



Psychometric Evaluation of Clinical Learning Motivation Scale

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Abstract

Aims: The aims of the study were to assess the reliability and construct validity of the clinical learning motivation scale.

Methods: This study is a methodological design. The study carried out in March 2013. A sample of 230 undergraduate students was recruited by random sampling from nursing department of health school at İnönü University in Turkey. The data were collected using a questionnaire prepared by researchers. The scale consisted of 23 items related motivation of clinical learning. The developed scale was judged by the expert panel on relevance content validity and phrasing of the instrument items, in addition to conducting the factor analysis. For each item, the expert could suggest possible improvements in phrasing. Subsequent revisions of the instrument were made and discussed each time by the panel members till agreement about the content was reached on a 5-point Likert format. In the data analysis, Pearson's product-moment correlation, factor and Cronbach's alpha analyses were used for construction of the scale.

Results: The developed scale, consisting of 23 items, was judged by the expert panel on relevance and phrasing of the instrument items. For each item, the expert could suggest possible improvements in phrasing. Subsequent revisions of the instrument were made and discussed each time by the panel members till agreement about the content was reached.

The principal components method of factor analysis identified one factor with accounted for 68.5% of the total variance. Internal reliability coefficients of the scale was found to be substantial ($\alpha = 95$).

Conclusions: The present study provides evidence of the clinical learning motivation scale validity and reliability for nursing students. The scale has potential applications as it can be used both as a research or a regular nursing student's motivation to clinical learning in health care settings.

Keywords: Instrument development, Motivation, Clinical learning, Nursing education

During the last few decades, nursing has changed in many ways, putting extra pressure on nurses. Several researchers describe nurse work as stressful [1]. Political and administrative authorities demand that more work be done in less time, especially within the health care system [2]. Work under pressure, stress and dissatisfaction with working hours are some of the negative factors [3]. The shortage of nurses and high staff turnover rates within the health care system are compromising the nurse's ability to provide competent and compassionate care. High rates of staff turnover cause negative effects on productivity and effectiveness [4]. As nurses make a unique contribution to the multidisciplinary teams they work in [5], job satisfaction and motivation influences the quality of the care they provide, just as nurses job dissatisfaction influences the nurse patient relationship [6]. When nurses feel dissatisfied with their work, they have a tendency to distance themselves from patients, from nursing tasks [7], and from their inner selves [8]. Furthermore, nurses who feel that their efforts are not fully appreciated tend to leave the profession [9].

During their education, nurses learn the importance of ethical practice, of being the patient's advocate and of caring. Their ability to provide high-quality care influences their perception of job satisfaction [10]. In addition, nurses' collaboration with other health care personnel can influence their job satisfaction. Collaboration with other professionals as well as with colleagues is important for their professional development and quality of care, and an issue for the clinical nurse leadership [11]. In a study, Ellefsen [12] found that nurses in both Scotland and Norway experienced stress in relation to the public as well as tension in their collaboration with other professionals. Findings from research investigating what the staff perceived as creating job satisfaction in their psychosocial work environment, as well as ethical dilemmas experienced within acute psychiatric care showed that factors contributing to job satisfaction or dissatisfaction can be related to the nurse's value system. Ethical dilemmas were specifically concerned with how to care for and handle the work in relation to patient autonomy and how to approach the patient [13]. In an investigation by Chaboyer, Najman and Dunn [14], collaboration and autonomy were significantly correlated with job valuation. In addition, the reality for nurses is that they work in an organization with an ever-increasing number of changes and structural upheavals. This affects job satisfaction at all levels, mainly in a negative and stressful way.

Nurses are involved in patients' suffering, and the interpersonal aspects of nursing are dependent on the autonomy and courage of

Introduction

Motivation is the occurrence acting, learning and moving feelings in human beings. Motivation in work life can be described as additional rights and rewards for working people to do their jobs better, more qualified and faster and also to occur their feelings. In having motivation a person must first believe that he is able to manage the work before he has decided.

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the individual nurse [15]. To be able to meet the challenges of their profession, nurses need to be clear about why they think and act as they do, and they need to perceive themselves as being empowered. It is required that motivation with work environment of nursing students is known for they are prepared to nursing job. According to previous literature, there is no study available that focuses on motivation with work clinical learning motivation of nursing students.

The aims of the study were to assess the content and construct validity of the clinical learning motivation scale (CLMS), and to establish the reliability of the scale in terms of the internal consistency of the scales.

Methods

Population and participants

This study was used methodological designs. The total population of the study was 1170 nursing students of health school at İnönü University, Turkey. The sample size was determined to be 230 nursing students. The literature stresses that it is adequate to include persons 5-10 times of the scale item number in studies of validity and reliability [16,17]. Also, some researchers recommend sample sizes of 100 and more in instrument validity and reliability study, and they suggest to use factor analysis sample size should be 100 least [18,19]. So, the numbers of the students recruited were ten times of that of the scale items in this study. For this reason, the sample size of the research is adequate. Two hundred thirty the students were requested to participate in the study by the researchers and to complete the CLMS. A randomly sample of 230 nursing students was recruited from the population.

Development of the items of the Clinical Learning Motivation Scale

The scale was developed to measure affecting factors on work motivation in work environment. The scale was structured by examining related to the literature cited [20-24]. The researchers did not go through exist any instruments and use/adapt items from other scales in examined literatures. Four experts were informed concerning the measures and concepts involved by the author. They were informed concerning the measures and concepts involved by the author. This panel comprised two nursing education specialists, two who had published works on instrument development. They reviewed the instrument and they suggested wording recommendations. The authors implemented these suggestions in the scale. A pool of items was generated from the literature and several health care professionals asked to identify any additional issues they felt should be included in the questionnaire. A focus group was also conducted with nursing students asking them to identify any issues of motivation of clinical learning. Combining information from these different sources resulted in a draft questionnaire. The draft instrument was pilot tested with another group from the target population. As a consequence, several items were reworded and a number of new items were added to the questionnaire. The resulting list of 23 items of motivations with work environment items was used as the basis for version of the motivation with work environment described in the present study. Psychometric analysis would then be used to the size of the questionnaire. The scale consisted of total 23 items on a 5-point Likert format with the following coding: certainly agree (scored 5), agree (4), natural (3), disagree (2), and certainly disagree (1). The maximum score of the scale was 115 and minimum score was 23 point. Evaluation of the scale score is made by sum point.

Additional questions: Questions regarding the students' age, class, education level of father, education level of mother and being of other health profession in family were also asked. These demographic questions allowed recognise of the sample.

Psychometric testing

Internal consistency and homogeneity: Cronbach's α was calculated to determine internal consistency. Besides, the mean inter-item correlations were included in the Pearson's correlation.

Clark and Watson [24,25] indicate that internal consistency may be a necessary condition for homogeneity or one dimensionality of a scale and Cronbach's α must be 0.70. They recommend using the mean inter-item correlation as criterion for internal consistency [26]. This should be between 0.15 and 0.50. They point out that this means value can be a bias and that all individual inter-item correlation should be within these limits. In other words, one can only be ensured of one dimensionality if all individual inter-item correlations are clustered closely around the mean inter-item correlation.

Construct validity: The data were analysed by means of factor analysis, more precisely: a principal component analysis, and varimax rotation. In order to attain the best fitting structure and the correct number of factor, the following criteria were used: eigenvalue higher than 1.0, factor loadings higher than 0.40 and the so-called elbow criterion regarding the eigenvalue [27]. Before conducting the factor analysis of the motivation with work environment scale, Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) and Bartlett's Test was calculated to evaluate whether the sample was large enough to perform a satisfactory factor analysis. The KMO measures the sampling adequacy that "p" value should be greater than 0.5 for a satisfactory factor analysis to proceed.

Ethical Considerations

Permission to undertake this study was gained from the ethical committee at the İnönü University and informed consent was obtained from each participant. Prior to this study, the students were informed of the purpose of the research. Participants were assured of their right to refuse to participate or to withdraw from the study at any stage. The anonymity and confidentiality of participants were guaranteed.

Data Collection

Data were collected using the motivation with work environment scale and an additional form including socio-demographic characteristics of participants in March 2013 by the researchers. The questionnaires were distributed by researchers to 230 students who accepted participant to the study and come to the school on same day. Questionnaires were given to students in their class before lesson did not start, and it was wanted that students answered this questionnaire. This procedure took approximately 10 to 15 minutes for each subject.

Statistical Analyses

Construct validity of the motivation with work environment scale was examined using principal components analysis with the resulting factor rotated using the varimax procedure. The number of component to retain was initially determined using the eigenvalue greater than one rule [28]. The resulting factor solution was then reviewed with items. Internal consistency of the domains was assessed using Cronbach's coefficient alpha (α). The test-retest reliability was examined at the scale. Individual items of the scale inter-item correlations were also assessed for internal consistency.

Results

The demographic characteristics of the participating students are displayed in table 1.

The mean age of the students was 20.77 ± 2.01 years, and the most of them was in second and fourth class.

Table 1: Year and class characteristics of the students

The Characteristics	X \pm SD	
Age (year)	20.77 \pm 2.01	
Class	N	%
1. class	55	24.0
2. class	63	27.4
3. class	50	21.7
4. class	62	26.9
Total	230	100.0

Validity

Content validity

The developed scale, consisting of 23 items, was judged by the expert panel on relevance and phrasing of the instrument items. For each item, the expert could suggest possible improvements in phrasing. Subsequent revisions of the instrument were made and discussed each time by the panel members till agreement about the content was reached.

Construct validity

KMO and Bartlett's Test were calculated to evaluate whether the sample was large enough to perform a satisfactory factor analysis. The KMO measures the sampling adequacy that should be greater than $p < 0.5$ for a satisfactory factor analysis to proceed. The calculated KMO was 0.70 ($p < 0.001$) indicating that the sample was large enough to perform a satisfactory factor analysis. The result of the KMO showed

that the total sample size was sufficient for psychometric testing of a 23 item scale. The first step of the factor analysis was a principal component analysis revealing one factor with an eigenvalue of higher than one (Table 2). The scale explained 68.5% of the variance. The factor loadings of the items in the scale ranged from 0.46 to 0.92.

Table 2. Factor loadings and item-total correlations of items of the scale (n = 230)

Reliability

Internal consistency

The reliability estimates for internal consistency was $\alpha = 0.95$. The analysis of item-total correlations indicated that a one dimensional scale was sufficient, and the item-total correlations ranged from 0.19 to 0.86 (Table 2).

Internal consistency and inter-item reliability estimates are presented in table 3 for the motivation with work environment

Table 2: Factor loadings and item-total correlations of items of the scale (n = 230)

The items of the scale	Factor loading	Item-Total correlation
Q1 Hard work affects my working motivation.	.922	.196 [*]
Q2 The opportunity of the practice I learn affects my working motivation.	.462	.607 ^{**}
Q3 The proud of the work done influences my working motivation.	.734	.757 ^{**}
Q4 The award given of extraordinary performance influences my working motivation.	.849	.615 ^{**}
Q5 The award given due to the work done affects influence my working motivation.	.842	.659 ^{**}
Q6 The continuation of job influences influence my working motivation.	.667	.811 ^{**}
Q7 The healthy of working environment affects influence my working motivation.	.731	.801 ^{**}
Q8 The team working affects influence my working motivation.	.709	.770 ^{**}
Q9 The peaceful of working environment affects influence my working motivation.	.861	.864 ^{**}
Q10 The satisfactory salary affects influence my working motivation.	.631	.741 ^{**}
Q11 Opportunity of post graduate education affects influence my working motivation.	.576	.740 ^{**}
Q12 The opportunity to develop myself affects influence my working motivation.	.692	.809 ^{**}
Q13 The close supervision affects influence my working motivation.	.759	.440 ^{**}
Q14 The good relations at work affect influence my working motivation.	.710	.819 ^{**}
Q15 The contribution of the work to the public affects influence my working motivation.	.719	.815 ^{**}
Q16 The belonging feelings at work affect influence my working motivation.	.644	.792 ^{**}
Q17 Having responsibility of work and power affects influence my working motivation.	.576	.682 ^{**}
Q18 The feeling of freedom at work affects influence my working motivation.	.520	.713 ^{**}
Q19 Being creative at work affects influence my working motivation.	.640	.739 ^{**}
Q20 Working at a qualified hospital affects influence my working motivation.	.664	.763 ^{**}
Q21 The job security affects influence my working motivation.	.752	.834 ^{**}
Q22 The feedback of the job affects influence my working motivation.	.466	.648 ^{**}
Q23 The feeling of being successful affects influence my working motivation.	.697	.784 ^{**}

* P < 0.05 ** P < 0.01

Table 3: Inter- item correlation matrix of the scale (n = 230).

	Item1	Item2	Item3	Item4	Item5	Item6	Item7	Item8	Item9	Item11	Item12	Item13	Item14	Item15	Item16	Item17	Item18	Item19	Item21	Item22	Item23		
Item1	1.00	.311	.568	.581	.196	.379	.248	.412	.318	.378	.333	.251	.295	.182	.191	.113	.173	.211	.277	.158	.113	.199	.119
Item2	.311	1.00	.434	.394	.234	.221	.217	.328	.361	.248	.252	.179	.221	.131	.128	.193	.234	.187	.258	.134	.137	.175	.111
Item3	.568	.434	1.00	.535	.121	.437	.311	.358	.312	.486	.352	.326	.237	.189	.189	.132	.248	.195	.241	.131	.172	.199	.137
Item4	.581	.394	.535	1.00	.212	.396	.422	.493	.381	.525	.476	.312	.391	.213	.219	.143	.263	.164	.261	.246	.122	.196	.121
Item5	.196	.234	.121	.212	1.00	.125	.192	.149	.229	.193	.149	.110	.211	.312	.238	.126	.113	.166	.217	.152	.155	.134	.138
Item6	.379	.221	.437	.396	.125	1.00	.459	.383	.314	.435	.365	.310	.268	.131	.117	.121	.154	.217	.177	.156	.122	.188	.111
Item7	.248	.217	.311	.422	.192	.459	1.00	.411	.295	.449	.383	.395	.315	.191	.144	.113	.110	.161	.181	.229	.164	.148	.155
Item8	.412	.328	.358	.493	.149	.383	.411	1.00	.488	.525	.516	.364	.295	.223	.234	.112	.211	.261	.271	.119	.117	.249	.141
Item9	.318	.361	.312	.381	.229	.314	.295	.488	1.00	.369	.523	.237	.331	.316	.271	.131	.189	.261	.251	.152	.168	.239	.141
Item11	.378	.248	.486	.525	.193	.435	.449	.525	.369	1.00	.643	.431	.478	.339	.258	.122	.227	.423	.417	.264	.142	.173	.129
Item12	.251	.179	.326	.312	.111	.311	.395	.364	.237	.431	1.00	.414	.572	.311	.291	.191	.276	.325	.317	.211	.139	.185	.111
Item13	.295	.221	.237	.391	.211	.268	.315	.295	.331	.478	.572	1.00	.194	.182	.229	.225	.171	.215	.379	.189	.147	.213	.192
Item14	.182	.131	.189	.213	.312	.131	.191	.223	.316	.339	.311	.175	1.00	.516	.128	.146	.192	.142	.121	.146	.271	.121	.121
Item15	.191	.128	.189	.219	.238	.117	.144	.234	.271	.258	.291	.184	.229	1.00	.188	.179	.173	.114	.128	.177	.221	.126	.126
Item16	.113	.193	.132	.143	.126	.121	.113	.112	.131	.122	.191	.186	.225	.128	1.00	.115	.124	.211	.191	.191	.219	.171	.171
Item17	.173	.234	.248	.263	.113	.154	.111	.211	.189	.227	.276	.246	.171	.146	.179	1.00	.115	.314	.177	.197	.271	.148	.148
Item18	.211	.187	.195	.164	.166	.217	.161	.261	.261	.423	.325	.254	.215	.192	.173	.124	1.00	.414	.137	.145	.243	.116	.116
Item19	.277	.258	.241	.261	.217	.177	.181	.271	.251	.417	.317	.253	.379	.142	.114	.211	.414	1.00	.198	.118	.334	.141	.141
Item21	.158	.134	.131	.246	.152	.156	.229	.119	.152	.264	.211	.245	.189	.121	.128	.191	.177	.137	1.00	.164	.145	.131	.131
Item22	.113	.137	.172	.122	.155	.122	.164	.117	.168	.142	.139	.144	.147	.146	.177	.191	.197	.145	.118	1.00	.145	.122	.122
Item23	.199	.175	.199	.196	.134	.188	.148	.249	.239	.173	.185	.165	.213	.271	.221	.219	.271	.243	.334	.145	1.00	.123	.123
Item23	.119	.111	.137	.121	.138	.111	.155	.141	.141	.129	.111	.147	.192	.121	.126	.171	.148	.116	.141	.131	.122	.123	1.00

scale. Inter-item correlation ranged from 0.11 to 0.58, and inter-item correlations were adequate.

Test-retest reliability

To test-retest reliability of the scale, the students were asked to complete the questionnaire to do so again 2 weeks later. The test-retest reliability of the scale was found $r = 0.83$.

Discussion

The clinical learning motivation scale is a one-dimensional instrument specifically developed to allow the examination of nursing students' motivation of clinical learning. It has demonstrable validity and reliability and a high level of acceptability for this nursing student group. The content validity of the clinical learning motivation scale indicated that there was no need to modify its content. Besides, the internal consistency of the motivation with work environment scale seems sufficient (Table 3), in view of the range of individual inter-item correlations the homogeneity of the instrument is secure, and inter-item correlations had adequately criteria. Internal consistency and inter-item correlations had adequately criteria [29,30]. If the item that correlation was under 0.20 was not affect alpha value and was preferred at instrument, it could stay on instrument items [31]. In this study all items met this criteria related to factor loading and correlation coefficients.

With varimax rotation the factor analysis indicated that, with regard to the content, one factor was discerned and clinical learning motivation scale explained 54.5% of total variance. Internal consistency reliability was 0.95 for the scale. In this study, internal consistency and explained total variance had adequately criteria [29,30]. It is stated in literature that a reliability of 0.80 is considered the lowest acceptable coefficient for a well-developed measurement tool. For a newly developed instrument, a reliability of 0.70 is considered acceptable [32]. It is stated in literature that alpha coefficient must be 0.70 and more [22,29].

The result of the KMO indicated that the sample was large enough to perform a satisfactory factor analysis; the further validation process clearly showed that factor solution was associated with sample size. Factor analysis yielded that factor loadings were all above 0.40, and factor loading of the items in the scale ranged 0.43 to 0.75 in this study. The minimum 0.30 for factor loading is acceptable [33]. In this study all items met these criteria and factor loadings were high. Therefore, it is might be said that construct validity of the scale was obtained.

Conclusion

In conclusion, the motivation with work environment scale has shown statistical acceptable levels of reliability and validity. The clinical learning motivation scale is very important as it provide standardized data in nurse's and nursing student's clinical learning motivation research. However, the application of our findings to other areas needs to be done. We merely present developed of a standardized instrument based on data obtained from Turkish nursing students. The clinical learning motivation scale will enable identification of nursing student's motivation of clinical learning assessment that should be an essential part of nursing practice. Further study may lead to the identification of variables that would improve the clinical learning motivation scale. A recommendation is that this scale should be further evaluated; with a larger sample size, in different regions in Turkey and diverse populations of world. Once a valid and reliable scale is ready for use, it can be used to measure outcomes in an intervention study. This will permit further testing of the clinical learning motivation that assisting nurses to increase their work motivation. This needs to be tested in different cultures. With the Turkish scale now, the study can proceed to further validation of the scale and use in outcomes research.

Implications for research include that the scale's validity and reliability can be tested in other areas and other countries that also represent a diverse sample of nurses from a wide range of personal

features background, to see if the results of the study are consistent with what has been derived in this study. Utilization of the results promotes more work motivation of nurses in respect of mental and physical. This could be helpful to management nurses for improving of nursing care in clinical setting and primary health centre. Additionally, knowing of work motivation of nurses and nursing students can affect positively their performance and their satisfaction with work life. Knowing of the motivation with work can be guide to managers at redounding personnel' work satisfaction and consequently work productivity. Managers can make new arrangements at workplaces.

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