Measuring the Psychometric Properties of the Arabic Version of DCL Scale to Measure Work-Related Stress among Jordanian Nurses

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Abstract

Background: Nursing role is instrumental to effective patient care, but the level and standards of clinical practice can be affected by stress. Work-related stress among nurses working in mental health units in Jordan has not been investigated using an instrument in Arabic.

Aim: To evaluate the psychometric properties of the Arabic version of the Devilliers, Carson, and Leary (DCL) Stress Scale when used on Jordanian mental health nurses.

Methods: A descriptive, cross-sectional design was used on a convenience, non-probability sample of Jordanian 99 nurses working in three public hospitals.

Results: The Arabic version of the DCL demonstrated acceptable levels of validity and reliability when it was used on mental health nurses working in units caring for psychiatric patients Jordan.

Conclusions: A reliable and valid instrument that is useful in determining levels of stress in nursing staff. Another facet of findings in this study is to the empirical evidence on the presence of high stress among mental health nurses, which should be taken into consideration among health care planners in mental health in Jordan. Therefore, nurse managers can use these findings to implement actions necessary to alleviate work-related stress among nurses in order to improve retention and decrease the negative impact of stress on nurses' wellbeing.

Keywords: Mental Health, Nurses, DCL Scale, Jordan, Work-Related Stress

Introduction

Worldwide mental health nurses have been recognized as experiencing high level of stress in their workplaces. Heavy work-load, widely ranging and complex sets of tasks and responsibilities, large emotional demands and dealing with highly potential violent and self-harming patients have been acknowledged as important sources of occupational stress for the mental health nursing population[1].

Mentally ill patients requiring treatment and care within unique environments are often

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involuntary in nature; and because of a severe mental illness and high levels of distress, can be extremely challenging to manage [2]. Thus, mental health nurses work in a context of high stress which can potentially lead them to quit from their profession [3]. Given the nursing shortage that is predicted to be looming; investigating work-related stress among mental health nurses is therefore an area worthy of ongoing examination [2].

Several studies have investigated work-related stress among mental health nurses [2]. Based on a thorough review of literature the researchers were unable to locate any study conducted in Jordan or the Middle East to measure work-related stress among mental health nurses using the Arabic version of any instrument specifically designed to measure work- related stress among mental health nurses who work in inpatient mental health units. Therefore, the aim of this study was to validate the Devilliers, Carson, and Leary (DCL) scale that measures work-related stress among Jordanian mental health nurses working in mental health units. This research filled this gap by translating the DCL scale into Arabic, validating the scale, and then using it to measure stress among mental health nurses in Jordan.

The De Villiers, Carson and Leary Scale

The DCL Scale was developed specifically for mental health nurses working in inpatient units and designed to measure perceived stressors. Permission was obtained from the owner of the scale through email. The scale consists of 30 items using a 5 point scale from 0 (this activity causes me no stress) to 4 (I feel extremely stressed by this activity).

The DCL comprises five subscales: patient demands, organizational and managerial issues, staffing, future concerns, and job satisfaction.

In a study by Fagin, Carson, Leary, de Villiers, Bartlett, O'Malley, West, and Mcelfatrick [4], 648 ward-based Mental Health Nurses (MHN) working in the United Kingdom participated.

Findings from their study revealed that the most stressful situations reported by participants were inadequate staffing to cover in potentially dangerous situations, dealing with changes in the health service, low morale, not being notified of changes before they occur, and perceiving that individual patient care is being sacrificed because of lack of staff. The instrument was shown to have good internal and test–retest reliability, as well as good face, content, and concurrent correlational validity [4].

Methods
Design and sample

A descriptive, cross-sectional research design was used for this study. A convenient, non-probability sample of Jordanian mental health nurses working in three public hospitals were invited to participate. The study inclusion criteria comprised: currently working on inpatient psychiatric unit and having clinical experience more than one year. Mental health nurses who had clinical experience in inpatient mental health units less than one year were, therefore, excluded from this study. The MHN were approached personally by the research assistants after ethical approval had been granted by the Jordanian Ministry of Health, Human Ethics Committee (approval number: 8526/13/11/2015).

The study aim and procedure were explained to potential participants during visits by research team to the clinical areas. In addition, a Participant Information Sheet (PIS) was provided; which clearly elucidated that participation was voluntary, could withdraw at any time without prejudice and anonymity was

ensured. The PIS identified the researchers' contact details and informed participants that the researcher could be contacted to answer any question to clarify any salient aspects of the study. Participants interested in participating \ took a copy of the self-report questionnaire and returned it anonymously to the research team after completion via the hospital internal mailbox. Data were collected over a 2-month period between July and September 2015.

Translating the scale

Four Arabic-speaking researchers with PhD degree translated the original version of the DCL in English. In collaboration with the translators, the researchers clarified unclear items. They agreed upon the revised version, and then sent it to two other Arabic speaking researchers for a back translation.

The final version of the questionnaire was sent to an English native speaker, who confirmed the face validity of the back-translated items. The principal researcher sent the Arabic-version of the DCL to an Arabic language specialist to ensure the readability and structuring of the items and the whole scale. The new Arabic version of the DCL, was pilot tested on seven mental health nurses, who were asked to report the readability, understandability of the scale. Nurses reported they could easily understand, read, and understand and respond to the scale. Findings from the pilot study were not included in the study.

Statistical analysis

Data analysis was performed using SPSS 20 (SPSS@IBM). The mean, median, standard deviation, minimum and maximum responses facilitate examination of the central tendency and distribution of scores. The maximum difference between an empirical and a hypothetical cumulative distribution of response was tested using Kolmogorov-Smirnov goodness of fit[5]. The reliability of the scale was calculated using Cronbach's alpha and Guttman Split Half reliability tests. Exploratory factor analysis using principal axis factoring and the rotation method was conducted using Varimax with Kaiser Normalization [6]. These measures were adopted to support the internal consistency and validity of the scale.

Findings

Questionnaires were included for analysis if they were fully completed. The number of completed questionnaires was 99 from 150 distributed copies, representing a response rate of 66%. The average age of participants was 34.8 ranging between 24 and 52. There were 58 (58.6%) male nurses. Participants' qualifications included either a diploma (35.4%) or bachelor's degree (59.6%) in nursing. Most participants (78.8%) indicated they were married. Participants identified as working mainly in an acute (35.4%) or chronic (32.3%) mental health units. Most participants were registered nurses 76 (76.5%) and only 34 (34.3%) reported not attending any workshop on mental health (see Table 1).

Factor analysis, normality, and reliability

The internal consistency of the total 30-item questionnaire was .923, representing a good value and justified proceeding into factor analysis[7]. An Exploratory Factor Analysis (EFA) with varimax rotation was performed on the original questionnaire items. Item loadings greater than 0.40, the cutoff point, were included as significant items in the findings [7]. The numbers of items loadings higher than the cut-off point were 28 items, representing eight factors. The first eight items explained more than 57% of the total variance. The Kaiser–Meyer–Olkin Measure of Sampling Adequacy

was .852 indicating a high level of inter-item correlations [8]. This result was consistent with Bartlett's test of sphericity, which showed that the correlations between the items were sufficient to perform factor analysis, approximate Chi-Square of 970.303 ($p < .001$).

Split half reliability using Cronbach's alpha for part 1 and 2 were .822 and .907, respectively. The correlation between the two parts was .738. The Spearman-Brown coefficient was .849 for both equal and unequal length. Guttman Split Half coefficient was .844, indicating an acceptable item correlation. Pattern matrix (Table 2) illustrates item cross-loadings, Eigen values and percentage of variance explained by the factors on the 28 items. With the exception of item '*The lack of an adequate financial reward for the job*' and other three values, which have an inter-correlation value of .347, .315, .331, and .341 distributed on different factors, all other items had values less than .30. These findings indicate that the level of inter-correlation among the 28 items on the scale is acceptable, and not high enough to affect the internal consistency values. High internal consistency values usually result from high inter-correlation among items on the scale indicating overlapping items [9].

Discussion

The study aim was met wherein the DCL demonstrated to be valid and reliable when used in Arabic. In this study, EFA was performed to determine the statements within the 30-item DCL that best represented the themes of the questionnaire from the Jordanian psychiatric nurses' perspectives. The factors were organizational and managerial issues; patient's demands; future concern; Job satisfaction; staffing"; security measures and psychological support"; collegial relationship" and financial concern. These eight factors were covered by 28 statements.

The first factor, organizational and managerial issues, was explained by six statements. It was noted that workplace with high levels of support diminishes occupational stress and maintains the employees in the organization [10]. Moreover, perceived organizational support by Nurse leaders' plays a crucial role in productivity and promoting nurses' professional performance [11]. In contrast, a lack of organizational and managerial support may contribute to moral distress among nurses [11].

The second factor, patient's demands, was explained by six statements. It was noted in the previous literature that work-related stress, which mental health nurses are facing in daily practice may be exacerbated by increasing patient demands [12], dealing with potentially violent patients and/or those with high levels of self-harming behavior. Mental health nurses usually work in environments that contribute to additional sources of stress; the least of which is high patient-acuity levels [3]. Therefore, mental health nurses require managing work-related stress and keeping healthy in order to provide the best care for the patients utilizing therapeutic and effective methods of coping such as receive sufficient training to enhance their clinical experience in dealing with patients need special care and offering good staffing to overcome this problem.

Four statements explain the third factor "future concern". The previous studies revealed that mental health nurses might be confronted with some challenges at their workplaces such as: work demands and pressures that are not matched by their knowledge and abilities and challenge their ability to cope; unsatisfactory working

conditions. role conflict, and unsatisfactory nurse-patient relationship [13].

"Job satisfaction" is the fourth factor, which was explained by three statements. Kamau [14] found that nurses' job satisfaction and professionalism were the most important variables influence the hospital's working environment. According to the findings' of Agheli's (2017), study [15]. The findings revealed that staff with appropriate job satisfaction, tends to have less absence days and job destructive behaviors, increase of organizational commitment; which will lead to decline of the intention to leave job, and ultimately lead to improve the organization's atmosphere and spirit.

The "Staffing" factor was explained by three elements. Higher staffing levels have been used as an indicator of better-quality care and might be expected to be related to the development of cohesive, well-organized work environment with an emphasis on independence [16]. On the other hand, inadequate staffing will have significant impact on the quality of total care; which delivered to various patients [16].

The sixth factor is "security measures and psychological support" and was explained by three statements. Hospital design influences clinical outcomes and may also affect staff recruitment, retention and morale [17]. Major concerns within psychiatric settings include the safety of the physical environment and the provision of personal space [18]. The potential for patients' contact with the surrounding neighborhood and community is another important consideration in planning psychiatric treatment facilities [19].

The physical layout of the facility has obvious implications for the safety of both staff and patients. Lanza, Kayne, Hicks, and Milner [20] found that most physical assaults occurred

in corridors and during the day and not in areas where the patients could not be seen easily. Design set-ups that have areas called blind spots are an obvious risk to both patients and staff and should be avoided.

Two statements explained the seventh factor "collegial relationship". Forming and maintaining collegiate relationships, termed collegiate presence by Broadbent and Moxham [21], may improve relationships where cultural differences are not understood. The authors further stated that lack of understanding of cultural differences between interdisciplinary groups can lead to fragmented services. Not only does there need to be collegiate relationships amongst staff but also amongst staff and patients.

"Financial concern" was the final factor and was explained by one statement. A previous study found that job resources which include financial rewards at work, social support, and organizational support at work have been found to increase employees' job engagement and enhance their loyalty to their workplaces. On the contrary, any workplaces characterize by imbalance between the efforts and rewards will lead employees to experience low job engagement; which ultimately lead to have occupational stress [13].

Conclusion

The DCL-Arabic version was found to be valid and reliable scale to measure work-related stress when administered to mental health nurses in Jordan.

Declarations
List of abbreviations

Mental Health Professionals Stress Scale (MHPSS)

Devilliers, Carson, and Leary (DCL)

Mental Health Nurses (MHN)

Participant information sheet (PIS)

Exploratory factor analysis (EFA)

Ethics approval and consent to participate

The MHN were approached personally by the research assistants after ethical approval had been granted by the Jordanian Ministry of Health, Human Ethics Committee (approval number: 8526/13/11/2015).

Consent for publication

The manuscript does not contain any individual person's data in any form.

Availability of data and material

These data represent nurses working in public hospitals and based on the ethical approval from the Ministry of Health, data will be kept confidential.

Competing interests

The Authors declare that there is no conflict of interest to disclose.

Funding

No fund or financial assistance has been provided from any resource.

Table 1. The Demographic Findings (n=99)

Factor		**N (%)**
Gender	Female	41 (41.4%)
	Male	58 (58.6%)
Age (Years)	24-30	32 (32.3%)
	31-40	47 (47.5%)
	41-50	19 (19.2%)
	>50	1 (1%)
Degree	Diploma	35 (35.4%)
	Baccalaureate	59 (59.6%)
	Masters	4 (4%)
	Higher Diploma	1 (1%)
Marital Status	Single	19 (19.2%)
	Married	78 (78.8%)
	Divorced	2 (2%)
Clinical Area	Acute	35 (35.4%)
	Chronic	32(32.3%)
	Forensic	12 (12.1%)
	Addiction	20 (20.2%)
Experience in Mental Health (Years)	1-3	32 (32.3%)
	4-6	9 (9.1%)
	7-10	20 (20.2%)
	>10	38 (38.4%)
Workshop on Mental Health	Yes	65 (65.7%)
	No	34 (34.3%)
Job Position	Registered Nurse	76 (76.5%)
	Unit Manager	10 (10.1%)
	Nurse Supervisor	9 (9.1%)
	Nurse Director	2 (2%)
	Nurse	2 (2%)

Table 2. Pattern Matrix Representing EFA with Item Cross-Loadings, Eigen Values and the Total Variance Explained by Each Factor

The item	Factor							
	1	2	3	4	5	6	7	8
Not being notified of changes before they occur.	**.725**	.158	.043	.154	.039	.067	.172	**.315***
Insufficient communication and consultation between staff at a professional level.	**.683**	.116	.155	.134	.238	.058	.246	.060
Having too little time to plan and evaluate treatment.	**.641**	.280	.133	.090	.001	.047	.063	.108
Knowing that individual patient care is being sacrificed due to lack of staff.	**.580**	.175	.080	.266	.139	.036	.021	.035
Lack of consultation from management about influential structural changes.	**.558**	.030	.131	.135	.229	.275	.099	.074
Not having the appropriate mix of skilled staff on the ward/shift.	**.518**	.119	.048	.139	.175	.279	.031	.123
Insufficient training to work with difficult patients.	.214	**.629**	.127	-.014	.134	.280	.134	-.090
Having to deal with potentially suicidal patients	.211	**.575**	.235	.258	.106	.229	.079	-.082
Feeling inadequately trained to deal with violent patients.	.170	**.526**	.151	.215	.419	.124	-.216	-.012
Low morale and poor atmosphere within the organization.	.139	**.519**	**.331***	.019	.157	-.040	.029	.045
Dealing with physical and verbal abuse from patients and others.	-.022	**.500**	.253	.154	.254	.199	.066	.018
Inadequate staffing cover in potentially dangerous situations	.110	**.470**	.113	.240	.040	.048	.221	.026
Dealing with changes in the Health Service and hospital closures.	.141	.284	**.650**	.002	.030	.009	.103	.196
The discrepancy between your grading and what you are expected to do.	.098	.184	**.578**	.395	.184	.137	.074	.285
Dealing with disagreements within the team about patients' treatment.	.072	.277	**.523**	.209	.171	-.098	.108	.044
The threat of redundancy.	.204	.034	**.494**	.105	-.029	-.057	.213	.168

The item	Factor							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Not having sufficient financial resources to attend training courses/workshops.	.177	-.003	.123	**.724**	.239	.214	-.034	.122
The lack of an adequate financial reward for the job.	**.347***	.178	.228	**.704**	-.018	.138	-.005	.098
Having to meet the demands of too many patients.	.267	.116	.080	**.434**	-.132	.109	-.183	.045
Conflicts not being settled within the organization.	.058	.143	.034	.088	**.719**	.070	.208	.055
Having to work with colleagues who do not their share of the workload.	.204	.151	.056	-.036	**.595**	.090	-.036	.040
Having to deal with disturbed and unpredictable patients.	.147	.007	.074	.147	**.515**	.095	.040	.008
Inadequate security measures on wards.	**.341***	.125	.124	.180	.143	**.570**	.288	.206
The lack of promotion prospects.	.154	.187	.154	.069	.053	**.501**	.143	-.062
Lack of positive feedback from supervisors.	.206	.121	-.004	-.115	.120	**.448**	-.090	.243
Difficulty in working with particular colleagues.	.141	.034	.078	.069	.220	.109	**.696**	.025
Dealing with difficulties that occur when you try to take action against incompetent staff.	.154	.121	-.004	-.115	.054	.083	**.425**	.006
The worry that there might be further budget cuts.	.206	.034	.178	.115	.184	.076	-.011	**.596**
% of Variance Explained	**61.723**	**18.637**	**7.858**	**4.267**	**3.298**	**2.458**	**1.283**	**.476**
Eigen value	**14.283**	**5.219**	**2.200**	**1.195**	**.924**	**.688**	**.359**	**.133**

*Item scoring value more than .30

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قياس وتقييم الخصائص السيكومترية للنسخة العربية لمقياس ديفيلير، كارسون، لايري لقياس الضغط النفسي التعلق بالعمل بين الممرضين في الأردن

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الملخص

المقدمة: تُعدُّ مهنة التمريض أساسية في تحقيق رعاية فعالة للمريض، ولكن معايير الممارسة العملية تتأثر بمستوى الضغط النفسي الذي يرضخ تحته الممرض، و لا توجد دراسات تبحث في الضغط النفسي المرتبط بالعمل التمريضي بين ممرضي الرعاية النفسية تستخدم أداة بحثية مناسبة في اللغة العربية.

الهدف: تقييم الخصائص السيكومترية للنسخة العربية لمقياس ديفيلير، كارسون، لايري لقياس الضغط النفسي عند استخدامها بين الممرضين في الأردن.

الطريقة: لقد استخدمت الطريقة المسحية الوصفية على ما مجموعة (99) من ممرضي الصحة النفسية بوصفها عينة كافية تمثل ثلاثة مستشفيات حكومية أردنية.

النتائج: لقد أظهرت النسخة العربية لمقياس الضغط النفسي ديفيلير، كارسون، لايري قدر جيد من المصداقية والاعتمادية عند استخدامه على عينة من الممرضين، والذين يعملون في مراكز تقديم الرعاية الصحية والنفسية للمرضى في الأردن، وأظهرت النتائج أنَّ مستويات الضغط النفسي عند هؤلاء الممرضين كانت مرتفعة، وأعلى من المستويات الموجودة في أدبيات الدراسات العالمية.

الاستنتاجات: إن وجود أداة قياس الضغط النفسي باللغة العربية مفيد لعمل دراسات تعمد إلى قياس وتوجيه البحث لحل مشاكل تتعلق بهذه المسألة بين الناطقين باللغة العربية، وقد كشفت هذه الدراسة بدليل حسي عن وجود مستوى مرتفع من الضغط النفسي عند الممرضين المشاركين في البحث والذي يجدر أن يتم التعامل معه من قبل متخذي القرار في الأردن، ويمكن استخدام ليس الأداة فحسب، بل والنتائج في هذه الدراسة لبناء ما يمكن أن يحقق المصلحة للمرضى، والممرضين، و نظام الرعاية الصحية بشكل عام.

الكلمات الدّالة: الضغط النفسي، التمريض، تقييم سيكومتري، الأردن.