Validity and Relıability Study of Nursing-Delirium Screening Scale Turkish Version

Hemşirelik-Deliryum Tarama Ölçeği'nin Türkçe Formunun Geçerlik ve Güvenirlilik Çalışması

Gülsen KARATAŞ[1], Sevgin SAMANCIOĞLU BAĞLAMA[2]

ABSTRACT

The aim of this study was to investigate the validity-reliability of the Turkish version of the Nursing-Delirium Screening Scale (Nu-DESC TR).

Hundred fifty intensive care patients with a stay in the intensive care unit not exceeding 48 hours, not in a coma state (RASS: between -3 and +4, GCS: 10 and above), without a story of a formerly diagnosed neurologial and psychiatric disease that may prevent the diagnosis of delirium (dementia, psychosis, mental retardation, neuromuscular disorder, head injury, brain operation, paralysis), without dementia (IQCODE score <3.4 patients) and without vital cases/disorder (expected to live longer than 24 hours) were included. Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), Richmound Sedation-Agitation Scale (RASS) and Glaskow Coma Scale (GCS) were used to test criterion validity. Exploratory and confirmatory factor analyzes were performed to reveal the factor structure of Nu-DESC. According to factor analysis, the scale has a one-dimensional structure as in its original form. The Cronbach alpha internal consistency coefficient was 0.74 and item-total correlation coefficients were between 0.22 and 1. There was a strong negative correlation between daytime scores of Nu-DESC TR and RASS (r: -0.637), GCS (r: -0.650) and CAM-ICU (r: -0.753). There was a strong negative correlation between nighttime scores of Nu-DESC TR and RASS (r: -0.696), GCS (r: -0.634) and CAM-ICU (r: -0.802). GCS, RASS and CAM-ICU scores decrease as Nu-DESC day and night time scores increase.

Analyses have shown that Nu-DESC TR has enough validity and reliability values in diagnosing delirium in intensive care patients.

Key Words: Delirium, Nursing, Reliability, Scale, Validity

ÖZ

Çalışmanın hedefi, Hemşire-Deliryum Tarama Ölçeği Türkçe formunun geçerlik-güvenirliğini gözden geçirmektir.

Yoğun bakımda yatış süresi 48 saati aşmayan, koma durumunda olmayan (RASS: -3 ile +4 arasında, GKS:10 ve üzeri olan), deliryum tanısı için engel olabilecek önceden tanı almış nörolojik ve psikiyatrik hastalık (demans, psikoz, mental retardasyon, nöromüsküler rahatsızlık; kafa travması, beyin cerrahi operasyonu, felç) hikayesi bulunmayan, demansı olmayan (IQCODE puanı <3.4 hastalar) ve hayati durumu/rahatsızlığı olmayan (24 saatten daha uzun yaşaması beklenen) 150 yoğun bakım hastası katılmıştır. Ölçüt geçerliliğini denemek amacıyla Yoğun Bakım Konfüzyon Değerlendirme Ölçeği (YB-KDÖ), Richmound Sedasyon-Ajitasyon Skalası (RASS) ve Glaskow Koma Skalası (GKS) kullanılmıştır. H-DTÖ' nün faktör yapısını ortaya koymak üzere açıklayıcı ve doğrulayıcı faktör analizleri yapılmıştır. Faktör analizine göre ölçek, özgün formunda olduğu gibi tek boyutlu bir yapıdadır. Cronbach alpha iç tutarlık katsayısı 0,74, ölçeğin Türkçe formunun madde-toplam korelasyon katsayılarının 0,22 ile 1 arasında olduğu neticesine varılmıştır. RASS puanları ile H-DTÖ gündüz ve gece grupları arasında istatistiksel olarak anlamlı farklılık olduğu bulunmuştur (p<0.05). RASS puanı -2 ve üstü olan hastalar H-DTÖ gündüz ve gece derecelendirilmesinde riskli grupta yer almaktadır. GKS puanı 10 ve üstü olan hastalar H-DTÖ gündüz ve gece derecelendirilmesinde riskli grupta yer almaktadır. Yoğun Bakım Konfüzyon Değerlendirme Ölçeği ile H-DTÖ gündüz ve gece grupları arasında istatistiksel olarak anlamlı farklılık olduğu bulunmuştur (p<0.01).

Analizler, H-DTÖ TR'nin yoğun bakım hastalarında deliryumu tanılamada yeterli düzeyde geçerlik ve güvenilirlik değerlerine sahip olduğunu göstermiştir.

Anahtar Kelimeler: Deliryum, Hemşirelik, Geçerlik, Güvenirlik, Ölçek

[1] Öğr. Gör., Gülsen KARATAŞ, İlk ve Acil Yardım, Kilis 7 Aralık Üniversitesi, Sağlık Hizmetleri Meslek Yüksekokulu, Tıbbi Hizmetler ve Teknikler Bölümü, Kilis, Türkiye, glsnkrts002@gmail.com, ORCID: 0000-0002-1850-4501

[2] Doç. Dr., Sevgin SAMANCIOĞLU BAĞLAMA, , İç Hastalıklar Hemşireliği, Mugla Sıtkı Koçman Üniversitesi, Sağlık Bilimleri Fakültesi, Hemşirelik Bölümü, Muğla, Türkiye, sevginsamancioglu@hotmail.com, ORCID: 0000-0002-0166-8294

INTRODUCTION

Delirium is a neuropsychiatric syndrome with sudden onset and a fluctuating course involving irregular thought and is characterized by acute confusion and inattention. It is an acute confusional condition that affects patients' quality of life, communication, and decision-making capacity.[1,2] Delirium is a common and harmful syndrome and is encountered in almost all health care settings. Delirium is a syndrome that leads to significant results, and studies have shown that it increases mortality and morbidity levels and prolongs hospital stay, and its high frequency and negative effects have been extensively documented.[3,4] There are three subtypes of delirium that exist. The first is hyperactive delirium with hyperactivity and increased response stimulation, the second is hypoactive delirium with delay to stimuli and decreased response to stimuli, and the third is the mixed type, which includes both types. In particular, the hypoactive type of delirium may produce more negative consequences. In particular, the hypoactive form of delirium is described in association with more negative outcomes. However, patients with hypoactive delirium are often overlooked without an adequate tool to diagnose delirium.[5] Studies have shown that delirium occurs in 10-20% of all hospitalized patients, in 30-40% of hospitalized elderly patients, and in 80% of patients hospitalized in the intensive care unit. The prevalence of delirium, which is quite common in patients hospitalized in intensive care units (ICU), varies between 30% and 75.6%. If not treated, stupor and coma may develop.[6] In a study conducted with 90 patients hospitalized in intensive care units in 2015, delirium developed in 75.6% of patients with a mean age of 78.2 years and staying in intensive care units for more than 24 hours.[7,8]

Delirium causes serious morbidity and mortality because of the inability to diagnose. Although there are diagnostic criteria for delirium and various complications can be prevented if delirium is diagnosed, it can often be overlooked and delirium cannot be diagnosed in 40% -80% of patients. This leads to prolonged hospital stay, increased risk of falls, pressure wounds, increased medical costs, increased mortality rates, increased rates of placement in a nursing home/nursing home, and post-discharge deaths.[2,9]

The diagnosis of delirium is made primarily by a comprehensive assessment of symptoms according to DSM-V diagnostic criteria, laboratory findings, and a detailed psychiatric and neurologic physical examination.[10] In patient assessment, delirium is classified as hypoactive, hyperactive, or mixed (micst) type according to the patient's psychomotor behavior. Patients with hypoactive delirium present with lethargy, apathy, blackness, inactivity, decreased psychomotor function, decreased attention, numbness, withdrawal, silence, and introversion. Patients with hypoactive delirium are often undiagnosed and confused with depression. However, it should be noted that the factor that distinguishes delirium from depression is lack of attention.

24% or so of all instances. Patients with hyperactive delirium display symptoms such as movement issues, orientation disorders, toying with pillows or sheets, attempting to get out of bed or leave the room, unrest, agitation, hallucinations, delusions, and behavior that irritates the caretakers. Intensive care units see between 1% and 5% of all cases, or around 30% of them. In addition to shorter hospital stays, hyperactive delirium is easier and earlier diagnosed, which lowers death rates. Patients who have delirium as their Mikst (mixed type) have traits common to both categories. It is a delirium subtype that alternates between hypoactive and hyperactive states. During the day, patients are typically at ease and relaxed; nevertheless, at night, they get agitated and engage in harmful conduct. Patients of this type will soon have major changes. Such patients will quickly experience significant alterations. 46% of all

cases, roughly. Intensive care units are where the majority of patients with mixed delirium and hypoactive delirium can be found.[5,11-14]

Many tests and scales are being used to diagnose and evaluate delirium. Gaudreau et al. developed the Nursing-Delirium Screening Scale (Nu-DESC) as a diagnostic tool specific to nurses. It is also reported that Nu-DESC can detect hypoactivity in delirium.[5]

In actual practice, nurses can contribute to patient evaluation in as little as two minutes, making it more useful than any other scale now available. The only time a patient is evaluated between day and night shifts is also the shortest and most accurate scale among all other scales in the literature since it allows

for diagnosis, especially for nurses who interact with patients one-on-one. This scale was described in article,[15] and the authors' usage of the phrase "Nu-DESC was found to be the most suited scale for nurses with its convenience, applicability, and excellent reliability" is quoted there.

Nurses spend more time with patients than with other healthcare professionals. Therefore, the need for a nurse-based screening tool to diagnose delirium is clear and important. The aim of this study is to test and ensure the validity and reliability of the Nursing-Delirium Screening Scale (Nu-DESC) improved by Gaudreau et al. for the Turkish population.

MATERIALS AND METHOD

This is a methodological research. The study was conducted between July 2018 and January 2019 with 150 inpatients hospitalized in an State University Training and Research Hospital intensive care units. Patients hospitalized in the 13-bed Internal Intensive Care Unit, 15-bed Reanimation Intensive Care Unit and 15-bed Coronary Intensive Care Unit were included in this study.

Patients

Study population consisted of intensive care patients over the age of 18 who were not sent to another intensive care unit, able to communicate (able to speak and understand Turkish, without significant sensory loss), with a stay in the intensive care unit not exceeding 48 hours, not in a coma (RASS: -3 to +4, GCS: 10 and above), without a story of a formerly diagnosed neurologial and psychiatric disease that may prevent the diagnosis of delirium (dementia, psychosis, mental retardation, neuromuscular disorder; head injury, brain operation, paralysis), no dementia (IQCODE score <3.4) and without vital cases/disorder (expected to live longer than 24 hours).

The initial incidence of unaware condition poses a direct danger to delirium in patients receiving critical care. If delirium is not

managed, dementia will inevitably develop. Even in patients who do not experience altered awareness, the chance of dementia development eventually rises. Cognitive impairments occur in both dementia and delirium, which is why they are frequently confused. But delirium starts right away, its symptoms change within a day, and cognitive impairment is only transient and reversible. However, dementia does not begin, the change is not apparent, and the harm is irreversible[16] In this study, delirium is identified with the Turkish validity and reliability study of the scale in the early phase of patients who are mentally healthy but are in the intensive care unit for physiological reasons. Therefore, patients with dementia were not included in this study because they have continuous impairments in cognitive function, perception, and movement and would interfere with the development of the Turkish version of the scale.

Sample size was determined based on the method used in scale studies, which recommends a sample size of 5-10 times the number of variables in the scale.[17,18] In this study, the number of samples was calculated by taking 10 times each variable to be measured. There are 5 variables in the Nursing-Delirium Screening Scale.

Accordingly, a sample of 50 (5 items x 10) was considered sufficient to represent the population of the research. A total of 196 patients were reached, but the patients who could not be evaluated for RASS or GCS scores and those who did not meet the inclusion criteria were excluded and the study was conducted with 150 patients. Written and verbal consents were obtained from the patients or their relatives who participated in the study.

Measurement Tools

Questionnaires and scales were applied by the researcher to the patients who were hospitalized in the intensive care units and met the inclusion criteria for the study. Patient Evaluation Form, which includes personal information about patients' medical and psychosocial lives, Richmound Sedation-Agitation Scale (RASS) to determine agitation status and severity, Glaskow Coma Scale (GCS) for assessing sleep-wake status and Confusion Assessment Method for the Intensive Care Unit (CAM-ICU) to evaluate existing or possible delirium status in patients hospitalized in ICU for more than 48 hours were administered once a day. Nursing-Delirium Screening Scale was administered and evaluated twice a day as day and night shifts. The purpose of these scales is to identify patients at risk for delirium and to remove those who do not meet the criteria, and to increase the reliability of the Nu-DESC by using it in conjunction with other tools.

The Richmound Sedation-Ajitation Scale (RASS)

The Sedation-Ajitation Scale includes a good observational assessment. First, the patient's sedation state is assessed. If the patient is in deep sedation, unconscious, or scores -5 on RASS -4, an assessment is not possible. In this case, called coma or stupor, it is not appropriate to assess for insanity because the patient cannot respond to anything. However, once the patient is awake (RASS > -3), he or she can be assessed for delirium based on a scoring system between +4 and -5.[11]

Glaskow Coma Scale (GKS)

The GKS is one of the physiological scoring systems used to monitor clinical progress during the remainder of the patient's stay. It is a simple, objective scoring system commonly used to determine the patient's previous condition and identify the state of consciousness, express the change in level of consciousness, and measure the degree of coma in the most reliable way. The maximum score of GKS is 15, and patients with a GKS score of 8 and below are classified as coma patients. A GKS score of 10 and above is considered delirium.[19]

Concentration Rating Scale in The Intensive Care Unit (YBU-KDO)

To assess the state of confusion in the intensive Care Unit (ICU), Inouye and his friends collaborated to develop a confusion assessment scale. The scale, which can be completed in less than 5 minutes, is based on DSM criteria.[20] The Confusion Assessment Scale (YBU-KDO) (the Method for Assessing Confusion in the Intensive Care Unit (CAM-ICU) was developed by Ely and friends (2001)[21] On the YBU-KDO, delirium is diagnosed when the first two substances and one of the third or fourth substances are positive. In addition, the fact that even one of the cases of deterioration of consciousness or evidence of alterations in the state of consciousness is positive results in a positive test and a diagnosis of delirium. In assessing sudden change in consciousness or alteration of consciousness in the first section, the second section tests for attentional deformity using tests to assess cautiousness. The third section examines whether the state of thinking has deteriorated, and the fourth article deals with the evaluation of the level of consciousness. In this research, patients were assessed using the YBU-KDO and patients were coded as delirious (+) or absent (-), and patients entering delirium were determined.

Nursing-Delirium Screening Scale (Nu-DESC)

Since delirium is a very difficult condition to diagnose, Gaudreau et al. improved the

Nursing-Delirium Screening Scale in 2005 with the aim of generating a tool that is easy to apply and evaluate but suffiient to diagnose delirium.[4] It is a very easy and rapidly identifiable tool in the clinical practice of nurses. It is recommended for routine use of patients in intensive care units as it allows easy bedside evaluation of delirium and nurses can witness characteristic fluctuations.[22]

Nu-DESC consists of five items. Items that include patient observation by nurses are as follows: Disorientation, Inappropriate behavior, Inappropriate communication, Illusions/hallucinations, and Psychomotor retardation.

Each item is given a score between 0-2 and a maximum score of 10 can be obtained.[5] Nu-DESC form used in many countries and is based on individual observation and requires on average 1 minute to compile. Furthermore, no training is required for the use of this scale.

By calling the patient and asking questions about the scale in use, it was possible to confirm awareness control and watch how the patients behaved. The meaning and consistency of the responses to the nurse's inquiries have been measured, and a brief discussion has been held with patients, in addition to the inappropriate behavior of patients, such as trying to get out of bed or yank catheters or monitoring cables.

Statistical Analysis

The data were analyzed by using SPSS verison-22 statistical software program and AMOS licensed program. Socio-demographic and clinical characteristics of the participants were evaluated with mean, number and percentage. Lawshe's content validity ratio (CVR) formula was used to calculate the content validity of the scale. Exploratory Factor Analysis and Confirmatory Factor Analysis were performed to evaluate construct validity. Within validity analysis, translation-back translation was performed for language validity and adequate expert opinions were obtained for content validity. Kendall's coefficient of concordance was calculated. In the reliability analysis, item total score correlation and sub-dimension item-sub-dimension total score correlation coefficient were calculated. In the study, Kaiser-Meyer-Olkin (KMO) analysis, which shows the suitability of the sample, was performed. P <0.05 was accepted as statistically significant in all analyses.

Ethical Aspect of Research

In order to conduct the study, approval was obtained from Gaziantep University Medical Faculty Clinical Research Ethics Committee (2018/114). Necessary permissions were obtained from Adıyaman University Training and Research Hospital. Information about the study was provided to the patients who participated in our study and their relatives, and written informed consent was obtained.

Analysis of Reliability and Validity

Validity of Nursing-Delirium Screening Scale

Language validity, content validity and construct validity (exploratory factor analysis) were used to determine the validity of the scale. "Co-validity" was investigated for validity. For this purpose, the correlation between the Nursing-Delirium Screening Scale (Nu-DESC) and Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), which was previously used in many Turkish studies, was examined.

Language Validity

For the language of the validity of the Nursing-Delirium Screening Scale Turkish Version, the original scale was translated from English to Turkish by three separate individuals, a professional English translator and two subject experts. After selecting the most appropriate expressions for the items of the scale, the scale was translated back from Turkish to English by four native Turkish speakers fluent in English (including one professional translator and two subject experts) who did not see the original version of the scale. Based on the translations, the

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Nu-DESC Turkish form (Nu-DESC TR) similar to the original form was prepared in order to meet the language validity criterion which is the basis of scale adaptation studies. The English translation was compared with the expressions of the original scale and after the necessary corrections were made based on feedback, the expressions were made more understandable and the scale used in the research was finalized. Data collection tools must be accurate, easy to understand and accessible to the target audience and culturally appropriate, reliable and valid.[23]

Content Validity

The Turkish scale, which was formed with these stages, was given to experts evaluate the measurement degree of each item over 10 points in terms of content validity. It was found that the opinions of the experts were balanced in terms of content validity (Kendall's = 0.117, P > 0.01).

Confstruct Validity

Explanatory factor analysis was used to test construct validity of Nu-DESC. Correlations between the Confusion Assessment Method for the Intensive Care Unit (CAM-ICU), Glasgow Coma Scale (GCS), Richmond Agitation Sedation Scale (RASS) and Nursing-Delirium Screening Scale (Nu-DESC) were examined. 5 items were used for factor analysis. Kaiser-Meyer-Olkin (KMO) ratio should be over 0.5 for the data to be suitable for factor analysis. The Barlett test should also be significant.[24] Principle Component Analysis was applied for factor analysis and 1 factor was obtained for the 5-item scale.

Reliability Study of Nursing-Delirium Screening Scale

Cronbach's Alpha Reliability Coefficient was used to evaluate the internal consistency of the scale. A scale is considered to be reliable if the Cronbach's Alpha Reliability Coefficient is 0.7 or higher. Lower scores can be associated with low number of items in the scale and when the calculated coefficient is above 0.9, it may indicate that there are meaningless or irrelevant questions in the scale.[25]

Internal consistency reliability of Nu-DESC was measured by Cronbach's Alpha coefficient. In addition, item total correlation was examined for each item of the scale.

Delirium Symptoms of Intensive Care Patients

As shown in Table 2, there was a statistically significant difference between the daytime and nighttime Nu-DESC classification of patients (P < 0.05). Accordingly, all patients in the high risk group during the day are also in the high risk group at night.

Table 2. Comparison of Day and Night Delirium Diagnosis Status of ICU Patients by Nu-DESC

			Nu-DESC Night		Total	P
			No Delirium(-)	Delirium(+)		
Nu-DESC Day	NoDelirium (-)	Number (n)	70	16	86	
		Percentage (%)	81.4	18.6	100.0	
	Delirium (+)	Number (n)	0	64	64	0.001
		Percentage (%)	0.0	100.0	100.0	
Total		Number (n)	70	80	150	
		Percentage (%)	46.7	53.3	100.0	

FİNDİGS AND DİSCUSSİON

Characteristics of Intensive Care Patients

Patients who scored 2 or more in the Nursing-Delirium Screening Scale were diagnosed with delirium. Accordingly, 57.33% (n = 86) of the 150 patients included in the study were not diagnosed with delirium and 42.67% (n = 64) were in the delirium group based on daytime Nu-DESC scoring. Similarly, 46.67% (n = 70) of the 150 patients included in the study were not diagnosed with delirium while 53.33% (n = 80) were diagnosed with delirium based on nighttime Nu-DESC scoring. 50.67% (n = 76) of the patients were female and 49.33% (n = 74) were male. In addition, the mean age of the patients was 68.99 ± 18.03 (min-max: 19-98 years). 52% of the patients were married and 39.33% were illiterate. 46% of 150 patients were living with their spouse. 99.33% of the patients included in the study had visitors during visiting hours (Table 1).

Table 1. Characteristics of Intensive Care Patients

		Number (n)	Percentage (%)
Nu-DESC-Daytime No Delirium		86	57.33
Nu-DESC-Daytime Delirium		64	42.67
Nu-DESC-Nighttime No Delirium		70	46.67
H Nu-DESC-Nighttime Delirium		80	53.33
Gender	Male	76	50.67
	Female	74	49.33
Age	X±SD	150	68.99±18.03
Marital Status	Single	14	9.33
	Married	78	52.00
	Widowed	58	38.67
Educational Status	Illiterate	59	39.33
	Literate	24	16.00
	Primary School	32	21.33
	Middle School	14	9.33
	High School	15	10.00
	University	6	4.00
Occupational Status	Civil Cervant	9	6.00
	Worker	6	4.00
	Self employed	9	6.00
	Unemployed/Retired	126	84.00
Health Insurance	SSI	87	58.0
	Private Insurance	2	1.33
	Green Card	15	10.00
	Other	46	30.67
Cohabitants	Spouse	69	46.00
	Children	47	31.33
	Other	34	22.67
Visitors	Yes	149	99.33
	No	1	0.67

Nu-DESC Validity Analysis

Construct Validity

Explanatory and confirmatory factor analyzes were used to investigate the construct validity of the scale. For this purpose, the sample adequacy calculated by the Kaiser-Meyer-Olkin coefficient applied to the scale was 0.766 and Bartlett's test result was highly significant ($x2 = 199.827$, df = 10, $p < 0.005$) and the data set was found to be suitable for factor analysis.

Nu-DESC Reliability Analysis

Inner Consistency

In order to define the reliability of the scale, in other words the reliability of the measurements, the inner consistency levels of the scale items were analyzed. Accordingly, Cronbach's alpha internal

consistency coefficients were calculated separately for all the scale and its sub-dimensions. Besides, item-total test correlation coefficients were calculated for each item. According to the results of the analyses, item-total test correlation values ranged between 0.22 and 1, and the Cronbach's alpha value for the entire scale was found to be 0.74 (Table 3).

Factor Analysis of Nu-DESC Turkish Version

Explanatory and confirmatory factor analyzes were used to determine the structure validity of the scale. With exploratory factor analyzes, one can quickly identify the sub-dimensions the items belong to and the items included in more than one dimension and create the model according to the data by making the relevant changes. This is the most important feature of EFA. The most important feature of CFA is the examination of whether the data fit the model in our heads.[26,27] In other words, we can construct the appropriate model quickly using exploratory factor analysis, but this model should have a scientific explanation. For example, the sub-dimension that an item belongs to should be theoretically appropriate for that sub-dimension. It is the sum of the squares of the factor loads of the items that make up a factor. Dividing the eigenvalue of each factor by the number of items shows us how much of the total variance is explained. In practice, factors with eigenvalues greater than 1 are generally taken into consideration.[29] When the total variance explained was examined for test items in the item pool, 1 item with an eigenvalue above 1 was identified in the scale (Table 3). The first factor explained 51.676% of the total variance.

The main purpose of factor analysis is to reduce a complex structure to a smaller number of basic dimensions or to summarize it to facilitate understanding and interpretation of the relationships between the many variables that are considered to be related. In other words, it is a method of reducing the dimension and eliminating the dependency structure like the principal

components analysis.[18] Factor loads and data quality results of each item are given in Table 3.

Table 3. Factor Loads and Cronbach's Alpha Values of Nu-DESC Items

Item	Factor Load	Data quality	Cronbach's Alpha if item is deleted	Variance explained:
Nu-DESC			.740	51.676
DO	.753	.648	.629	
IB	.805	.681	.627	
IC	.768	.691	.627	
I/H	.436	.347	.757	
PR	.325	.216	.758	

DO: Disorientation, IB: Inappropriate Behavior, IC: Inappropriate communication, I/H: Illusions/Hallucination, PR: Psychomotor Retardation

When the relationship between the Nursing-Delirium Screening Scale (Du-Nesc) and RASS, GCS and CAM-ICU is examined, a negative correlation between the scales means that there is an inverse relationship between the two variables. In other words, one variable increases while the other decreases. There was a strong negative correlation between daytime scores of nursing-delirium screening scale and RASS (r: -0.637), GCS (r: -0.650) and CAM-ICU (r: -0.753). Similarly, there was a strong negative correlation between nighttime scores of Nursing-Delirium Screening Scale and RASS (r: -0.696), GCS (r: -0.634) and CAM-ICU (r: -0.802). There was an inverse relationship between Nu-DESC daytime and nighttime scores and RASS, GCS and CAM-ICU. As the Nu-DESC daytime and nighttime scores increased, GCS, RASS and CAM-ICU scores decreased (Table 4).

Table 4. Correlation Between Nu-DESC and RASS, GCS and CAM-ICU (N = 150)

Nu-DESC		RASS	GCS	CAM-ICU
Daytime score		-0.637**	-0.650**	-0.753**
	p	0.000	0.000	0.000
Nighttime score		-0.696**	-0.634**	-0.802**
		0.000	0.000	0.000

The path diagram obtained after confirmatory factor analysis is given in Figure 1. In the path diagram, it can be seen that factor loadings of the items in the scale vary between 0.16-1.41.
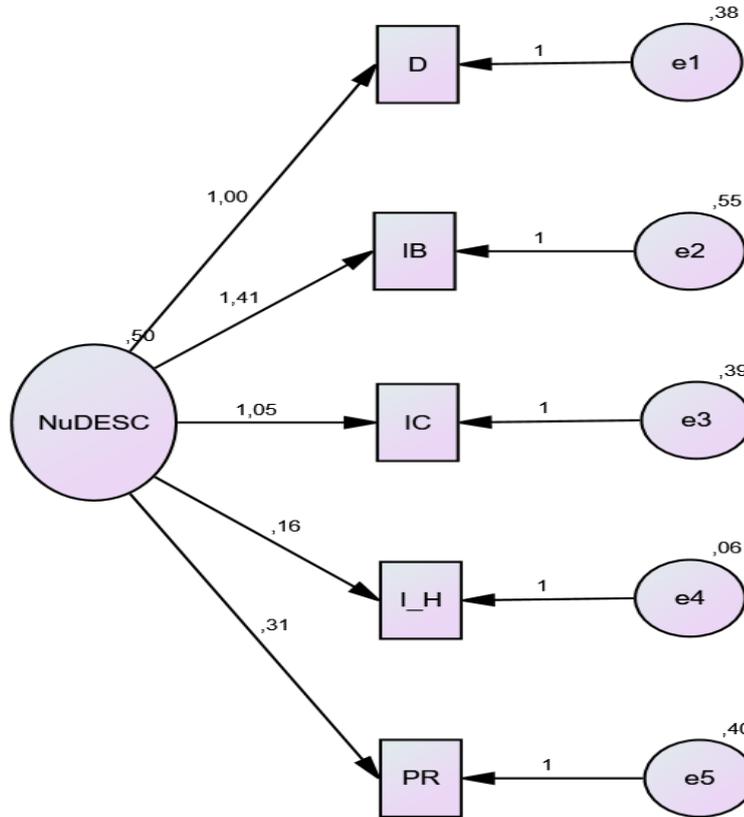

Figure 1. Path Diagram of CFA Analysis

In a study, which was conducted with non-healthy individuals aged 18 years and over in intensive care, no significant difference was found between delirium and age.[29] In another study by, Balas et al. focused on elderly patients only. Delirium status of patients over 65 years of age was examined and no significant relationship was found between delirium and age.[30] However, studies have reported that old age is an important condition that increases predisposition to delirium.[31,32] According to other studies, the incidence of delirium increases with increasing age.[33,34] Our study is consistent with these data. Randomized patients over 18 years of age were selected according to the inclusion criteria and the incidence of delirium increased with increasing age and more significant results were obtained.

Delirium is the most common psychiatric condition in people admitted to clinics, postoperativly and in intensive care units, with a prevalence ranging from 11% to 50%.[5] Diagnosis can be difficult because delirium is in three different types and varies during the day. This is why the detection rate of delirium in daily clinical routine is generally low. The nurse is primarily involved in the detection of delirium. Nu-DESC (Nursing-Delirium Screening Scale) is a scale that fulfills these criteria as it can be applied by nurses in a short amount of time and does not require any training.

In previous studies, the presence of visual and hearing impairment was among the possibilities of independent harm for delirium.[32,35] The results of our study are consistent with these data and predisposition to delirium is increased in patients with

visual or hearing impairment. In a study performed by Han et al., a significant relationship was found between delirium and patients with visual impairment.[32] In this study, when individuals with and without delirium were compared, no significant difference was found in terms of vision and hearing loss. Previous studies also support these results.[36,37] However, Nu-DESC is a screening tool that is completely observational and can be with ease applied by nurses. The relationship between visual and hearing aids and delirium in other studies can be a coincidental byproduct of verbal/behavioral detection of patients with delirium and nurse delirium screening scale being based entirely on observation.

In a study by Mangnall et al., they found comorbidity common in the patient group developing delirium.[38] According to the analysis results of our study, no significant difference was found between those with chronic diseases and delirium.

The diagnosis of delirium can only be made by clinical assessment. For this reason, in addition to DSM-V criteria, some diagnostic scales are recommended for the diagnosis of delirium.[39,40] DSM-IV Diagnostic criteria showed that Nu-DESC, although it has good validity, did not detect many more cases of delirium, but it was detected earlier.[5] DSM-V diagnostic criteria are not used in the studies. However, monitoring ICU patients for risk of developing delirium using DSM-V diagnostic criteria provides nurses with speed and comfort. In most scales using the diagnostic criteria from DSM-IV, it was found that there may be at least a 30% difference between the DSM-V diagnostic criteria and the DSM-V diagnostic criteria used in this study.[4,5]

Some nu-DESC studies performed on samples with neurologic and neurosurgical disorders may not provide accurate results.[13] This situation causes the analyzes of the scales to be wrong. In our study, it was aimed to obtain more robust data by considering the group without a neurological disease. Hargrave et al.[14] reported that the Nu-DESC scale was a specific but not sensitive delirium detection instrument. They emphasized the use of a threshold value of ≥1 or the addition of an attention test to increase sensitivity with a small decrease in specificity. In the present study, attention test was applied by using the confusion assessment method and increased the importance of sensitivity in the results obtained.

Nu-DESC has been translated into many languages and its validity has been examined. Nu-DESC, developed in 2005 by Gaudreau et al, was psychometrically validated and showed a sensitivity of 85.7% and a specificity of 86.8%.[4] Haegi-Pedersen et al. stated that Nu-DESC has the potential to be the cornerstone for delirium screening and diagnosis in Denmark, and they found high sensitivity and good specificity for the scale.[5]

CONCLUSION AND RECOMMENDATIONS

This study is the first official Turkish validity and reliability study of the Nursing-Delirium Screening Scale applied to inpatients in the intensive care unit. Our assessment is that Nu-DESC is a sensitive and specific screening tool for delirium when a threshold value of ≥2 is used, and can be applied quickly and easily by nurses, clinically various hospital setting. Nu-DESC is an easily understandable and easily applicable tool. However, if a patient with Nu-DESC positive for delirium is not actually in delirium, it can be said that the risk of developing delirium is high in this patient due to basic cognitive impairment.

Our results show that Nu-DESC is a valid and reliable instrument for measuring the severity of delirium among ICU patients. The use of a well-differentiated delirium sample and the researcher's experience as an intensive care nurse are the study's strengths.

The sample's size is one of its weaknesses. Future research should

therefore focus on individuals who require more extensive care.

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