: 503-507.
- 4 Jarosz M, ed. [Psychological measurement of religiosity]. Lublin: KUL; 2011. Polish.
- 5 Koenig HG, Parkerson GR, Meador KG. Religion index for psychiatric research. *Am J Psychiatry*. 1997; 154: 885-886.
- 6 Koenig HG, Büssing A. The Duke University Religion Index (DUREL): A five-item measure for use in epidemiological studies. *Religions*. 2010; 1: 78-85.
- 7 Hafizi S, Memari AH, Pakrah M, et al. The Duke University Religion Index (DUREL): Validation and reliability of the Farsi version. *Psychol Rep*. 2013; 112, 1: 151-159.
- 8 Wansley Taylor P. Psychometric properties of the Duke University Religion Index, English and Spanish versions, for Hispanic-American women. A thesis presented to the Faculty of San Diego State University. 2013. http://scholarworks.calstate.edu/bitstream/handle/10211.10/5006/Wansley_sdsu_0220N_10013.pdf?sequence=1. Accessed July 24, 2016.
- 9 Kretchky I, Owusu-Daaku F, Danquah S. Spiritual and religious beliefs: do they matter in the medication adherence behaviour of hypertensive patients? *Biopsychosoc Med*. 2013; 7: 15.
- 10 Moon YS, Kim DH. Association between religiosity/spirituality and quality of life or depression among living-alone elderly in South Korean city. *Asia Pac Psychiatry*. 2013; 5: 293-300.
- 11 Hafizi S, Koenig HG, Arbabi M, et al. Attitudes of Muslim physicians and nurses toward religious issues. *J Relig Health*. 2014; 53: 1374-1381.
- 12 Lucchetti G, Lucchetti AL, Peres MF, et al. Validation of the Duke Religion Index: DUREL (Portuguese version). *J Relig Health*. 2012; 51: 579-586.
- 13 Storch EA, Strawser MS, Storch JB. Two-week test retest reliability of the Duke Religion Index. *Psychol Rep*. 2004; 94: 993-994.