

ORIGINAL RESEARCH

Open Access



Midwifery empathy scale: development and validation for a greek sample

Victoria G. Vivilaki^{1*}, Polyxeni Fifi¹, Anastasia Charitou¹, Paraskevi Giayi¹, Chrysoula Ekizoglou¹, Nicholas D. Tsopelas², Maria Bouroutzoglou³ and Evridiki Patelarou^{4,5}

Abstract

Background: In recent years, a growing number of studies report on the importance of empathy to women's care. The Midwifery Empathy Scale (M.E.S) was developed in order to study and record the levels of empathy of professional and student midwives. The purpose of our study was to validate this instrument and determine the factor structure and reliability.

Methods: The study sample ($n = 242$) consisted of professional ($n = 114$) and student midwives ($n = 128$) of 3 Maternity Hospitals (public and private) of Athens.

Results: The exploratory factor analysis on the 25 item of Midwifery Empathy Scale (MES) revealed seven orthogonal factors (KMO Measure of Sample Adequacy = 0.817 and Bartlett's test of sphericity = 1508.169, $df = 300$, $p < 0.0001$). The MES showed medium overall internal consistency (Cronbach's alpha value: 0.546, $p < 0.0001$). The internal consistency characteristics of MES demonstrated good reliability. Our findings attest to the multidimensionality of MES, and the Confirmatory Factor Analysis (CFA) demonstrated that the 7 factor model offers a very good fit to our data.

Conclusion: Our data indicate that the Midwifery Empathy Scale (MES) is a reliable and valid tool for assessing the levels of empathy of professional and student midwives for both clinical and research practices.

Keywords: Midwives, Compassionate, Empathetic, Emotional detachment, Perspective taking, Interpersonal relationship, Tendencies

Background

Empathy is considered a key parameter in compassionate care and understanding its nature can be of great significance for women's care [1–3] and for the midwives [4–7].

Studying the levels of empathy through a practical psychometric tool it is expected to improve the quality of the midwifery care. There are a few studies in the relevant literature exploring the levels of empathy in student midwives [8], and professional midwives [9, 10]. At the same time, there was no validated instrument designed to assess the levels of empathy specifically for midwives. The Midwifery Empathy Scale (MES), a 25- item psychometric scale, was developed to meet this challenge.

Therefore, the aim of the present study was to develop and determine the factor structure, validity and reliability of the MES by measuring student and professional midwives' levels of empathy.

Methods

Pilot study

The 25-item MES was developed after extensive literature review, targeting only midwives. The midwifery underpinning philosophy, culture and clinical practice was taken into consideration. The scale was originally tested in a small pilot study with 7 midwives. In the process of cultural adaptation, we conducted in depth interviews to examine respondents' understanding of the scale items. Participants provided their views about the clarity of each item, the relevance of the content to their situation, the comprehensiveness of the instructions and their ability to complete the scale on their own.

* Correspondence: v_vivilaki@yahoo.co.uk

¹Department of Midwifery, Technological Educational Institute of Athens, Athens, Greece

Full list of author information is available at the end of the article



Data collection

The research was approved by the Ethical Committees of the participant Hospitals (No51/27-2-2015 & No17/24-2-2015) and validation activities were initiated in the period of March to June 2015. Following written informed consent, students and professional midwives completed the scale. A cover letter explained the purpose of the study, provided the researchers' affiliation and contact information and guaranteed confidentiality and anonymity.

Participants

Student midwives ($n = 128$) and professional midwives ($n = 114$) were recruited from 3 Hospitals of Athens municipality (public and private) and the midwifery Department of TEI of Athens. The inclusion criteria required fluency in spoken and written Greek language, being a student or a professional midwife and written informed consent.

Instrument

The MES is a 25-item scale that consists of situations where empathetic responses are evaluated. Each item is scored on a 6-point Likert scale from 1-6 with response options that range from 1 (totally agree) to 6 (totally disagree). A total score for MES is calculated (25–150). Items that measure negative statements are reversely scored with lower scores indicating lower levels of empathy.

Data analysis

Statistical analysis was performed using IBM SPSS statistics version 20. Descriptive characteristics (including means, standard deviation, frequencies and percentages) were calculated for the socio-demographic variables.

Reliability

Reliability coefficients, measured by Cronbach's alpha, were calculated for MES to assess reproducibility and consistency of the instrument; a minimum value of 0.70 for group comparisons is considered acceptable [11].

Factor structure

The underlying dimensions of the scale were checked with an exploratory factor analysis using a Varimax rotation and Principal Components Method for analyzing group data [12] to determine the dimensional structure of MES using the following criteria: (a) eigenvalue > 1 [13], (b) variables loaded > 0.50 on only one factor and on other factors less than 0.40; (c) the interpretation of the factor structure was meaningful, (d) the screenplot was accurate when means of communalities were above 0.60 [14]. Computations were based on a measurement scale [15]. During factor analysis, a Barlett's test of sphericity ($p < 0.05$) and a Kaiser-Meyer-Olkin (KMO)

measure of sampling adequacy of 0.817 were also implemented. A factor was considered as important if its eigenvalue exceeded 1.0 [16]. Additionally, a confirmatory analysis –also called Structural Equation Modelling– of principal components was conducted by STATA 13.1 to confirm the scale items principally load on to that factor and correlate weakly with other factors. To assess tests for significance of factor loadings and orthogonality of factors [12, 14, 16] a model (based on a priori information of exploratory factor analysis)– was built in order to specify latent factors, their component variables and the intercorrelations of the response variables; maximum likelihood estimates, t-values, error terms, correlation of independent variables and goodness of fit-test for the specified model were performed.

Results

During the recruitment period (March 2015-June 2015), 300 eligible student and professional midwives were invited to participate. Fifty eight of them did not participate for a range of reasons (19 refused, 24 missing values, 8 missed, 7 other). This resulted in a final sample of 242 student and professional midwives which was adequate for exploratory factor analysis [17–19]. The questionnaire response rate was 80,6 %.

Sample characteristics

According to the answers to questions, 234 from 242 respondents are women. The age of the midwives ranges from 19-58 (mean 28.68). Most of them (47.1 %) were graduates from direct entry midwifery school (TEI), while fewer (11.2 %) has post-graduate studies and 0.81 % had a PhD; 52.1 % were student midwives practicing in the public hospitals; 24.8 % of them were married (Table 1).

Psychometric characteristics of MES

Reliability

The MES showed an overall medium consistency. Cronbach's alpha was 0,546 $p < 0,0001$ for the total scale (Items 1–25).

Factor structure

Exploratory factor

The exploratory factor analysis of the 25 items of the MES revealed seven orthogonal factors (KMO measure of sampling adequacy = 0.817 and Barlett's test of sphericity = 1508.169 $df = 300$ $p < 0.0001$). Communalities for MES questions are presented in (Table 2). The Screeplot (Fig. 1) and Component Plot in Rotated Space (Fig. 2) that are 7 factors in the model, with these factors explaining 57,065 % of the data (Table 3). The first factor (Compassionate Care) includes the following items: 6,12,13,15,20, the eigenvalue was 6.158 and accounted

Table 1 Characteristics of the Study Sample

	All participants No (%)
Sex	
Male	7 (2.9 %)
Female	234 (96.7 %)
Hospital	
Public	71 (29.3 %)
Private	33 (13.6 %)
Marital Status	
Single	175 (72.3 %)
Married	60 (24.8 %)
Divorced	6 (2.5 %)
Education	
Student	126 (52.1 %)
TEI	114 (47.1 %)
Postgraduate	18 (7.4 %)
Doctoral	2 (0.8 %)

24.632 % of the variance. The second factor (Empathetic Ways) includes the items : 14,18,21,24, the eigenvalue was 1.792 and accounted for 7.169 % of the variance. The third factor (Emotional Detachment) is composed of items: 10, 19, 25, the eigenvalue was 1.443 and accounted for 5.771 % of the variance. The fourth factor (Perspective Taking) is composed of items: 1, 3, 7 had an eigenvalue 1.366 and accounted for 5.464 % of the variance. The fifth factor (Interpersonal Relationship) includes the items: 22, 23 had an eigenvalue of 1.287 and accounted for an additional 5.149 % of the variance. The sixth factor (Standing in the woman's shoes) includes the following items: 8, 11 had an eigenvalue of 1.205 and accounted for an additional 4.821 % of the variance. Finally, the seventh factor (Empathetic Tendencies) consists items: 9, 16, 17 with an eigenvalue of 1.015 and accounted for an additional 4.059 % of the variance (Table 3).

According to MES validation, 3 out of the 25 items, which were not relevant for the Greek midwives (Items: 2, 4, 5).

Table 2 Descriptive Statistics of the MES items

Question	Mean	Std. Deviation
1. I believe that empathy plays an important role in midwifery care.	1,46	,683
2. Midwives should understand the emotional situation of the women and their families.	1,45	,590
3. I can perceive the hidden feelings and thoughts of the women that are in my care.	2,42	,796
4. During the taking of the medical history it is not important to pay attention to the women's feelings.	5,04	1,276
5. Women's emotions do not concern me.	5,55	,853
6. Women feel better when they sense that they are understood.	1,32	,603
7. I recognize the body language of a woman.	2,28	,763
8. Body language is not as important as verbal communication for the understanding of the woman's feelings.	4,52	1,300
9. I recognize when a woman is silent because of embarrassment.	2,07	,693
10. I don't get emotionally affected when I see women cry.	4,34	1,369
11. It is difficult for a midwife to see things from women's perspective.	4,75	1,199
12. I try to stand in the woman's shoes, so I can better understand her.	1,99	,991
13. I show that I am willing to listen to the woman by always sitting near her.	1,70	,774
14. I would spend time to take care of women after my work hours.	2,54	1,271
15. Midwife's touch encourages the woman.	1,66	,742
16. I avoid to touch the woman I am caring for, in order to keep a distance.	5,05	,886
17. I think it is important to touch a woman when I am caring for her.	1,90	,840
18. Very sensitive women irritate me.	4,58	1,211
19. There were times that I witnessed a woman cry and I got emotional.	2,32	1,131
20. Many times I left work and I kept thinking of a woman I was caring for.	1,90	,960
21. I don't think part of my job to occupy myself with the problems of the woman I care.	4,85	1,188
22. I feel satisfaction when women feel better with my care.	1,31	,704
23. If I realize that a woman is afraid, I spend time trying to reassure her.	1,58	,743
24. I could go against hospital rules in order to help a woman.	3,14	1,304
25. I usually stay emotionally detached from the women that are in my care.	4,26	1,322

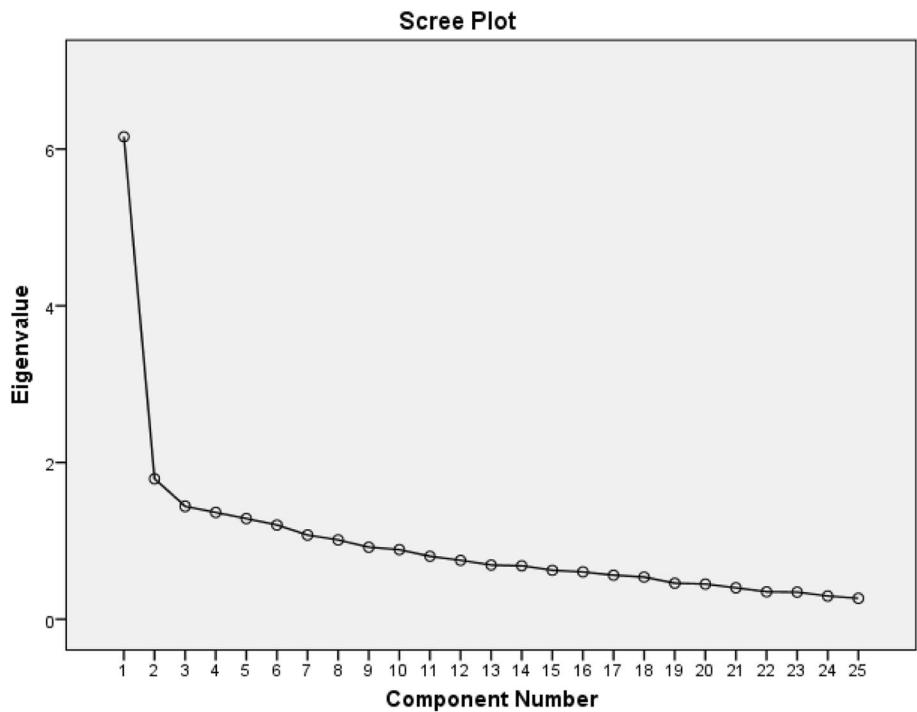


Fig. 1 Screeplot

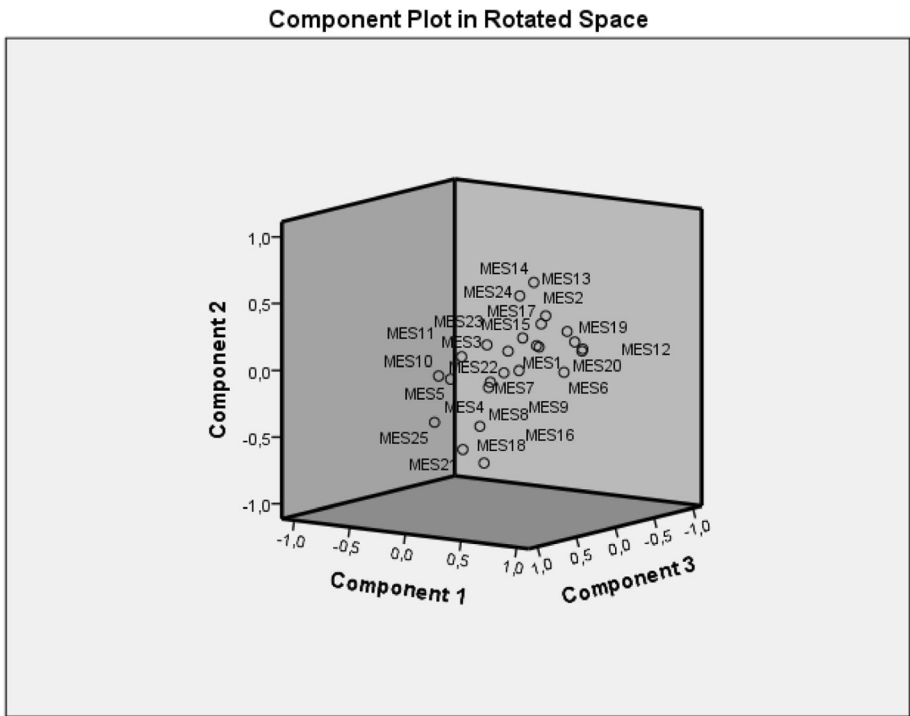


Fig. 2 Component Plot in Rotated Space

Table 3 Exploratory factors and Explained Variance after rotation for MES

Factors		Rescaled Loadings	Eigen values	Rotation Sums of Squared Loadings			
				% of Variance	Cumulative Variance	Cronbach's alpha	Standardised alpha
Factor 1 (Compassionate Care)	Q6	0.626	6.158	24.632	24.632	0.720	0.731
	Q12	0.719					
	Q13	0.648					
	Q15	0.469					
	Q20	0.534					
Factor 2 (Empathetic Ways)	Q14	0.640	1.792	7.169	31.801	0.564	0.577
	Q18	0.739					
	Q21	0.620					
	Q24	0.533					
Factor 3 (Emotional Detachment)	Q10	0.735	1.443	5.771	37.572	0.465	0.505
	Q19	0.709					
	Q25	0.650					
Factor 4 (Perspective Taking)	Q1	0.489	1.366	5.464	43.036	0.592	0.588
	Q3	0.787					
	Q7	0.756					
Factor 5 (Interpersonal Relationship)	Q22	0.895	1.287	5.149	48.185	0.766	0.767
	Q23	0.771					
Factor 6 (Standing in the woman's shoes)	Q8	0.753	1.205	4.821	53.006	0.514	0.515
	Q11	0.682					
Factor 7 (Empathetic Tendencies)	Q9	0.720	1.015	4.059	57.065	0.572	0.556
	Q16	0.511					
	Q17	0.488					

Confirmatory factor analysis

Confirmatory factor analysis was conducted to determine whether data are consistent with the a priori specified model that has been suggested by Exploratory Factor Analysis in order to evaluate whether the data fit the model adequately. The seven factor-model was based on correlated factors that derived from the factor analysis using principal component analysis with varimax rotation by SPSS 20. The seven latent variables Compassionate Care (Questions 6, 12, 13, 15, 20), Empathetic Ways (Questions 14, 18, 21, 24), Emotional Detachment (Questions 10, 19, 25), Perspective Taking (Questions 1, 3, 7), Interpersonal Relationship (Questions 22, 23), Standing in the woman's shoes (Questions 8, 11) and Empathetic Tendencies (Questions 9, 16, 17) were strongly correlated with method Maximum Likelihood. Estimates, standard error, t-values, error terms and r^2 for all the questions that consisted each latent variables are presented at Fig. 3. The error terms correlated significantly and Goodness of Fit Statistics were also estimated; Discrepancy Chi-Square = 2340.841, $p = 0.000$; Standardized Root Mean Square Residual (SRMR) = 0.323; CD = 1.000 (Fig. 4).

Validity**Construct validity**

Cronbach's alpha was calculated for each of the following subscales of the MES, with the questions indicated constituting the items of each subscale:

1. Compassionate Care (6,12,13,15,20): 0.731
2. Empathetic Ways (14,18,21,24): 0.577
3. Emotional Detachment (10,19,25): 0.405
4. Perspective Taking (1,3,7): 0.592
5. Interpersonal Relationship (22, 23): 0.767
6. Standing in the woman's shoes (8,11): 0.515
7. Empathetic Tendencies (9,16,17): 0.572

Discussion**Main findings**

The MES is a scale designed to measure the empathy of professional and student midwives. It was developed to meet the challenge of developing a psychometric tool tailored to assess the levels of empathy for midwives. The results of this research showed that the major formative factors of the empathy levels in midwives are: 1) Compassionate Care 2) Empathetic Ways 3) Emotional

	Standardized	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Measurement							
MES6 <--							
	Compassionate	.6236902	.1374743	4.54	0.000	.3542455	.8931349
	_cons	5.163311	.9297113	5.55	0.000	3.34111	6.985512
MES12 <--							
	Compassionate	.5591341	.0527031	10.61	0.000	.4558379	.6624302
	_cons	2.257295	.0663475	34.02	0.000	2.127256	2.387333
MES13 <--							
	Compassionate	.8602767	.0400724	21.47	0.000	.7817361	.9388172
	_cons	2.310589	.0637798	36.23	0.000	2.185583	2.435595
MES15 <--							
	Compassionate	.756096	.0487516	15.51	0.000	.6605446	.8516474
	_cons	2.561466	.0623044	41.11	0.000	2.439291	2.68352
MES20 <--							
	Compassionate	.5661248	.0599629	9.59	0.000	.4503637	.6818859
	_cons	3.361086	.1233126	15.76	0.000	2.943001	3.779172
MES14 <--							
	EmpatheticW	.8280714	.0246459	33.60	0.000	.7797663	.8763765
	_cons	2.05981	.0545016	37.79	0.000	1.952988	2.166631
MES18 <--							
	EmpatheticW	-.6969914	.0352342	-19.78	0.000	-.7660492	-.6279336
	_cons	4.747793	.1674632	28.35	0.000	4.419571	5.076015
MES21 <--							
	EmpatheticW	-.8046669	.0410928	-19.58	0.000	-.8852072	-.7241265
	_cons	5.329898	.1953607	27.28	0.000	4.946999	5.712798
MES24 <--							
	EmpatheticW	.6700584	.0320962	20.88	0.000	.607151	.7329657
	_cons	3.004	.1215608	24.71	0.000	2.765745	3.242255
MES10 <--							
	Emotional	.5056432	.040723	12.42	0.000	.4258275	.5854589
	_cons	3.980697	.1359146	29.29	0.000	3.714309	4.247085
MES19 <--							
	Emotional	-.597813	.0726418	-8.23	0.000	-.7401804	-.4554377
	_cons	2.781901	.1279525	21.74	0.000	2.531118	3.032683
MES25 <--							
	Emotional	.6016594	.045453	13.24	0.000	.5125731	.6907456
	_cons	4.144662	.1279416	32.39	0.000	3.893901	4.395423
MES1 <--							
	Perspective	.5223508	.0469104	11.14	0.000	.4304082	.6142934
	_cons	2.576413	.1203555	21.41	0.000	2.340521	2.812306
MES3 <--							
	Perspective	.731517	.0597058	12.25	0.000	.6144959	.8485382
	_cons	3.814209	.1453904	26.23	0.000	3.529249	4.099169
MES7 <--							
	Perspective	.7138211	.0466058	15.32	0.000	.6224753	.8051668
	_cons	3.261893	.1117159	29.20	0.000	3.042934	3.480852
MES22 <--							
	Interpersonal	.8510626	.1192196	7.14	0.000	.6173964	1.084729
	_cons	2.750376	.3776893	7.28	0.000	2.010118	3.490633
MES23 <--							
	Interpersonal	.8944537	.008649	103.42	0.000	.877502	.9114054
	_cons	2.485249	.0873756	28.44	0.000	2.313996	2.656502
MES8 <--							
	Standing	.7965323	.0522651	15.24	0.000	.6940945	.8989701
	_cons	3.741201	.1208794	30.95	0.000	3.504202	3.978121
MES11 <--							
	Standing	.6409112	.0461934	13.87	0.000	.5503738	.7314485
	_cons	5.093465	.2085231	24.43	0.000	4.684768	5.502163
MES9 <--							
	EmpatheticT	.5926628	.0398425	14.88	0.000	.5145728	.6707527
	_cons	3.878794	.2197388	17.65	0.000	3.448114	4.309475
MES16 <--							
	EmpatheticT	-.7512866	.0380087	-19.73	0.000	-.8259357	-.6766376
	_cons	7.696607	.3785459	20.33	0.000	6.954133	8.438006
MES17 <--							
	EmpatheticT	.8868595	.0395081	22.45	0.000	.8094251	.9642939
	_cons	2.694175	.1082594	24.89	0.000	2.48199	2.906355
	var(e.MES6)	.6110105	.1714828			.3524969	1.059113
	var(e.MES12)	.6873691	.0589362			.5810407	.8131553
	var(e.MES13)	.250924	.0689468			.1545464	.371535
	var(e.MES15)	.4283188	.0737218			.3056745	.600171
	var(e.MES20)	.6795027	.0668739			.5602984	.8248679
	var(e.MES14)	.3142978	.0408171			.2436676	.405483
	var(e.MES18)	.514203	.0491159			.4264116	.6200692
	var(e.MES21)	.3525112	.066132			.2440537	.5091673
	var(e.MES24)	.5510218	.0430126			.4728509	.6421158
	var(e.MES10)	.7443249	.0413187			.6678309	.8295806
	var(e.MES19)	.6426196	.0868525			.4930726	.8375236
	var(e.MES25)	.638006	.0546944			.5393289	.7547374
	var(e.MES1)	.7271496	.0490073			.6371707	.8290351
	var(e.MES3)	.4648829	.0873516			.3216641	.6718687
	var(e.MES7)	.4904595	.0665364			.3759481	.6398503
	var(e.MES22)	.2756924	.2029268			.065146	1.166708
	var(e.MES23)	.1999527	.0154722			.1718152	.232698
	var(e.MES8)	.3655363	.0832617			.2339075	.5712377
	var(e.MES11)	.8892329	.0592117			.4838939	.7175031
	var(e.MES9)	.6487508	.0472264			.5624809	.7402417
	var(e.MES16)	.4355684	.0572285			.336681	.5635001
	var(e.MES17)	.2134802	.0700762			.1121878	.406228
	var(Compassionate)	1	-			-	-
	var(EmpatheticW)	1	-			-	-
	var(Emotional)	1	-			-	-
	var(Perspective)	1	-			-	-
	var(Interpersonal)	1	-			-	-
	var(Standing)	1	-			-	-
	var(EmpatheticT)	1	-			-	-
cov(Compassionate, EmpatheticW)		-.5862033	.0413889	14.16	0.000	-.5050825	-.6673241
cov(Compassionate, Emotional)		-.5147204	.0763136	-6.76	0.000	-.6639356	-.3655052
cov(Compassionate, Perspective)		.8973879	.083886	10.70	0.000	.7329743	1.061802
cov(Compassionate, Interpersonal)		.4057959	.0843636	4.81	0.000	.2403562	.5710555
cov(Compassionate, Standing)		-.3825022	.0429018	-8.91	0.000	-.4649206	-.3001197
cov(Compassionate, EmpatheticT)		.6522893	.0403312	13.50	0.000	.557562	.7470167
cov(EmpatheticW, Emotional)		-.5578221	.0733322	-7.63	0.000	-.7011585	-.4144856
cov(EmpatheticW, Perspective)		.3291102	.0630148	5.22	0.000	.2056034	.452617
cov(EmpatheticW, Interpersonal)		.5283677	.0439636	12.02	0.000	.4421486	.6144748
cov(EmpatheticW, Standing)		-.4860743	.0535576	-9.08	0.000	-.5910453	-.3811032
cov(EmpatheticW, EmpatheticT)		.7602368	.0388447	19.57	0.000	.6841026	.836371
cov(Emotional, Perspective)		-.5243033	.0854016	-6.14	0.000	-.6916073	-.3569192
cov(Emotional, Interpersonal)		-.2489679	.0782424	-3.18	0.001	-.4023202	-.0956157
cov(Emotional, Standing)		.5486562	.0782726	7.01	0.000	.3952447	.7020677
cov(Emotional, EmpatheticT)		-.6274844	.0751438	-8.35	0.000	-.7747635	-.4802053
cov(Perspective, Interpersonal)		.359349	.0569684	6.15	0.000	.238693	.482005
cov(Perspective, Standing)		-.5719754	.076341	-7.49	0.000	-.721601	-.4223498
cov(Perspective, EmpatheticT)		.5825314	.0588598	9.90	0.000	.4671684	.6978944
cov(Interpersonal, Standing)		-.4091933	.0477451	-8.57	0.000	-.502772	-.3156146
cov(Interpersonal, EmpatheticT)		.5416748	.0503436	10.76	0.000	.4430031	.6403465
cov(Standing, EmpatheticT)		-.4778999	.0510761	-9.36	0.000	-.5780071	-.3777926

Fig. 3 Estimates, standard error, t-values, error terms and r2 for items of MES

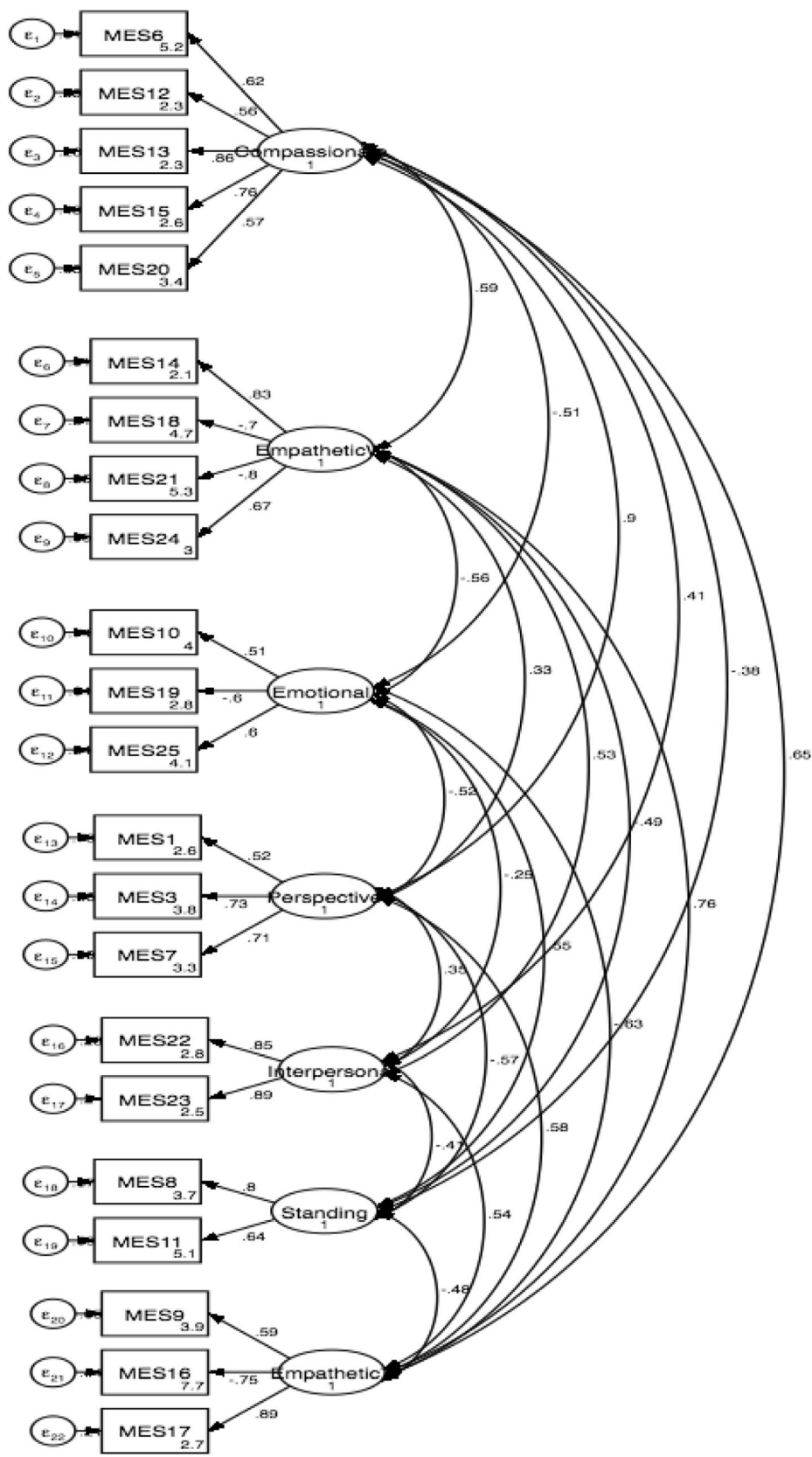


Fig. 4 Confirmatory Factor Analysis for the Midwifery Empathy Scale (MES)

Detachment 4) Perspective Taking 5) Interpersonal Relationship 6) Standing in the Woman's Shoes 7) Empathetic Tendencies. According to MES validation study, 3 out of 25 items were excluded from the analysis, which were not relevant for our sample.

A Barlett's test of sphericity with ($p < 0.0001$) and Kaiser-Meyer-Olkin (KMO) measure of simplicity adequacy of 0.817 were used in performing this factor analysis. A factor was considered important if its eigenvalue exceeded 1 (Kaiser 1960). As factor analysis found 7 independent subscales, subsequent Cronbach's alpha were separately carried out for each subscale, to highlight how the items group together. According to factor analysis 7 subscales have been revealed within the MES. Cronbach's alpha was 0.731 for the first subscale, 0.577 for the second, 0.505 for the third, 0.592 for the fourth, 0.767 for the fifth, 0.515 for the sixth and 0.572 for the seventh.

Our findings confirm the multidimensionality of the MES, demonstrating a seven-factor structure, while the sub-scales of the Greek MES showed very good values for Cronbach's alpha. Significant differences in item-factor loadings characteristics may be explained by the varied cultural backgrounds of our study population. The confirmatory factor analysis demonstrated that the seven factor model based on the exploratory factor analysis offered a very good fit to the our data. All goodness of fit statistics were found to be very good.

Limitations

This study was not without limitations. The MES was pilot-tested and validated using samples of midwives and student midwives from the two largest public maternity hospitals in Athens and fewer midwives who work in the private sector where included and independent midwives were not included at all. This sample may not be representative of the population of midwives in Greece and the majority of our subjects were female. Another limitation of the research concerns the fact that the recruited midwives work in a hospital setting (public, private) and there were time availability issues in regards to completion of the questionnaires. For similar reasons as well as stress related factors colleagues of the Central Delivery Units were not invited to participate to the study. Finally, the authors didn't use patient assessments of their midwife's empathy, such as Stewart Mercer's CARE (consultation and relational empathy) scale, a well-validated and reliable measure, as a complementary method of assessing the empathy of midwives that participated to the study [20, 21].

Conclusion

The MES studied in a sample of 242 student and practicing midwives, showed satisfactory reliability and factor analysis indicated seven components. Therefore, we assert

that this validated scale may be reliably used for identifying the levels of empathy of student and professional midwives, in order to improve the quality of midwifery care.

Abbreviations

KMO: Kaiser-Meyer-Olkin; MES: Midwifery empathy scale

Acknowledgements

We are grateful to all the midwives and student midwives who contributed with their valuable perspectives and time. We would also like to acknowledge the contributions by Prof Christos Lionis, Prof Katerina Lykeridou and Antigoni Sarantaki for the fruitful discussions about measuring the levels of empathy in midwifery clinical practice.

Funding

The authors declare that they have no funding for the research reported.

Availability of data and materials

The materials described in the manuscript are readily reproducible, including database and all relevant data. The Midwifery Empathy Scale is freely available to any scientist willing to use it. Software, databases, MES as described in the manuscript are available for testing by reviewers in a way that preserves the reviewers anonymity. Authors wish to share MES and could email the pdf version to any scientist who will contact the corresponding author.

Authors' contributions

All authors have made substantial contributions to this study; VV, PF, AC, PG and NT were responsible for the study design. PF and AC collected the data, VV was responsible for the initial data analysis and the writing of manuscript. All authors took part in the interpretation of data and drafting of the manuscript. All authors critically revised, read and approved the final manuscript.

Competing interests

The authors declare that they have no competing interests.

Consent for publication

Written informed consent and consent for publication was provided by the participants of the study.

Ethics approval and consent to participate

Ethical approvals by the Ethical Committees of the Hospitals (No51/27-2-2015 & No17/24-2-2015) were obtained.

Author details

¹Department of Midwifery, Technological Educational Institute of Athens, Athens, Greece. ²University of Pennsylvania, Philadelphia, USA. ³Department of Midwifery, ATEI of Thessaloniki, Sindos, Greece. ⁴Department of Nursing, TEI Crete, Heraklion, Greece. ⁵Kings's College, London, UK.

Received: 1 June 2016 Accepted: 27 October 2016

Published online: 17 November 2016

References

1. Campbell-Yeo M, Latimer M, Johnston C. The empathetic response in nurses who treat pain: concept analysis. *J Adv Nurs*. 2007;61(6):711–9.
2. Neumann M, Bensing J, Mercer S, Ernstmann N, Ommen O, Pfaff H. Analyzing the "nature" and "specific effectiveness" of clinical empathy: A theoretical overview and contribution towards a theory-based research agenda. *Patient Educ Couns*. 2009;74:339–46.
3. Matthew DA. A perspective on cultivating clinical empathy. *Complement Ther Clin Pract*. 2009;15:76–9.
4. Tarkka M-T, Paunonen M, Laippala P. Importance of the midwife in the first-time Mother's experience of Childbirth. *Scand J Caring Sci*. 2000;14:184–90.
5. Hodnett E, Osborn R. Effects of continuous intra-partum professional support on childbirth outcomes. *Res Nurs Health*. 1989;12:259–97.
6. Tarkka M-T, Paunonen M. Social support and its impact on mothers' experiences of childbirth. *J Adv Nurs*. 1996;23:70–5.
7. Pascoe JM, French J. The reliability and validity of the maternal social support index for primiparous mothers : a brief report. *Fam Med*. 1989;22:228–30.

8. McKenna L, Boyle M, Brown T, Williams B, Molloy A, Lewis B, Molloy L. Levels of empathy in undergraduate midwifery students: An Australian cross-sectional study. *Women Birth*. 2011;24(2):80–4.
9. Williams B, Brown T, McKenna L, Palermo C, Morgan P, Nestel D, Brightwell R, Gilbert-Hunt S, Stagnitti K, Olausson A, Wright C. Student empathy levels across 12 medical and health professions: an international study. *J Compliance Health Care*. 2015;2:4.
10. Williams B, Brown T, Boyle M, McKenna L, Palermo C, Etherington J. Levels of empathy in undergraduate emergency health, nursing and midwifery students: a longitudinal study. *Adv Med Educ Pract*. 2014;5:299–306.
11. Cormack D. *The research process in nursing*. Oxford: Blackwell Science; 2000.
12. Tabachnick B, Fidell L. *Using multivariate statistics*. 3rd ed. N.Y.: Addison-Wesley- Longman; 2007.
13. Kaiser HF. The application of electronic computers to factor analysis. *Educ Psychol Meas*. 1960;20:141–51.
14. Hakstian AR, Rogers WD, Cattell RB. The behaviour of numbers factors rules with simulated data. *Multivar Behav Res*. 1982;17:193–219.
15. Morrison DF. *Multivariate statistical methods*. 2nd ed. New York: McGraw-Hill; 1976.
16. Joreskog KG, Sorbom D. *LISREL VI: analysis of linear structural relationships by maximum likelihood, instrumental variables, and least squares methods*. Sweden: Department of Statistics, University of Uppsala; 1986.
17. Anderson JC, Gerbing DW. The effect of sampling error on convergence, improper solutions, and goodness of fit indices for maximum likelihood confirmatory factor analysis. *Psychometrika*. 1984;49:155–73.
18. Bentler PM, Chou CP. Practical issues in structural equation modelling. *Sociol Methods Res*. 1987;16:78–117.
19. Marsh HW, Balla JR, MacDonald RP. Goodness of fit indexes in confirmatory factor analysis: the effect of sample size. *Psychol Bull*. 1988;88:245–58.
20. Mercer SW, Watt GCM, Maxwell M, Heaney DH. The development and preliminary validation of the Consultation and Relational Empathy (CARE) Measure: an empathy-based consultation process measure. *Fam Pract*. 2004;21(6):699–705.
21. Murphy DJ, Bruce DA, Mercer SW, Eva KW. The reliability of workplace-based assessment in postgraduate medical education and training: a national evaluation in general practice in the United Kingdom. *Adv Health Sci Educ*. 2009;13:219–32.

Submit your next manuscript to BioMed Central and we will help you at every step:

- We accept pre-submission inquiries
- Our selector tool helps you to find the most relevant journal
- We provide round the clock customer support
- Convenient online submission
- Thorough peer review
- Inclusion in PubMed and all major indexing services
- Maximum visibility for your research

Submit your manuscript at
www.biomedcentral.com/submit

