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Psychometric Properties of Chinese Version of the Barriers to Error Disclosure Assessment (C-BEDA) Tool

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Aim: The Barriers to Error Disclosure Assessment (BEDA) tool is used to measure barriers to the disclosure of medical errors by healthcare professionals. This study aimed to evaluate the psychometric properties of the Chinese version of the BEDA (C-BEDA).

Background: The culture of disclosure and transparency in response to medical errors has been recommended in recent years. However, there are no relevant assessment tools for measuring barriers to disclosing medical errors in China.

Methods: The C-BEDA tool underwent translation, back translation, cross-cultural adaptation in a pilot study. It was tested with 1254 healthcare professionals in Guizhou and Sichuan Provinces, China. The content validity index (CVI) was used to evaluate the content validity of the C-BEDA, and exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to evaluate its structural validity. The Cronbach's α coefficient and test-retest reliability were evaluated to determine its reliability.

Results: Three factors were extracted by EFA that explained 65.892% of the total variance of the C-BEDA tool. CFA showed a good fit for a three-factor structure with acceptable values: goodness-of-fit index=0.939; adjusted goodness-of-fit index=0.911; incremental fit index=0.967; comparative fit index=0.967; partial least squares path modeling for confirmatory factor analysis=0.735; and root mean square error of approximation=0.058. The item-level content validity index ranged from 0.86 to 1.00, and the average scale-level content validity index was 0.98. The Cronbach's α coefficient (0.909) and test-retest reliability (0.86) were acceptable.

Conclusion: The C-BEDA toolis a valid and reliable tool for assessing the extent of barriers to error disclosure among Chinese healthcare professionals.

Keywords: patient safety, medical error, disclosure, risk management

Introduction

Medical error is a serious public health issue and the third leading cause of death in the United States. However, due to medical errors are composed of different types, there are significant differences in incidences. The definition of a medical error varies, making analysis via uniform objectives difficult. The Institute of Medicine (IOM) defined a medical error as "the failure of a planned action to be completed as intended or the use of a wrong plan to achieve an aim". Another definition is "a failure in care that may or may not result in patient harm". Common types of medical errors include surgical errors, diagnostic errors, medication errors, equipment failures, patient falls, hospital-acquired infections, and communication failures. Regardless of the definition, medical errors are associated with high morbidity, mortality, and economic burden.[1]

Approximately 1 in every 10 patients is harmed in healthcare, and more than 3 million deaths occur annually due to unsafe care. In low- to middle-income countries, as many as 4 in 100 people die from unsafe care. On a global scale, the

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indirect cost of harm amounts to trillions of US dollars each year. Investment to reduce patient harm can lead to significant financial savings and, more importantly, better patient outcomes.[2]

Traditional beliefs may make it difficult for healthcare providers to accept their fallibility and to acknowledge and disclose errors.[3] Since 2007, there has been a move away from the "deny and defend" approach toward transparency, apology, and disclosure when facing medical errors.[4]

Fein et al proposed the definition: Error disclosure equals to communication between a health care provider and a patient, family members, or the patient's proxy that acknowledges the occurrence of an error, discusses what happened, and describes the link between the error and outcomes in a manner that is meaningful to the patient.[5] Disclosing diagnostic and treatment errors to patients is crucial for minimizing the perceived harm of medical errors by patients as well as creating a culture of openness, learning, and coproduction of health.[6]

The United States, the United Kingdom, Australia, Singapore, Japan and South Korea all require hospitals to actively disclose information, and some countries or states have clarified this requirement through legislation.[7] Although China also has a voluntary reporting system, underreporting and nondisclosure of medical errors are common.[8] A previous study revealed that among the six types of information disclosed by medical institutions to the public, the disclosure rates for medical quality and patient satisfaction were relatively low.[7] A survey revealed that some healthcare professionals actively informed patients of medical errors and obtained good results, but there were still many concerns.[9] Considering various barriers, open disclosure is not common among healthcare professionals, even if we know its benefits. Experience indicates that disclosure facilitates improvements in patient safety.[4] However, even countries with extensive experience in disclosing medical errors face key challenges, especially in terms of measurements related to disclosure.[10]

Globally, the appropriate disclosure of medical errors is a key area for continuously improving patient safety. To determine the barriers to medical staff disclosure of medical errors, domestic and foreign scholars have also conducted surveys using self-made questionnaires.[3,11,12] However, due to incomplete measurements or the lack of unified evaluation tools, horizontal comparisons cannot be made, which leads to limitations in the promotion of the results. Subsequently, Welsh et al developed the Barriers to Error Disclosure Assessment (BEDA) tool in 2021, which systematically identifies and quantifies barriers from four aspects: confidence and knowledge barriers, institutional barriers, psychological barriers, and economic barriers.[13]

In China, however, there is relatively little research on medical error disclosure, and there is no complete and comprehensive tool for evaluating and measuring the barriers to disclosing medical errors. Therefore, the purpose of this study was to translate and cross-culturally adapt the BEDA, test its reliability and validity, develop a tool for scholars to better understand the barriers to medical error disclosure by healthcare professionals, improve patient safety, and promote the application of disclosure mechanisms in China.

Methods

Subjects and Study Design

This study was a cross-sectional study design, and convenience sampling was used to choose three hospitals in Guizhou and Sichuan Provinces, China. Workers in the three hospitals with physician certificates or nurse certificates who had worked for more than one year were eligible to participate in this study, while clinical interns, trainees and visiting healthcare professionals were excluded. This study referred to the cross-cultural adaptation guidelines[14] with a sample size of at least 10 times the number of items on the scale. There are 31 items in the BEDA tool and 11 questions in the general questionnaire. Considering a 20% loss to follow-up, the preliminary estimated sample size was at least 500 participants. The sample size needs to be divided into two parts for exploratory factor analysis and confirmatory factor analysis, respectively. Therefore, the sample size should include at least 1000 cases.

Instruments

The BEDA scale was initially developed by Welsh et al[13] in 2021 and consists of 31 items, including four factors (confidence and knowledge barriers, institutional barriers, psychological barriers, and financial concern barriers) and other independent items (13, 14, 16, 17, and 18). Items 1–4, which are non-scoring items, collect information on training

needs and demographics from respondents. Items 5–19 collected the respondents' attitudes toward their medical disclosure ability, disclosure policies, hospital atmosphere regarding medical disclosure, and views on professional roles in the disclosure process. A 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to indicate the respondents' degree of agreement with the items. Items 20–31 assess the factors that hinder medical disclosure by healthcare professionals using a 5-point Likert scale ranging from 1 (not a barrier at all) to 5 (very much a barrier). The Cronbach's α coefficient ranged from 0.82 to 0.95.

Translation and Back Translation

The following steps followed the cross-cultural adaptation guidelines.[14] First, we contacted the original author of the BEDA tool and obtained copyright permission. Second, two translators with English master's degrees separately translated the instrument and developed two Chinese versions. Third, a bilingual nursing expert and the two translators mentioned above were invited to discuss the two Chinese versions based on the original English version. They deleted or rephrased ambiguous and/or complex terms to form a preliminary Chinese translation. Fourth, we selected two additional translators who had not seen the English version (one with a bilingual background and one with a medical master's degree) to translate the Chinese version back into English. Fifth, all personnel involved in the translation and back translation worked with our research group to analyze and compare the back-translated English version with the original English version, discuss any inconsistencies between them, and further modify the Chinese version developed through the sequential translation. Finally, we retranslated the instrument. When the translated version was basically consistent with the original English version, the final version was established.

Cross-Cultural Adaptation

The BEDA tool was reviewed by seven professional experts from the fields of medicine, nursing, and patient safety. The CVI of all the items was measured using a 4-point Likert scale (1=irrelevant to 4=highly relevant). Each expert was asked to consider differences in language and culture for all items. The expert selection criteria included an medium or senior professional title, bachelor's degree or above, 10 or more years of clinical work experience, and familiarity with the development of psychometric instruments and measurements. Due to cultural differences, many texts are difficult for Chinese respondents to understand through literal translation. Therefore, we chose the most vivid words to convey the same meaning. Item 29 (fear of increased insurance premiums) was excluded because most participants are not aware of or concerned about whether insurance premiums will increase as their hospitals have clinical risk management. Departments and employees know how to seek professional help when they encounter disputes. Therefore, the research group believed that this item was not suitable for China's context and decided to delete it.

Pilot Study

According to Perneger's research, small samples (5–15 participants) that are common in pre-tests of questionaires may fail to uncover even common problems. A default sample size of 30 participants is recommended.[15] Thirty healthcare professionals who met the inclusion and exclusion criteria participated in the preliminary survey to ensure that the C-BEDA tool was understandable and readable, and one questionnaire with more than 80% same options was excluded. The time for participants to complete the questionnaire ranged from 145 to 3474 seconds, and the average response time was 300 seconds.

Data Collection

An electronic questionnaire was created on the WenJuanXing website (https://www.wjx.cn/).[16] The research group contacted the participating hospitals, described the purpose, significance and plan of this study, and obtained consent and assistance. The electronic questionnaires were sent to hospital leaders, who distributed them to healthcare professionals through the WeChat application. WeChat is the most popular social media application in China and connects more than 1 billion users worldwide (https://weixin.qq.com/).[17]

Instructions were presented on the first page, and the collected information was strictly confidential. Healthcare professionals voluntarily completed and submitted the questionnaire anonymously after providing informed consent.

Each respondent was allowed to submit the questionnaire only once. This survey was conducted from April to May 2023, and all participants completed and submitted the survey within 1 week of receiving the completed notification. A total of 1294 questionnaires were collected in this study, and the response rates of the respondents in the three hospitals were 69%, 73%, and 97%, respectively.

Two researchers reviewed all the data, and 40 questionnaires were excluded from the final analysis (35 cases with answer times less than 300 seconds and 5 cases with incorrect ages). In total, the effective sample size was 1254 samples, and the effective recovery rate was 96.91%. Two weeks later, twenty of the survey respondents were conveniently selected to complete the questionnaire again to measure retest reliability.

Statistical Analysis

Data analysis was performed using SPSS 20.0 and AMOS 24.0. The frequency, percentage, mean and standard deviation were used to present the descriptive data. The total sample was equally divided into 2 groups using randomization, and the demographic differences between the two groups were analyzed using the Mann–Whitney *U*-test. The discrimination of each item was analyzed. By comprehensively evaluating the decision value, correlation coefficient, and the deleted Cronbach's α coefficient, the items meeting the three criteria were directly deleted. Otherwise, the items were selected through expert group discussion. The skewness coefficient (<3) and kurtosis coefficient (<10) were used to determine whether the variables followed a multivariate normal distribution. The construct validity index(CVI) was used to evaluate content validity. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were used to verify construct validity, respectively. Cronbach's α coefficient and test-retest reliability were used to evaluate reliability.

Results

Respondents' General Information

The 1254 participants were randomized into two groups, and their demographic characteristics are detailed in Table 1. There was no significant difference in the distribution of demographic characteristics between the EFA and CFA samples.

Validity Analysis

Item Analysis

The item analysis was conducted in three steps. First, the total score was calculated and ranked from high to low. The top 27% of the highest scores were in the high group (critical score 3.34), and the bottom 27% of the lowest scores were in the low group (critical score 2.82). The differences in each item were compared. Second, the correlation coefficient of the total score and each score was calculated, considering the items that did not reach the significance level or that were <0.3 (according to statistical requirements, which should be 0.4, but considering that the scale is divided into different dimensions and differences in construction). Third, when the Cronbach's α coefficient of the scale increases significantly after removing one of the items, the item is considered deleted (see Table 2 for details). Ultimately, items 14 and 17 did not pass the item analysis and could not enter the factor analysis.

Exploratory Factor Analysis

Half of the sample size was randomly selected for the EFA. Based on four criteria: eigenvalue<1, factor load≥0.40, no cross-load, and relatively appropriate content. Four criteria were met after the third EFA, and item 5 was deleted. KMO=0.920 and Bartlett's sphericity test=3435.07 (P<0.001) indicated that factor analysis could be performed. Three common factors were extracted, with a cumulative variance contribution rate of 65.892% and factor loadings of 0.410~0.823, as shown in Table 3. Compared with the original scale, the factors of some of the items changed.

Confirmatory Factor Analysis

Half of the sample size was randomly selected for the CFA. The data showed an approximately normal distribution, so the maximum likelihood method was used for parameter estimation. CFA was used to verify the structural validity of the

Table 1 Demographic Characteristics of the Participants (n=1254)

Characteristics	Total Samples (=1254), n(%)	EFA Samples (n=627), n(%)	CFA Samples (n=627), n(%)	Statistics $t/X^2/Z$	*P* value
Sex					
Male	101(8.1)	50 (8.0)	51(8.1)	−0.104	0.917
Female	1153(91.9)	577 (92.0)	576(91.9)		
Age (years)	33.53±7.42	33.49±7.51	33.56±7.34	−0.462	0.644
Educational level					
Below Bachelor's degree	327(26.1)	173 (27.6)	154(24.6)	−1.336	0.182
Bachelor's degree	853(68.0)	420 (67.0)	433(69)		
Master's degree or above	74(5.9)	34 (5.4)	40(6.4)		
Professional title					
Primary	656(52.4)	327(52.2)	329(52.5)	−0.061	0.951
Medium	432(34.4)	220(35.1)	212(33.8)		
Senior	166(13.2)	80(12.7)	86(13.7)		
Profession					
Registered doctor	141(11.2)	60(9.6)	81(12.9)	−1.876	0.061
Registered nurse	1113(88.8)	567(90.4)	546(87.1)		
Years employed in the current hospital (years)					
≤5	357(28.5)	173(27.5)	184(29.3)	−0.117	0.907
6–10	388(30.9)	207(33.0)	181(28.9)		
11–15	242(19.3)	109(17.4)	133(21.2)		
16–20	101(8.1)	53(8.5)	48(7.7)		
≥21	166(13.2)	85(13.6)	81(12.9)		
Hospital level					
Tertiary	900(71.8)	445(71.0)	455(72.6)	−0.627	0.531
Secondary	354(28.2)	182(29.0)	172(27.4)		
Working department					
Internal medicine	444(35.4)	233(37.2)	211(33.7)	−1.25	0.211
Surgery	190(15.2)	92(14.7)	98(15.6)		
Gynecology and pediatrics	165(13.2)	81(12.9)	84(13.4)		
Outpatient	114 (9.1)	60(9.6)	54(8.6)		
Intensive care unit	27(2.2)	9(1.4)	18(2.9)		
Emergency	48(3.7)	26(4.1)	22(3.5)		
Other	266(21.2)	126(20.1)	140(22.3)		

(*Continued*)

Table 1 (Continued).

Characteristics	Total Samples (=1254), n(%)	EFA Samples (n=627), n(%)	CFA Samples (n=627), n(%)	Statistics $t/X^2/Z$	*P* value
Management position					
Yes	308(24.6)	153(24.4)	155(24.7)	−0.131	0.896
No	946(75.4)	474(75.6)	472(75.3)		
Marital status					
Single	276 (76.1)	139(22.2)	137(21.8)	−0.027	0.979
Married	954 (22.0)	475(75.7)	479(76.4)		
Other	24 (1.9)	13(2.1)	11(1.8)		
Employed as civil servant					
Yes	519(41.4)	244(38.9)	275(43.9)	−1.777	0.076
No	735(58.6)	383(61.1)	352(56.1)		

Note: The percentage in the table is rounded so that, in some cases, it does not reach 100%.
Abbreviations: EFA, exploratory factor analysis; CFA, confirmatory factor analysis.

Table 2 Item Analysis

Items	*t*	*P value*	Correlation Coefficient	Spearman *P value*	The Cronbach's α Coefficient Deleted	Comments
5	11.572	0.000	0.317	0.000	0.886	
6	9.528	0.000	0.296	0.000	0.882	Retained, very close to 0.3, and the construct has only 2 items.
7	10.724	0.000	0.366	0.000	0.880	
8	6.394	0.000	0.198	0.000	0.884	Retained, this item is scored in reverse, there may be measurement bias; it mainly measure open and transparent culture.
9	11.707	0.000	0.338	0.000	0.882	
10	15.643	0.000	0.476	0.000	0.879	
11	13.981	0.000	0.425	0.000	0.880	
12	16.303	0.000	0.495	0.000	0.878	
13	16.485	0.000	0.481	0.000	0.878	
14	0.900	0.368	−0.023	0.416	0.890	Deleted
15	11.889	0.000	0.387	0.000	0.881	
16	3.746	0.000	0.104	0.000	0.886	
17	0.938	0.348	0.027	0.337	0.888	Deleted
18	12.193	0.000	0.371	0.000	0.880	
19	3.510	0.000	0.113	0.000	0.885	

(*Continued*)

Table 2 (Continued).

Items	t	*P value*	Correlation Coefficient	Spearman *P value*	The Cronbach's α Coefficient Deleted	Comments
20	23.817	0.000	0.641	0.000	0.875	
21	29.983	0.000	0.725	0.000	0.870	
22	26.300	0.000	0.671	0.000	0.871	
23	30.283	0.000	0.726	0.000	0.870	
24	30.127	0.000	0.709	0.000	0.870	
25	30.527	0.000	0.732	0.000	0.869	
26	31.830	0.000	0.740	0.000	0.869	
27	31.863	0.000	0.755	0.000	0.868	
28	30.745	0.000	0.745	0.000	0.870	
30	26.419	0.000	0.689	0.000	0.870	
31	27.518	0.000	0.711	0.000	0.870	

three-factor model, but the initial model fit was not ideal. After several rounds of model revisions, residual paths were added, and the revised index and model are shown in Table 4 and Figure 1.

Content Validity Index

The CVI was calculated after consulting 7 experts. After calculation, the item-level CVI (I-CVI) ranged from 0.860 to 1.000, and the scale-level CVI (S-CVI) was 0.980.

Table 3 The Factor Loadings of the C-BEDA Tool

Items	Factor		
	F1	F2	F3
27. Fear of judgment from colleagues	0.899		
26. Fear of damaged reputation	0.897		
25. Fear of losing self-esteem	0.888		
31. Fear that peers will question my competence	0.874		
24. Fear of personal failure	0.872		
30. Fear of shame	0.863		
28. Fear of losing malpractice insurance coverage	0.855		
23. Fear of losing colleague support	0.848		
22. Fear of losing patient trust	0.834		
21. Fear of disciplinary action	0.795		

(*Continued*)

Table 3 (Continued).

Items	Factor		
	F1	F2	F3
20. Fear of litigation	0.601		
12. I am not sure when I should disclose an error.		0.782	
11. I receive mixed messages from my institution regarding what types of errors should be disclosed.		0.714	
10. I receive mixed messages from my institution regarding the process of disclosing an error.		0.710	
7. I am not sure how much I should disclose to a patient/family member in the event I am involved in a medical error.		0.641	
15. I am unsure of my role in a disclosure conversation with the patient and/or family members.		0.629	
9. My institution supports disclosure of medical errors by health care providers.			0.819
6. I am confident in my ability to disclose a medical error.			0.782
8. My institution supports an atmosphere of transparency in error disclosure.			0.741
Eigenvalue	7.901	2.615	2.003
Cumulative variance explanatory rate	41.586	55.349	65.892

Table 4 Fitting Indices of the C-BEDA Model (n=627)

Model	χ^2	df	χ^2/df	GFI	AGFI	IFI	CFI	PCFI	RMSEA
Before correction	1425.990	149	9.570	0.790	0.732	0.851	0.850	0.741	0.117
After correction	409.226	130	3.148	0.939	0.911	0.967	0.967	0.735	0.058

Abbreviations: χ2/df, Chi square/degree of freedom; GFI, goodness-of-fit index; AGFI, adjusted goodness-of-fit index; IFI, incremental fit index; CFI, comparative fit index; PCFI, partial least squares path modeling for confirmatory factor analysis; RMSEA, root mean square error of approximation.

Reliability Analysis

Internal Consistency Reliability

The overall Cronbach's α coefficient of the C-BEDA tool was 0.909. The Cronbach's α coefficients for F1, F2, and F3 were 0.961, 0.752, and 0.714, respectively.

Test-Retest Reliability

Twenty participants completed follow-up evaluations for retesting reliability. The intraclass correlation coefficient (ICC) of the C-BEDA tool was 0.86 (95% CI: 0.65–0.93, $P<0.001$).

Discussion

In this study, we tested the reliability and validity of the C-BEDA tool among 1254 Chinese healthcare workers and achieved acceptable psychometric properties. The tool can be used by hospital managers to assess healthcare providers' perception of disclosure ability, impression of institutional policies and culture, and specific barriers to disclosure in China.

Acceptable Validity

The validity can reflect the efficacy and accuracy of a scale. This study used construct validity and content validity to test the validity of the C-BEDA tool. Three factors were formed through EFA, with a cumulative variance contribution rate of

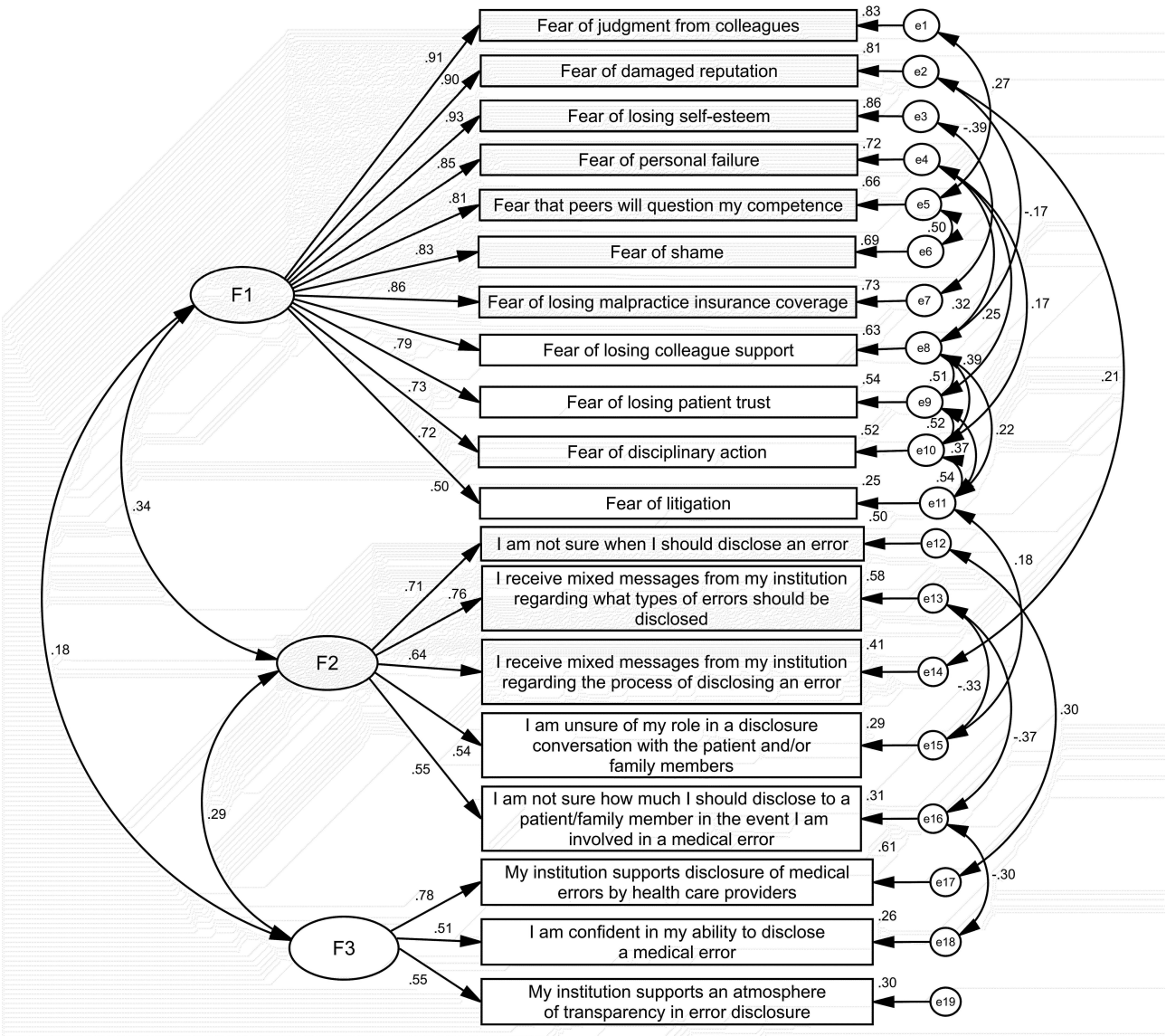

Figure 1 CFA of the modified three-factor model of the C-BEDA (*N* = 627).

65.892%, and a rate greater than 60% is usually considered acceptable for the explanatory power of the factors on the variables.[14] In the original scale, factor 3(psychological barriers) and factor 4(financial concern barriers) were separate dimensions. However, in this study, these two dimensions were rotated together.

Initially, CFA was further performed on the four factors of the original scale, but the data was not ideal. It indicates that the corresponding items could not be fully explained by the latent variables to which they belonged. The second time, the rotated three factors were used to continue the process. After multiple model revisions, the fit indices of the revised model were as follows: $x^2/df=3.148$, less than 5 but greater than or equal to 3, which is acceptable; RMSEA=0.058, less than 0.08 but greater than or equal to 0.05, which is acceptable; GFI, AGFI, IFI, and CFI≥0.9, which indicates that the model has good adaptation; and PCFI>0.5, which indicates that the model has good adaptation.[14] After discussion by the expert group, it was found that these items are inherently related and that merging them together is acceptable.

Seven experts were invited to test the content validity. The I-CVI ranged from 0. From 860 to 1.000, the S-CVI was 0.980, the I-CVI reached 0.78 or above, and the S-CVI reached 0.90 or above, indicating that the tool has good content validity.[14]

Acceptable Reliability

Reliability can reflect the solidity, stability, and consistency of a scale. In this study, Cronbach's alpha coefficient and test-retest reliability were used to evaluate the internal consistency of the C-BEDA. The overall Cronbach's α coefficient of the tool was 0.909. The Cronbach's α coefficients for F1, F2, and F3 were 0.961, 0.752, and 0.714, respectively. A Cronbach's alpha coefficient above 0.7 is acceptable, and it is closer to 1, indicating that the tool has higher internal consistency and reliability.[14] The correlation coefficient of the C-BEDA tool was 0.86 (95% CI: 0.65–0.93, P<0.001), indicating that the test-retest reliability of the C-BEDA tool is good and that its stability is high. With further research on disclosure in China, other barriers may be considered in the future, such as fear of workplace violence and fear of stereotypes from public opinion.

Policy Implications

Disclosing medical errors minimizes the perceived harm of errors by patients, decreases litigation, rebuilds trust between providers and patients.[6,18–20] However, when disclosure is integrated with practice, healthcare providers express some concerns[21] and challenges.[10] They face with ethical dilemmas, lack of empathy and communication skills, lower leadership and other issues.[22–24] Therefore, effectively identifying and quantifying barriers to disclosing medical errors becomes a key point of management. The emergence of the C-BEDA tool effectively helps managers survey and measure barriers to disclosure of medical errors,[13] which align with the general understanding of disclosure barriers by scholars from various countries.[25–27]

Limitations

This study has several limitations. First, respondents were recruited through cross-sectional surveys. Stratified sampling or censuses were not used for each hospital during the survey, so the sample cannot represent all clinical medical personnel. The use of this tool is recommended for multicenter and longitudinal studies. Second, due to the limited research on disclosure in China and the potential gap in understanding among clinical healthcare professionals, managers, and scholars, the respondents may not have been able to clearly distinguish the dimensions and items of the scale, leading to conceptual confusion and data bias. Therefore, although the sample size of the study met the basic requirement of 5–10 times the number of scale items, it may have been insufficient. Third, as doctors accounted for only 5.9% of the respondents, the results may not fully reflect obstacles to the disclosure of medical errors by doctors. It is recommended that multiple types of respondents be included in the future. Fourth, due to the other variables (13,14,16,17,18) that cannot be attributed to factors 1~4 in the original scale, these variables were not tested for reliability and validity in our study. Considering the content and value of these items, they were retained as other variables, but the research group believes that the overall structure of the scale is not perfect enough. This may be related to the differences in patient safety culture, disclosure culture, and "just culture" in developing countries, so it is recommended to continuously revise the scale to make it more in line with China's culture in the future.

Conclusions

The Chinese version of BEDA was preliminarily applied to 1254 Chinese healthcare workers, and the results showed that the tool has relatively acceptable reliability and validity, and can be used in the Chinese culture. However, the structure of the scale is still not perfect, it is recommended that the scale be improved with further research on disclosure. Overall, so far, C-BEDA provides an objective and quantitative way to help Chinese policy makers and managers identify and quantify barriers to healthcare workers' disclosure of medical errors to provide information for disclosure training programs.

Data Sharing Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethics and Consent Statement

Approval of the research protocol: The study was approved by the Ethics Review Committee of the Affiliated Hospital of Guizhou Medical University (2023887).

Informed Consent: Written informed consent was obtained from all participants.

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Disclosure

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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