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Nursing Motives for Helping Scale: Further Psychometric Investigation Using a Large Sample of non-European Nurses.

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ABSTRACT

Background: The nursing Motives for Helping Scale (N-MHS) is an easily administrable and reliable measure of prosocial helping behavior in nurses. The psychometric validity of this tool needs to be established in non-European nurses including Asians.

Material and Methods: In this cross-sectional sample (simple random) survey, 361 nurses (age: 23-62 years; male: 66 and female: 294) working in three cities in Saudi Arabia participated. N-MHS, Scale of Attitude towards the Patient (SAtP), and a tool for socio-demographic information were used.

Results: Exploratory factor analysis (EFA) findings were inconsistent, which favored both a 1-Factor as well as a 2-Factor solution for the N-MHS. Fit indices did not favor any model (1-Factor, 2-Factor, and a 3-Factor). However, both multidimensional models had divergent validity issues (inter-factor correlation coefficient>0.9). Internal consistency (Cronbach alpha: 0.87) and convergent validity (correlation coefficient between N-MHS and SAtP: r = 0.19 to 0.64; p<.01) were adequate.

Conclusion: The findings support the psychometric validity of N-MHS in non-European nurses.

Keywords: Prosocial; Empathy; Altruism; Factor analysis; Dimensionality

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INTRODUCTION

Nursing care necessitates strict adherence to principles of the humanistic nursing theory which is primary for the relationship between nurses and patients [1]. Prosocial behavior is an essential component of nursing practice, which may help in developing valuable relationships between nurses, patients, and their families [2]. Evidence shows that prosocial behavior is significantly affected by organizational communication satisfaction and emotional labor in nurses [3]. Therefore, for the promotion of quality care and better organizational operation, it is imperative to optimize the discretionary prosocial behavior of nursing professionals especially at workplaces [4]. In such a perspective, it is highly desirable to have a valid, easily administrable, and reliable measure of prosocial helping behavior in nurses.

Helping is a form of prosocial behavior that is determined by a wide range of factors that may be involved in its causation, moderation, and mediation [5]. All these three types of determining factors can be broadly categorized into two major characteristics, i.e., dispositional and situational [6]. Batson et al propounded the *empathy-altruism hypothesis*, in the context of the situational factors playing an important role in helping behavior, wherein, the final goal is to benefit others [7]. The egoistic nature of help is an alternate opinion, wherein, the final goal can be motivation for any or all of these: the quest for reward, escaping punishment, and aversive-arousal reduction [7]. Dispositional factors are related to those aspects, which are concerned with overtime and across situation consistency in helping behavior [8]. Personal factors play a functional role in interactions between dispositional and situational factors, which finally determine prosocial helping behavior in an individual [9]. Many tools have been developed to assess prosocial behavior and its aspects, i.e., prosocial orientation index [10], prosocial Personality Battery [11], Volunteer Functions Inventory [9], and Volunteer Motivation Questionnaire [12]. However, most of these tools assess prosocial behavior in spontaneous, volunteerism, and unpaid assignments. One notable exception is the Nursing Motives for Helping Scale (N-MHS) which assesses motivation in the remunerated assignment of the nursing profession. It is a brief and easily administrable tool. N-MHS had adequate internal consistency and convergent validity in Spanish nurses [13]. However, the psychometric validity of this tool needs to be established in non-European nurses including Asians. Furthermore, the factorial validity of the N-MHS needs further investigation especially using a culturally diverse and larger sample of nurses for a better understanding of the proposed dimensions and their relevance in nurses from different societies.

MATERIALS AND METHODS

Participants

In this study, three hundred and sixty-one nurses, 66 males and 294 females, with an age range of 23-62 years participated. All participants were required to have a valid registration with the Saudi Commission for Health Specialists; there were no exclusion criteria. Four hundred nurses were approached for participation, of which 361 participated with a response rate of 90.25%. Saudi and expatriate nurses participated in this study. Expatriate nurses were Indians, Pakistanis, Philippines, Indonesian, Sudanese, Egyptians, Syrians, Jordanians, etc. The sample size was considered adequate with participants to items ratio of 40.11, which is higher than the recommended minimum value [14]. There were no construct level and item-level missing values for N-MHS and Scale of Attitude towards the Patient (SAtP). There were few missing values in the participants' characteristics, age (0.83%), gender (0.28%), and nationality (1.4%).

Procedures

This was a cross-sectional sample (simple random) survey study among nurses working in hospitals, clinics, and primary health care centers in three cities of Saudi Arabia, Dammam, Riyadh, and Al Majmaah. Participants were given a summary of the purpose and the objectives of the study. Participant information sheet clearly stated

that: (i) participation was voluntary, (ii) involved no potential risk(s) to health, (iii) involved no fee or remuneration, and (iv) freedom to discontinue or withdraw at any stage. Appropriate measures were taken to maintain the confidentiality of the personal information of participants. Written consent was given by the participants before enrollment for the study. All the procedures used in this study complied with the Helsinki declaration, 2002. The study questionnaire package comprised of three questionnaires; N-MHS, Scale of Attitude towards the Patient (SAtP), and a semi-structured tool [13], [15].

Nursing Motives for Helping Scale (N-MHS)

The N-MHS is based on the concept of prosocial behavior as envisaged in the empathy-altruism theory of Bateson; wherein, empathy leads to selfless help of the person in need [7]. N-MHS is a brief self-reported tool with 9-items; it is designed to evaluate the motives of helping others [13]. All the items are scored on the Likert scale, where lower scores indicate lesser empathy and altruistic traits in the respondents. The scale was implemented in Spanish nurses, which showed acceptable internal reliability, convergent validity, and acceptable factorial validity for a 3-factor model [13].

The Scale of Attitude towards the Patient (SAtP)

It is a standardized and validated questionnaire of 7-items to measure health professionals' attitudes toward patients [15]. Health professionals are required to respond to all the close-ended 7-items on a Likert scale of 1 (strongly disagree)-5 (strongly agree). Therefore, a range of scores from 7 to 35 is possible for the SAtP total score; higher scores represent a positive and empathic attitude of health professionals towards patients. All the 7-items record respondent health professionals' attitudes towards the patient in four aspects, namely respect for patients' autonomy, holism, empathy, and altruism [15].

Socio-demographic questionnaire

A semi-structured tool to record information related to the social and demographic characteristics of the participants was used.

Statistical analysis

SPSS 23.0 was used for statistical analysis. Frequency, percentage, mean, standard deviation, and range were used for presenting participants' characteristics. Skewness [statistics and standard error (SE)], kurtosis (SE), percentage (for ceiling/floor effect), Spearman's correlation test, and Cronbach's alpha if item deleted (CAID) were used for item analysis. Internal consistency and divergent validity of N-HMS was assessed using Cronbach's alpha test and Spearman's correlation test.

The study dataset was split into equal sub-samples (n=180) for performing exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) [16]. Bartlett's test (p<.001 for both sub-samples), Kaiser-Meyer-Olkin Test (0.88 and 0.90 for both sub-samples), Determinant (0.01 and 0.03 for both sub-samples), communality (0.36-0.79 for EFA sub-sample and 0.48-0.75 for CFA sub-sample), diagonal elements of the anti-image matrix (0.69-0.93 for EFA sub-sample and 0.79-0.93 for CFA sub-sample) and inter-item correlation (24 out of 36 inter-item correlation coefficients were above 0.3 in EFA sub-sample, and 23 out of 36 inter-item correlation coefficients were above 0.3 in CFA sub-sample) favored application of factor analysis in the N-HMS scores in this study population [16]. Four measures were used to determine the number of factors (s) in EFA: parallel analysis, Cattell's Scree test, eigenvalue more than 1 method, and cumulative variance more than 40% [16]. There were six multivariate outliers in the EFA sub-sample and three in the EFA sub-sample according to the Mahalanobis distance rule, X^2 (9)= 27.88 [17]. Furthermore, most of the items of the N-HMS were skewed, therefore, Factor Axis factoring (it does not need normality assumptions) with Promax rotation (the previous study had found correlated factors) was used in the final EFA. An initial Principal component analysis was performed using rotation to simplify the structure. CFA estimated standardized factor loadings: maximum likelihood with bootstrapping to manage univariate and multivariate distribution issues. CFA screened three models: model-A, a 1-Factor model (as explained ahead, it was based on findings of three of the factor retention methods in EFA); Model-B, a 2-Factor model (as explained ahead, it was based on findings of one of the factor retention methods in EFA); and Model-C, a 3-Factor model (theoretical construct and based on findings of the previous study). Multiple fit indices from various classes were used following the recommended norms [16], [18], [19]. For the comparative fit index (CFI) and goodness of fit index (GFI), a value of 0.95 and above implied excellent fit, while a value of 0.90 and above implied acceptable fit [18]. A value of 0.05 for root mean square residual (RMR) of 0.05 suggested excellent fit, while a value of 3 and less for χ^2/df implied excellent fit [18].

Participants' characteristics

The summary of the participants' characteristics is presented in Table 1. The average age and SAtP scores of the nurses were 33.4±7.4 years and 26.8±4.6, respectively (Table 1). Most of the participating nurses (81.4%) were females and the majority of them were married (66.8%) at the time of the study (Table 1). Saudi nurses were more in number than the expatriates (Table 1). Nurses working in the intensive care unit and the primary health care centers together comprised 47.4% of the study participants (Table 1). The majority of the participating nurses worked in the morning shift (57.1%). The majority of nurses reported bachelor's (59.8%) as their highest level of academic qualification (Table 1).

Factor analysis

Sample adequacy measures:

The N-MHS scores satisfied conditions for factor analysis in both EFA and CFA sub-samples: (i) no issues of singularity (Bartlett's test ($p < 0.001$; Table 2) [20], (ii) absence of multicollinearity (determinant > 0.00001; Table 2) [20], (iii) meritorious to an excellent level of common variance (KMO>0.88; Table 2) [20] (iv) communality values were higher than the minimum value (0.2) needed to account variance explained by the common factor(s), i.e., all were above 0.38 [21], and (v) all diagonal elements of the anti-image correlation matrix were more than 0.5 [20]. Further support for the application of factor analysis in this dataset was implied by inter-item correlations; most of which were above 0.3 in both sub-samples (24 out of 36 in the CFA sub-sample and 23 out of 36 in the EFA sub-sample) (Table 3) [17].

Exploratory factor analysis

The results of the measures to determine the number of factors (s) in EFA were disparate, i.e., the Cattell's Scree test, the Cumulative variance criteria (>40%), and the robust Parallel analysis indicated a 1-Factor solution, while Kaiser's criteria (Eigenvalue≥1) suggested a 2-Factor solution for the N-MHS scores in this population of nurses (Table 4, Figure 1) [16], [19], [22]. The correlations between the N-MHS item scores and their factors were

adequate as all significant factor loadings were 0.3 and above (Table 5) [23].

Confirmatory factor analysis

Table 6 summarizes the results of fit statistics of the three models N-MHS, i.e., two based on EFA findings in this study and one based on Gutiérrez et al findings in the Spanish nurses. None of the three models performed noticeably better than others in terms of fit indices (Table 6) [13]. However, both multi-dimensional models, i.e., Model-B and model-C had divergent validity issues for their respective factors, because inter-factor correlations were above 0.9 (Figure 2) [16]. The correlations between the N-MHS item scores and their factors were adequate for model-A, as all significant factor loadings were above 0.3 (Figure 2) [23].

Item analysis

The preliminary item analysis of the N-MHS scores is shown in Table 7. None of the nine items of the N-MHS showed floor effect, i.e., less than 15% of respondents reported the least score [24]. However, four items had a ceiling effect, i.e., more than 15% of respondents reported the highest score [24]. There was no issue of ceiling/floor effect for the N-MHS total score, as only 1.1% of respondents reported the lowest and highest scores for the N-MHS total score [24]. There were issues of skewness and kurtosis, as absolute values of Z-score of skewness was above 3.29 for all except item-9 of the N-MHS (Table 7). Item 4 to Item-8 has kurtosis issues, absolute values of Z-score of kurtoses were above 3.29 (Table 7).

Internal consistency and item-discrimination

Correlations between item and total scores of the N-MHS scale ranged between r=0.54, p<.01and r=0.71, p<.01) (Table 7). Corrected item-total (N-MHS) correlations ranged between (r=0.29) and (r=0.71) (Table 7). Cronbach alpha for the N-MHS scale was 0.87. The value of the CAID of the N-MHS scale ranged between 0.83 and 0.88 (Table 7).

Convergent construct validity

N-MHS item as well total score correlated significantly with SAtP total score in the study population (r = 0.19 to 0.64; p<.01).

DISCUSSION

In this study, the psychometric characteristics of the N-MHS scale were studied in a sample of non-European nurses for the first time. The results of this study may be more generalizable than previous findings because of the larger sample size as well as the inclusion of nurses from many nationalities. The study provided further psychometric validation support for factorial validity, favorable item analysis-classical test theory-based, good reliability-internal consistency, and convergent construct validity of the N-MHS scale in the study population.

The factor analysis procedure was performed after splitting the sample into two sub-samples as per the recommended practice [16], [19]. Gutiérrez et al performed principal component analysis followed by CFA on the same sample, this may complicate the direct comparison of the factorial validity findings of their study with that of the present study [13]. The factor analysis procedure was applied after a comprehensive analysis of the N-MHS item scores for the sample adequacy measures (Bartlett's test, determinant, KMO, communality, diagonal element of the anti-image correlation matrix, and inter-item correlations) showed that all the required conditions were satisfied. A systematic review on the factorial validity of questionnaire tools recommended that multiple measures of sample adequacy and sample suitability should be employed to unambiguously ascertain the applicability of factor analysis procedures [16]. Gutiérrez et al reported only inter-item correlation coefficient values to indicate content homogeneity without issues of redundancy [13]. Unlike, Gutiérrez et al 2006 multiple measures of factor retention including a robust measure, i.e., the parallel analysis was used, the results of which were disparate [13], [16], [19], [22]. Therefore, CFA was applied for further pieces of evidence using model fit indices from multiple categories [16], [19], [25].

A unidimensional structure, i.e., model-A was favored because both the multifactorial models, i.e., 2-factor and 3-factor models were non-viable because of high inter-factor correlations (Figure 1, Table 6). This is because inter-factor correlations that are higher than 0.85 may have discriminant validity issues [16], [26]. It has been previously shown that factorial validity solutions may vary among different populations for questionnaire tools [16]. The generalizations from the overall findings of the factorial validity investigations in this study indicate that the items of the N-MHS scale may be representing a unidimensional construct. This implies that in these non-European nurses, the N-MHS scale was not found to comprise of three distinct constructs of altruistic motivation, a quest for reward, and escaping punishment but instead had a single-dimensional underlying construct. Factorial validity findings of this study may have a significant impact on the interactional model; situational and dispositional factors of the helping behavior interact wherein personal factors play a role [9]. It is noteworthy to mention that [13]Gutiérrez et al 2006 also did not get distinct evidence in support of their purported 3-factorial solution from the model fit indices in Spanish nurses [13].

Though there were no concerns about the ceiling/floor effect for the total score of the N-MHS scale, individual item scores had such issues [24]. Furthermore, univariate distribution issues were observed in the individual item scores. Gutiérrez et al 2006 did not report values for these measures for individual items but they reported values for their purported 3-factorial solutions, therefore a direct comparison is not possible [13]. All the three measures of item discrimination, i.e., CAID, item-total score correlations, and corrected item-total correlations were above the minimum required value of 0.2 [27]. Item discrimination had adequately differentiated between nurses who scored high or N-MHS scale total scores [27]. The findings of this study about item discrimination indices are similar to those reported by the previous study. Gutiérrez et al reported that the corrected item-factor correlation was above 0.3 in Spanish nurses [13]. In this study on non-European nurses, all three indices of item discrimination, i.e., item-total correlation, corrected item-total correlation, and CAID were all above 0.3, except for the corrected item-total correlation for one item score, for which it was 0.29 (Table 6).

According to Georges and Mallery's rule of thumb criteria of the interpretation of the Cronbach's alpha, the N-MHS scale had a good internal consistency [28]. Gutiérrez et al reported Cronbach's alpha for their 3-factors solutions, therefore, a direct comparison is not possible. Understandably, Gutiérrez et al reported lower values of Cronbach's alpha for the sub-scales Gutiérrez et al because Cronbach's alpha is sensitive to the number of items in a construct [13]. However, in the present study, the N-MHS scale was found to have a unidimensional

structure, therefore, Cronbach's alpha of the complete tool with 9-items was evaluated instead of being evaluated separately for three factors.

The convergent construct validity of the N-MHS scale was evaluated by the estimation of correlation with the related construct of the SAtP [15]. The SAtP is based on two major concepts: (i) the Beauchamp and Childress' principle assumptions, and (ii) continental Tradition [29]. Therefore, this questionnaire assesses four aspects of the ethical attitude towards patients in health professionals. These four aspects are altruism, empathy, holistic method, and respect for patient autonomy [15]. The issue of attitude is inherently related to healthcare administration with human values-driven patient care. In this perspective, moderate strength of correlation coefficients (except for two items) between the SAtP and the N-MHS scale support convergent validity of the N-MHS scale. Gutiérrez et al also reported favorable convergent validity for the N-MHS scale, when these authors correlated scores of the N-MHS scale with that of the Professional Expectations Scale in the Spanish nurses [13]. Gutiérrez et al reported a weak and significant correlation between dimension scores of the N-MHS scale and the SAtP [13]. In summary, this study provided a piece of evidence for adequate factorial validity (unidimensional structure), good reliability-internal consistency, item analysis, and convergent validity of the N-MHS scale in a larger sample of non-European nurses who came from different nationalities.

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Table 1 Participant characteristics

Characteristics	Mean ± SD/frequency
Age (yr)	33.4±7.4 (23-62)
Gender	
Male	66 (18.3)
Female	294 (81.4)
Did not report	1 (0.3)
Civil status	
Single	114 (31.6)
Married	241 (66.8)
Divorced	4 (1.1)
Widowed	2 (0.6)
Nationality	
Saudi	183 (50.7)
Expatriate	173 (47.9)
Did not report	5 (1.4)
Specialty	
Medical wards	27 (7.5)
Surgical wards	14 (3.9)
Emergency	35 (9.7)
Outpatient clinics	14 (3.9)
Intensive care units	75 (20.8)
Laboratory	1 (0.3)
Obstetrics-Gynecology wards	31 (8.6)
Pediatric wards	22 (6.1)
Primary healthcare centers	96 (26.6)
Administrative jobs	46 (12.7)
Clinical duty schedules	
Morning shift	206 (57.1)
Afternoon shift	3 (0.8)
Night shift	3 (0.8)
Rotating shift	149 (41.3)
Highest educational qualification	
Diploma	102 (28.3)
Bachelors	216 (59.8)
Masters	43 (11.9)
SAtP total score	26.8±4.6 (7-35)

SD: standard deviation; SAtP: Scale of Attitude towards the Patient

Table 2 Sample size adequacy measures of the Nursing Motives for Helping Scale (N-MHS) scores in nurses.

Measures	Values		
	Total sample	CFA sub-sample	EFA sub-sample
Anti-image matrix	0.78-0.93	0.79-0.93	0.69-0.93
Bartlett's test of Sphericity	X^2 (36) = 1357.69, p<0.001	X^2 (36) = 751.05, p<0.001	X^2 (36) = 617.33, p<0.001
Determinant	0.02	0.01	0.03
Kaiser-Meyer-Olkin Test of Sampling Adequacy (KMO)	0.90	0.90	0.88
Communality	0.48-0.70	0.48-0.75	0.36-0.79

Table 3 Inter-item Correlation matrix of the Nursing Motives for Helping Scale (N-MHS) scores in nurses.

Items of the N-MHS	N-MHS-1	N-MHS-2	N-MHS-3	N-MHS-4	N-MHS-5	N-MHS-6	N-MHS-7	N-MHS-8	N-MHS-9	CFA sub-sample
N-MHS-1		.31**	.24**	.12	.13	.21**	.20**	.28**	.34**	
N-MHS-2			.51**	.42**	.58**	.41**	.44**	.43**	.26**	
N-MHS-3				.25**	.46**	.40**	.33**	.40**	.35**	
N-MHS-4					.42**	.44**	.56**	.44**	.11	
N-MHS-5						.53**	.54**	.52**	.28**	
N-MHS-6							.61**	.58**	.24**	

N-MHS-7								.68**	.23**	
N-MHS-8									.37**	
N-MHS-9										
N-MHS-1		.25**	.16*	.18*	.08	.23**	.17*	.10	.19*	EFA sub-sample
N-MHS-2			.50**	.47**	.53**	.43**	.39**	.52**	.32**	
N-MHS-3				.41**	.44**	.50**	.44**	.51**	.32**	
N-MHS-4					.51**	.48**	.44**	.49**	.18*	
N-MHS-5						.47**	.42**	.58**	.28**	
N-MHS-6							.67**	.57**	.17*	
N-MHS-7								.63**	.19*	
N-MHS-8									.23**	
N-MHS-9										

* $p < 0.05$; ** $p < 0.01$; EFA: exploratory factor analysis; CFA: confirmatory factor analysis

Table 4 Summary of the factor extraction measures used in exploratory factor analysis of the Nursing Motives for Helping Scale (N-MHS) scores in nurses.

√ indicates extraction criteria fulfilled, X indicates otherwise.

Number of Factors	Eigenvalue	Cumulative Variance Explained (%)	Above point of inflection on Scree plot	Decision to extract		
				Kaiser's criteria (Eigenvalue≥1)	Cumulative variance rule (>40%)	Scree test
1	4.28	47.60	Yes	√	√	√
2	1.05	59.28	No	√	X	X
3	0.89	69.15	No	X	X	X
4	0.69	76.79	No	X	X	X

Table 5 Pattern matrix of the Nursing Motives for Helping Scale (N-MHS) scores in nurses.

	Factor-1	Factor-2
NHMS_1		.30
NHMS_2		.81
NHMS_3		.48
NHMS_4	.34	.41
NHMS_5		.46
NHMS_6	.79	
NHMS_7	.99	
NHMS_8	.59	
NHMS_9		.48

Principal Axis Factoring extraction with Promax rotation (Kaiser Normalization), where rotation converged in 3 iterations. Factor loading less than 0.3 were removed from interpretation.

Table 6 Fit statistics of the Nursing Motives for Helping Scale (N-MHS) scores in nurses.

Models	CFI	GFI	RMR	RMSEA	χ^2	df	p	χ^2/df
A	.93	.91	.07	.10 (.08-.13)	76.21	27	<.01	2.82
B	.94	.92	.07	.09 (.06-.12)	69.75	26	<.01	2.68
C	.93	.91	.07	.11 (.08-.13)	72.23	24	<.01	3.01

A: 1-Factor, B: 2-Factor model and C: 3-Factor model
CFI: Comparative Fit Index, GFI: Goodness of fit index, SRMR: Standardized root mean square residual, RMSEA: root mean square error of approximation.

Table 7 Descriptive statistics of the Nursing Motives for Helping Scale (N-MHS) scores in nurses.

Items of the N-MHS	Cronbach's α if Item Deleted	Item-Total Correlation	Corrected Item-Total Correlation	Mean ± SD	Skewness		Kurtosis		Percentage distribution across item scores				
					Statistic (SE)	z	Statistic (SE)	z	1	2	3	4	5
N-MHS-1	.88	.46*	.29	3.29 ± 1.0	-0.53 (.13)	-4.09	-0.21 (.26)	-0.80	7.8	12.2	32.7	38.2	9.1
N-MHS-2	.84	.71*	.64	3.56 ± 1.0	-0.83 (.13)	-6.44	0.38 (.26)	1.47	5.3	9.1	23.3	49.3	13.0
N-MHS-3	.85	.70*	.58	3.32 ± 1.0	-0.47 (.13)	-3.69	-0.32 (.26)	-1.24	4.2	16.6	29.6	42.4	7.2
N-MHS-4	.84	.57*	.64	4.17 ± 1.0	-1.65 (.13)	-12.88	2.81 (.26)	10.95	5.0	1.9	7.5	42.4	43.2
N-MHS-5	.84	.69*	.66	3.67 ± .9	-0.88 (.13)	-6.83	0.93 (.26)	3.62	3.6	6.1	24.4	51.2	14.7
N-MHS-6	.83	.69*	.71	3.80 ± .9	-1.02 (.13)	-7.95	1.40 (.26)	5.45	2.8	5.5	18.3	55.7	17.7
N-MHS-7	.84	.66*	.70	3.86 ± .9	-1.21 (.13)	-9.42	2.29 (.26)	8.94	3.0	3.3	16.3	58.7	18.6
N-MHS-8	.83	.74*	.72	3.72 ± .9	-1.08 (.13)	-8.44	1.36 (.26)	5.29	4.7	4.7	20.5	54.3	15.8
N-MHS-9	.86	.54*	.42	3.06 ± 1.1	-0.21 (.13)	-1.66	-0.72 (.26)	-2.80	7.8	23.3	29.9	33.0	6.1
N-HMS total score				32.45 ± 6.0	-1.28 (.13)	-10.00	2.94 (.26)	11.46					

SD: Standard deviation; SE: Standard Error; *p<.01

Table 8 Convergent validity: Correlation of the Nursing Motives for Helping Scale (N-MHS) scores with Scale of Attitude towards the Patient (SAtP) scores in nurses.

N-MHS scores	SAtP total score
N-MHS-1	.19**
N-MHS-2	.46**
N-MHS-3	.43**
N-MHS-4	.50**
N-MHS-5	.48**
N-MHS-6	.59**
N-MHS-7	.62**
N-MHS-8	.61**
N-MHS-9	.27**
N-MHS total score	.64**

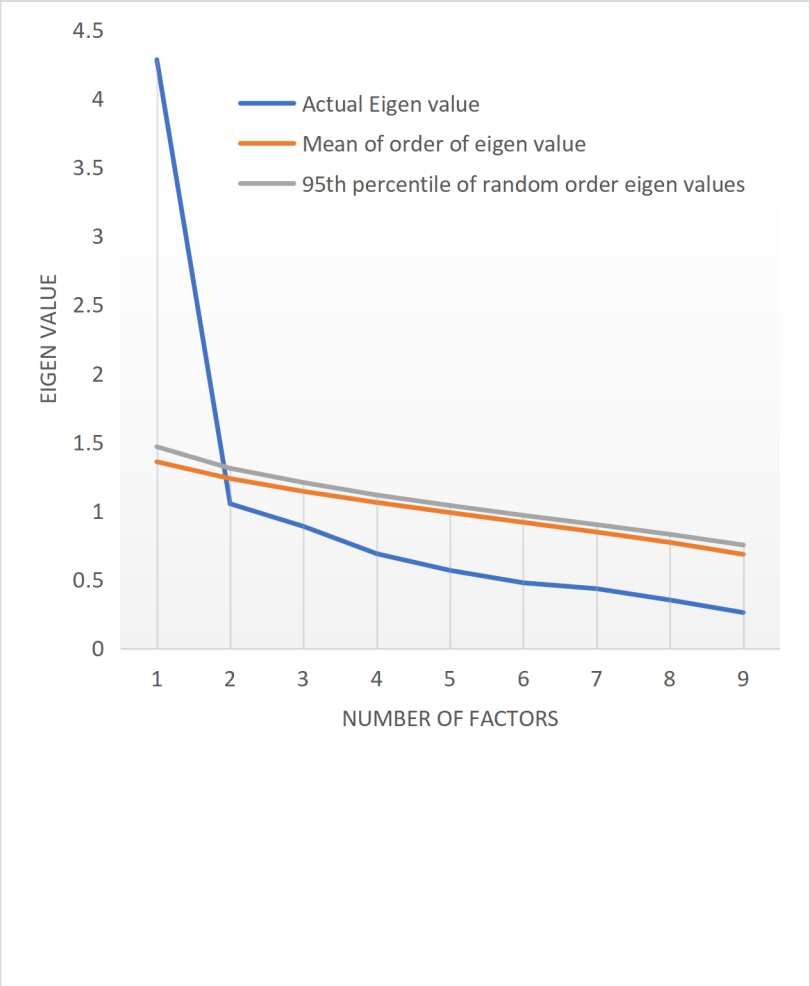

Figure 1 Parallel analysis Sequence plot of the Nursing Motives for Helping Scale (N-MHS) scores in nurses. Monte Carlo Parallel analysis with Principal Components and Random Normal Data Generation

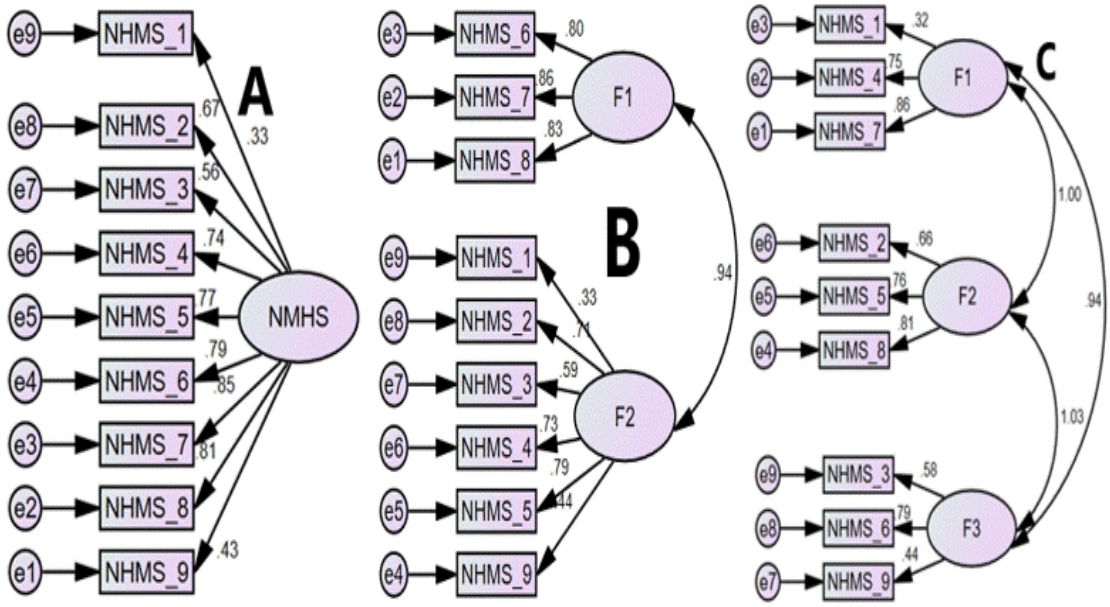

Figure 2 Confirmatory factor analysis models of the Nursing Motives for Helping Scale (N-MHS) scores in nurses A: 1-Factor, B: 2-Factor model and C: 3-Factor model All coefficients are standardized. Ovals latent variables, rectangles measured variables, circles error terms, single-headed arrows between ovals and rectangles factor loadings, single-headed arrows between circles and rectangles error terms.