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Development and Validation of Instrument Measuring Perception of Healthcare Provider on Cost Containment and Related Practices in Hospital Setting

Randa Khirfan[1], Aniza Abd Aziz[2], Zainuddin Awang[3]

[1]General Directorate of Health Affairs in the Northern Border Region, Kingdom of Saudi Arabia,[2]Faculty of Medicine, [3]Faculty of Business, Universti Sultan Zainal Abidin, Malaysia

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Abstract

Introduction: Healthcare system is struggling to overcome challenges in cost-containment and to maintain expenditure levels conceivable for an efficient operation. A new instrument measuring cost containment practices in healthcare are essential to provide genuine information to prevent unnecessary expenses and excessive spending. **Objective of the Study:** To develop and validate the instruments for measuring staff perception on Cost Containment Practices (CCP) and related factors in the hospital setting in the North Region in the Kingdom of Saudi Arabia. **Methodology:** The study instruments consist of 11 items measuring cost containment practice (CCP), 11 items measuring healthcare quality (HQ) and 8 items measuring staff attitude (SA) were newly constructed. Otherwise, the 17 items measuring health information technology (HIT) and another 17 items for measuring organization empowerment (OE) were adapted and modified from previous studies. All items were measured using the ten-point interval scale. The instrument was developed in stages: reviewing the literature and development of the item, experts' verification for content validity, and face validity. Later, this study employed a cross-sectional design in two phases. In the pilot study stage, 170 respondents were sampled using a stratified random sampling method. The selected respondents were given an online self-administered questionnaire for data collection. Then, the researchers conducted exploratory factor analysis (EFA) to assess the usefulness of every item for measuring their respective construct. In the actual field study, another 247 respondents were sampled from two other hospitals to provide data for confirmatory factor analysis (CFA) to assess the instruments' construct validity, convergent validity, and discriminant validity as well as its composite reliability. **Results:** The EFA results showed the extraction method of Principal Component with Varimax Rotation was significant. The Bartletts' Test of Sphericity and the sampling adequacy by KMO test confirmed sufficiency of samples. None of the items were removed as all the items in all five constructs showed factor loading of more than 0.6. The reliability of all constructs was achieved by Cronbach's

Alpha above 0.8; CCP=0.805, HIT=0.890, OE=0.890, HQ=0.834 and SA=0.910. Furthermore, the CFA results for each construct fulfilled the construct validity through acceptable factor loadings (more than 0.6) and fitness indexes values achieved the threshold for all constructs and respective items. The fitness indexes were namely RMSEA, the Incremental Fit category; the CFI, the Parsimonious Fit category, and the ratio of Chisq/df. The study also revealed all Average Variance Extracted (AVE) and Composite Reliability (CR) results exceeded their threshold values of 0.5 and 0.6 respectively, which fulfilled the model Convergent Validity and Composite Reliability. In addition, the Discriminant Validity assessment ensured that no redundant constructs occur in the model and no multi-collinearity problem. **Conclusion:** The study produces a valid and reliable instrument for better assessment and understanding of practices on healthcare cost based on staff perception. It potentially reflects and explains the reasons behind the success or failure of cost containment initiatives. The present findings indicate applicability of the proposed instrument to measure cost containment practices in hospitals.
Keywords: Cost-Containment Practice, Healthcare, Validation, Validity, Exploratory Factor Analysis, Confirmatory Factor Analysis, Validity and Reliability.

Introduction

The world economic crisis hurts the economy of all countries, including Saudi Arabia, notably the healthcare system (Khirfan et al., 2019). The last few decades had witnessed a continuous increment in the healthcare expenditure due to a remarkable enhancement in the quantity and quality of services in parallel with new specialties and medical technologies introduced to the local health market (Al-Hanawi, 2017). Cost-containment measures are the measures that resulted in a tangible financial benefit for the organization (Oliver, 2018). There are several contributing factors to cost containment practices in health care such as quality in healthcare (HQ), Health Information Technology (HIT) and Organization Empowerment (OE), and the Staff Attitudes (SA). Nonetheless, the impact of HIT and OE on cost containment is not well defined or measured in the literature (Myreteg, 2015).

According to the World Health Organization, healthcare with quality should be safe, effective, timely, efficient, equitable, and people-centered (Ilies, 2014; Mosadeghrad, 2014). Health information technology was structured based on the dimensions of health information technology usability evaluation scale (Health-ITUES) explained by Schnall et al., (2018). Matthew (2002) identified three dimensions of OE. Empowerment tools focus on the indirect positive monetary impact of satisfaction, productivity, and staff retention. The SA covers eight evidenced means of cost reduction either directly or in an indirect way as expert recommendations. Evaluating staff attitudes has become crucial since it influences the cost practices and the relationship between exogenous variables and cost containment variables.

In general, the previous studies discussed the CCP and the four-cost determinants in separation without using any direct measurement tool. For example, the existing accreditation bodies used to evaluate compliance to quality standards but did not measure the actual practices influencing the cost of the health service. Moreover, no standard instrument has been created and validated to assess the cost containment practices in the hospital setting. Additionally, lack of health management research investigates the collective action of these three factors along with staff attitudes toward cost containment. Therefore, this study aims to develop and validate a new instrument to assess the perception of hospital

staff on CCP and its related factors in a healthcare setting in the North Region of Kingdom of Saudi Arabia by employing Exploratory Factor Analysis (EFA) and Confirmatory (CFA). Specifically, this study considers four important factors affecting healthcare expenditure namely Health Information Technology (HIT), Healthcare Quality (HQ), Empowerment (OE), and Staff Attitude (SA).

Methodology

The instrument was developed in three stages. The initial stage was generating the initial 64 items based on literature as mentioned in the references for all items. The items of CCP, HQ, and staff attitudes were newly developed while the items measuring HIT and OE were modified from previously validated questionnaires; Health Information Technology Usability Evaluation Scale (Health-ITUES) for (Schnall et al., 2018). Subsequently, Brislin's method (1980) for forward and backward translation was utilized where the items are translated from English to Arabic and back to English by another translator. Both languages are required since participants were Arabic native and English speakers.

The first stage was continued by establishing the content validity of the questionnaire. Six experts and one statistician scrutinized the questionnaire items. The expert reviewers were specialized personnel from the respective academic fields (two health economists, two hospitals administrative, and two quality specialists). They evaluated, reviewed and suggested addition, deletion, and some minor wording changes to ensure comprehension and clarity of questions to all categories. The questionnaire was subsequently disseminated to ten health providers and later reviewed by the experts for the second time for face validity. The second and third stages involved the dissemination of the self-administered online of cost containment questionnaire to collect data for EFA and CFA analysis using separate sample.

Questionnaire validity through EFA and CFA analysis

Preliminary EFA involved significant Bartletts' Test of Sphericity (*P*-value < 0.05) and KMO value that exceeded the required value of 0.6 indicates that the data is adequate to proceed further for data reduction procedure in EFA (Awang, 2010, 2012; Noor et al., 2015; Hoque et al., 2017, 2018; Yahaya et al., 2018; Rahlin et al., 2019 and Bahkia et al, 2019). Subsequently, the EFA procedure resulted in Scree plots and total variance explained which guide the appropriate number of dimensions or components emerged from their respective items. Later, factor loading for items in each construct was run using the Extraction Method of Principal Component Analysis and Rotation Method of Varimax with Kaiser Normalization. The factor loading for every item should be greater than 0.6 in order to be retained (Awang, 2010, 2012; Yahaya et al., 2018; Rahlin et al., 2019; Bahkia et al., 2019).

After that, CFA of the measurement model of latent constructs was assessed to confirm achieving Construct Validity if the fitness indexes of the measurement model meet the required levels. The Convergent Validity through computing the Average Variance Extracted (AVE) reflected the average percentage of the variation explainable by the items measuring each construct. Finally, the Discriminant Validity of every construct was performed and assured by absence of redundancy.

Questionnaire Reliability Analysis

Finally, Cronbach's Alpha values were generated for each construct which reflects the internal reliability for the retained items in measuring their latent construct was conducted to indicate how strong the respective items are holding together in measuring the respective construct. The value of Cronbach's Alpha should be greater than 0.7 for the items to achieve internal reliability (Awang, 2010, 2012; Muda et al., 2018). Additionally, an assessment of Composite Reliability was done and its value should exceed the threshold value of 0.6 (Awang, 2014; 2015; Awang et al., 2018).

Results

Content and Face Validity

The expert panel suggested modification of the instrument as the followings:

The four modified items in HQ, HIT, and CCP constructs:

1. '*All needed supplied are sufficiently available'* was modified to *'All needed supplies are provided on time'*. It covers availability and timeliness aspect as well.
2. '*Utilization of hospital information technology increases the possibility of medical errors'* was modified to '*Utilization of hospital information technology increases the possibility of medication errors'*.
3. *'Hospital staffs are not adhering to infection control guidelines'* was modified to *'Hospital staffs are not adhering to infection control guidelines (hand hygiene)'*.
4. '*Health care services are provided within reasonable time'* was edited to '*Health care services are provided within reasonable time (admission and discharge procedure)'.*

The two added items in HQ and CCP constructs:

1. *'All medical staff credentials are reviewed and validated.'*
2. *'Some patients stay in hospital longer than the expected length of stay according to their health condition.'*

The single split statement in OE construct:

'Your hospital disseminates information about the targeted goals and way of achieving these goals' has double barrel meaning. Thus, this item was divided to two statements; '*Your hospital disseminates information about the goals to be achieved',* and '*Your hospital disseminates information how to achieve targeted goals.'*

The three deleted items from CCP and HQ contructs:

1. '*Some diagnostic procedures repeated without a medical reason*.'
2. '*All supplies required for provision of healthcare are available*.
3. '*The staff distribution is based on the work need*.'

Exploratory Factor Analysis (EFA)

Table 1 depicts the results of KMO and Bartlett's Test Scores for all constructs. The results of Bartlett's Test were significant. KMO > 0.60 for each construct indicate each data was adequate to proceed further with the data reduction procedure in EFA.

Table 1
The KMO and Bartlett's Test Scores for Four Constructs

Constructs		**CCP**	**HQ**	**HIT**	**OE**	**SA**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.754	.768	.816	.827	.888
Bartlett's Test of Sphericity	**Approx. Chi-Square value**	791.521	830.977	1732.527	821.795	821.795
	Df	55	55	136	28	28
	P value	<0.001				

The EFA for CCP Construct

The EFA procedure has grouped 11 CCP items into four dimensions. The total variance explained in four components measuring about 76.60% of the CCP Construct exceeded the minimum requirement of 60%. Thus, no item was deleted.

Table 2
Components, Items and Factor Loading CCP construct

Items	**Component**			
	1	**2**	**3**	**4**
CCP1. Some diagnostic procedures are ordered without a medical reason (Rothberg et al., 2014)			**.722**	
CCP2. Hospital staffs are not adhering to infection control guidelines (hand hygiene) (Cimiotti et al., 2012)			**.895**	
CCP3. Physicians provide patients, family, and community with enough information about disease prevention (Javitt et al., 1994; May et al., 2015)			**.893**	
CCP4. Health care services are provided within reasonable time (admission and discharge procedure) (Mehwish, 2018)				**.870**
CCP5. All patients who are admitted to the hospital need inpatient care (Burke & Ryan, 2014)				**.823**
CCP6. The staff follows the admission procedure as explained in the admission policy (Ortiga et al., 2012)	**.826**			
CCP7. The hospital suffers from continuous turnover of the staff (Waldman et al., 2004)	**.864**			
CCP8. Some patients stay in hospital longer than the expected length of stay according to their health condition (Badgal, 2015; Rahmqvist et al., 2016)	**.850**			
CC9. The utilization review committee has an active role in monitoring of hospital expenditure (Desai et al., 2017; Durvasula, 2018)		**.867**		

CCP10. The hospital has a realistic budgeting plan for the coming year (Durvasula, 2018)		**.777**		
CCP11. The hospital has a dynamic scheduling to make the best use of the available human resources (Griffiths et al., 2016; Jingjing et al., 2019)		**.862**		

The EFA for HQ Construct

The total variances explained of the 11 HQ items in four components are measuring about 76.471% of the Health Quality construct exceeded the minimum requirement of 60%. No item being deleted since all factor loading are greater than 0.60.

Table 3

Components, Item and Factor Loading for HQ construct

	Component			
Items	**1**	**2**	**3**	**4**
HQ1. Many medical errors happened by medical staff during the healthcare procedures (Chaudhry et al., 2006)	**.771**			
HQ2. The hospital infrastructure is suitable for the hospital service (Khamis & Njau, 2016)	**.881**			
HQ3. All required medications for healthcare are available (Cambpell et al., 2000)	**.858**			
HQ4. Some equipment needed for work is not in good condition (Grossbart & Agrawal, 2011)		**.853**		
HQ5. All needed supplies are provided on time (Homer, 2018)		**.787**		
HQ6. All hospital staffs are qualified to provide healthcare correctly (Kumar, 2013; Hongoro & McPake, 2004)		**.846**		
HQ7. All medical staff credentials are reviewed and validated (Gerszten et al., 2013)			**.754**	
HQ8. The number of working staff per shift is sufficient (Spilsbury et al., 2011)			**.874**	
HQ9. Job position determined by scientific qualifications and experience (Gusdorf, 2008)			**.845**	
HQ10. The hospital has continuous learning program. (Alomi et al., 2018; Pache et al., 2019)				**.837**
HQ11. There is annual assessment of educational and training needs of hospital staff (Alina et al., 2017)				**.891**

The EFA for HIT Construct

The total variances explained of the 17 HIT items in five components are measuring about 76.672%. No item was deleted since all factor loadings were greater than 0.60 as in Table 4.

Table 4
Components, Item and Factor Loading for HIT construct

Items	Component				
	1	2	3	4	5
HIT1. Hospital staff got training to use information Technology in effective manner (Schnall et al., 2018)	**.829**				
HIT2. Information technology (electronic medical record) utilized to improve work (Smith, 2012)	**.718**				
HIT3. Using information technology at your hospital makes it easier to retrieve health information (Smith, 2012; Ash et al., 2004)	**.845**				
HIT4. Utilization of hospital information technology increases the possibility of medication errors (Smith, 2012; Franke & FelfeHow, 2011)	**.715**				
HIT5.Information technology at your hospital decreases wasted time (Hillestad et al., 2005)		**.683**			
HIT6. Utilization of information technology makes staff communication easier (Manojlovich, 2015)		**.841**			
HIT7. Using HIT can improve the quality of the provided healthcare (Schnall et al., 2018)		**.854**			
HIT8. Applying HIT has a role in enhancing health condition of patients (Schnall et al., 2018)		**.781**			
HIT9. HIT provide users with information how to manage disease condition (Schnall et al., 2018)			**.798**		
HIT10. HIT make it easier for user to deal with signs and symptoms of disease (Schnall et al., 2018)			**.783**		
HIT11. The level of HIT assistance is satisfying (Schnall et al., 2018)			**.809**		
HIT12. HIT increase the possibility of staff autonomy at work (Schnall et al., 2018)				**.746**	
HIT13. It is easy to use HIT system (Schnall et al., 2018)				**.863**	
HIT14. It's possible for all health staff to learn how to use HIT (Schnall et al., 2018)				**.825**	
HIT15. It's easy for staff to master the required skills for applying HIT (Schnall et al., 2018)					**.739**
HIT16. The health information system gives error messages and how to fix it (Schnall et al., 2018)					**.888**
HIT17. The instruction and messages given by HIT system are clear (Schnall et al., 2018)					**.880**

The EFA for OE Construct

The total variance explained of 17 items in five components are measuring 74.770% of the construct. Table 5 presented the items and their respective factor loading. No item was deleted since all factor loadings were greater than 0.60

Table 5
Components, Item and Factor Loading for OE construct

Items	Component				
	1	2	3	4	5
OE1. Hospital staffs not have sufficient authority to achieve their job independently (Matthews et al., 2002)				**.706**	
OE2. Your manager appreciates your opinion for improving the work (Franke & FelfeHow, 2011)				**.868**	
OE3. You are not allowed to access some information which could help you to complete your job (Franke & FelfeHow, 2011)				**.854**	
OE4. Managers encourage staff to solve work problems independently (Ghosh, 2013)					**.844**
OE5. Your hospital disseminates information about the goals to be achieved (Rowi et al., 2005)					**.709**
OE6. You are authorized to participate in establishing work plans (Jaafarpour & Khan, 2011).					**.797**
OE7. Your hospital disseminates information how to achieve targeted goals. (Matthews et al., 2002)	**.732**				
OE8. You are allowed to change the hospital policies (Matthews et al., 2002)	**.856**				
OE9. The hospital has well established work guidelines (Matthews et al., 2002)	**.813**				
OE10. Employee has the right to plan annual leave (Matthews et al., 2002)	**.791**				
OE11. Staff can participate in formation of work team (Matthews et al., 2002)			**.743**		
OE12. Employee has input in hiring new staff (Matthews et al., 2002)			**.860**		
OE13. Employees do not have the right to establish retirement plan (Matthews et al., 2002)			**.826**		
OE14. There is a clear financial record of the hospital disseminated to all staff (Matthews et al., 2002)		**.714**			
OE15. Staff can access information in personal work file (Matthews et al., 2002)		**.873**			
OE16. Hospital has a clear announced reward system (Matthews et al., 2002)		**.875**			
OE17. Hospital provides professional development program (Matthews et al., 2002)		**.690**			

The EFA for SA Construct

The total variance explained of 8 items in one components are measuring 61.682% of the construct. Table 6 presented the items and their respective factor loading. No item was deleted since all factor loadings were greater than 0.60

Table 6
Components, Item and Factor Loading for SA Construct

Items	Component 1
AT1. There is a serious need for cost reduction of healthcare expenditure in KSA (Walston & Al-Harbi, 2008)	**.734**
AT2. Cost containment is achievable goal/controllable factor in KSA. (Alwin et al., 2017)	**.798**
AT3. Improving quality could decrease cost of health care. (May et al., 2015; Albejaidi, 2010)	**.814**
AT4. Proper resources allocations can lower the cost of healthcare. (Iannone et al., 2013; Nedzelský, 2016)	**.785**
AT5. Transformational leadership is important mean of cost containment. (Khirfan & Aziz, 2022)	**.740**
AT6. The organizational empowerment plays a crucial role in cost reduction. (Kim & Fernandez, 2017)	**.803**
AT7. HIT usability is effective method for reducing cost of healthcare. (Buntin et al., 2011)	**.802**
AT8. Workshops or training course are effective means to improve performance of the three cost influencing factors. (Al-Mohaissen, 2017)	**.805**

The Internal Reliability of Constructs

The Cronbach Alpha values in Table 7 indicate all constructs and their components have good internal reliability for measuring each construct.

Table 7
Summary of Components and Internal Reliability for All Construct

Construct	Total variance explained	ems	bach's alpha
CCP	**76.6%**	**11 items**	**.805**
Component 1	Provision of individualized care	3	.834
Component 2	Right service at right time	3	.827
Component 3	Impact of following same policies by same staff on hospital stay	3	.810
Component 4	Proper management of budget and resources	2	.758
HQ	**76.5%**	**11 items**	**0.834**
Component 1	Appropriateness of the provided service	3	0.852
Component 2	Qualified professionals and machines for service provision	3	0.827
Component 3	Adequacy of staff with verified qualifications	3	0.814
Component 4	Continuous learning program to meet educational an d training needs	2	0.726
HIT	**76.7%**	**17 items**	**0.890**
Component 1	Effective use of HIT improves the service outcomes	4	.865
Component 2	Faster Communication through HIT improve quality of care	4	.870
Component 3	HIT impact on assisting staff to manage diseases	3	.887
Component 4	Ease of HIT use	3	.814
Component 5	HIT skills in errors prevention and management	3	.810
OE	**74.8%**	**17 items**	**0.890**
Component 1	Appreciation and authority for making work decision	3	0.852
Component 2	Staff encouraged to manage challenges toward achieving clear goals	3	0.827
Component 3	Accessibility to policies, guidelines and planning information	4	0.906
Component 4	Active role of staff in work team structure	3	0.814
Component 5	Access to financial, reward and personal information.	4	0.822
SA	**61.682%**	**8 items**	**0.910**
Component 1		8	0.910

CONFIRMATORY FACTOR ANALYSIS (CFA)

The assessment for construct validity in Table 8 shows that all constructs achieved the targeted fitness indexes; RMSEA, CFI, and Chi-Square/ df with acceptable values. As presented in Table 9, loading values for all components were above the targeted values.

Table 8
Fitness Indexes for the five constructs

Construct	**RMSEA < 0.10,** (Ideal if < 0.08)	**CFI > 0.85,** (Ideal if > 0.90)	**Chi-Square/ df < 5.0,** (Ideal if < 3.0)
Cost Containment	0.081	0.968	2.598
Healthcare Quality	0.079	0.962	2.544
Information Technology	0.086	0.940	2.838
Organization Empowerment	0.066	0.967	2.079
Staff Attitude	0.068	0.987	2.122
Cost Containment Instrument	0.073	0.945	2.300

Table 9
Factor loadings, Composite Reliability and Average Variance Extracted for the five constructs

Construct	**Items**	**Factor Loading** (Ideal if > 0.5)	**CR** (Ideal if > 0.6)	**AVE** (Ideal if > 0.5)
Cost Containment	CCC1	0.74	**0.872**	**0.631**
	CCC2	0.74		
	CCC3	0.86		
	CCC4	0.83		
Healthcare Quality	HQC1	0.82	**0.886**	**0.662**
	HQC2	0.87		
	HQC3	0.76		
	HQC4	0.80		
Information Technology	ITC1	0.74	**0.874**	**0.582**
	ITC2	0.82		
	ITC3	0.76		
	ITC4	0.75		
	ITC5	0.74		
Organization Empowerment	OEC1	0.78	**0.902**	**0.649**
	OEC2	0.83		
	OEC3	0.83		
	OEC4	0.86		
	OEC5	0.72		
Staff Attitude	SAC1		**0.943**	**0.878**

The Average Variance Extracted (AVE) and computed Composite Reliability (CR) exceed the threshold values of 0.5 and 0.6 sequentially. Therefore, the results can conclude that the Convergent Validity and Composite Reliability for all latent constructs in the model have been achieved.

Table 10
The Discriminant Validity Index Summary for all Constructs

Construct	Information Technology	Healthcare Quality	Organization Empowerment	Cost Containment
Information Technology	**0.783**			
Healthcare Quality	0.78	**0.814**		
Organization Empowerment	0.53	0.71	**0.805**	

As seen in Table 10, the Discriminant Validity of the respective constructs is achieved if the diagonal values (square root of its AVE) exceed any other values in its row and column (correlation between constructs in the model.

Discussion

The instrument development and validation is critical and essential especially during the current financial pressure worsened by the COVID-19 pandemic. Apart from Organization Empowerment Scale for Mathew and Health-ITUES for Schnall (2018), there was no standard tool developed to assess the root causes for expenses inflation in clinical practice in hospitals. Information obtained from this questionnaire in turn delivers a useful basis to control cost and handle inflated healthcare expenditure and future effective use of resources in a secondary healthcare setting. The development of a new valid and reliable tool for quantifying the financial consequences of staff practices is crucial and imminent to assist strategies for cost containment (Roberts et al., 1999). Hence, this study had developed and validated the pioneering instrument used for the evaluation of cost containment practices and related influential factors by healthcare providers in hospitals. The present questionnaire is considered a comprehensive procedure for assessing psychometric properties of relevant factors.

Generation of Items and Content Validity

In detail, the eleven items of cost containment were constructed based on the literature and after discussion with experts' team and clinical leaders in the North region. New items for quality in healthcare (HQ) were formed based on understanding that it is a complex and multifaceted variable influenced by patient-related factors and provider-related factors. The HIT usability items were adapted from Schnall HIT usability tool. The 17 statements were structured based on the four dimensions of information technology usability; impact, usefulness, perceived ease of use, and user control. The OE construct has 17 items adapted from the Mathew organization empowerment tool was built based on the three dimensions of organization empowerment; dynamic structural framework, control of workplace decision,

and fluidity in information sharing. The development of statements measuring attitudes (SA) originated from critical opinions of clinical leaders and literature review**.** Items of the five constructs were further discussed with experts in clinical settings and academic fields who are specialized in health administration, health economy, hospital management, and resources management. The statements of the items were amended according to the experts' comments and suggestions.

Every construct was measured using the interval scale (Likert) ranging from 1 (strongly disagree) to 10 (strongly agree) with the given item statement to measure staff perception regarding the item statement in the questionnaire. Awang (2014, 2015) suggested the use of 10 points Likert scales because this would produce more precise interval data and meet the requirement for employing parametric analysis.

Construct Validity

The Construct Validity was confirmed when the Fitness Indexes of the Measurement Model achieved the required levels. The Convergent Validity confirmed through computing the Average Variance Extracted (AVE), which reflects the average percentage of the variation explainable by the items measuring each construct. The Discriminant Validity among the constructs was confirmed through developing the Discriminant Validity Index Summary (Awang et al., 2015, 2018; Yusof et al., 2017; Mohamad et al., 2016, 2017, 2018, 2019 and Afthanorhan et al., 2020, 2020a).

The researcher disseminated the revised questionnaire to ten health care providers before conducting a pilot study where 170 responses were obtained and used for EFA analysis. According to Hair et al (2015), a pilot study tests justification, straightforwardness, and suitability of the gathered information. Later, the researcher explored and assessed the usefulness of each item and their dimensionality in measuring their respective latent construct. Based on EFA results, none of the items were deleted because all items showed satisfying factor loading and the internal consistency of each individual construct was excellent, ranging from 0.805 to 0.910. The emerging components from each construct are named accordingly following meaningful characteristics of its items. The Pooled - CFA results depicted that all constructs achieved the respective thresholds of validity and reliability (Awang et al., 2018; Muda et al., 2018; Mahfouz et al., 2019, 2020; Raza & Awang, 2020, 2020a; Baistaman et al., 2020a; Sarwar et al., 2020).

Reliability

Reliability of a questionnaire is a vital procedure to ensure the extent of measurement model potential in measuring the intended constructs (Awang, 2015). In EFA, the Cronbach's Alpha value reflects the internal reliability for the retained items in measuring their latent construct and indicates how strong the respective items are holding together in measuring the respective construct. The value of Cronbach's Alpha greater than 0.6 for the items achieves internal reliability (Awang, 2010, 2012; Muda et al., 2018). The resulted Cronbach alpha from EFA indicated all constructs and respective components had good internal reliability exceeding 0.60. Additionally, the CFA analysis confirmed achieving reliability requirement as the Composite Reliability CR of each construct and for the measurement model exceeded the threshold value of 0.6 (Afthanorhan et al., 2017, 2017a, 2018, 2019; Rahlin et al., 2019a, 2020 & Mahfouz et al., 2019, 2020).

Conclusion

The findings support the questionnaire's validity for measuring containment practices in a clinical field. Furthermore, the reliability of all the four constructs was also achieved. The reliability and validity of the questionnaire provides the possibility for it to measure the real perception of practices affecting cost in a healthcare environment.

Limitations and Recommendation of the Study

The main limitation of this study was the narrow scope of the source population that could limit its representativeness and generalizability. The quantitative design of this study does not groove into a preferable measure of perception as opposed to a qualitative study. The instrument is recommended to be cross-validated in different healthcare settings in other parts of countries.

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