RESEARCH ARTICLE

Developing assessment criteria for operation control of local security health fund in the upper central area, Thailand

[version 1; peer review: 1 approved, 1 approved with reservations]

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Abstract

Background: The government's support for public health care in Thailand is very important and necessary. Therefore, there must be a supervisory process for budgeting to create the most equality and fairness to all people. At present, the instruments used to monitor health fund performance cannot be comprehensively assessed for effectiveness such as planning, organizing, leading and controlling. To address this gap, we created the Assessment Criteria for Operation control of Local security health Fund (ACOLF) which evaluates old assessment criteria, review literature and experience as separate constructs.

Methods: The ACOLF is a 42-item survey with 12 old assessment criteria, 26 review literature and four experience items rated on scale from 0-9. In an observational analytical study, the survey was administered to 406 general population participants working in a provincial office for local administration. Validity and reliability were evaluated by testing construct validity. Exploratory factor analysis was conducted to confirm the item of old assessment criteria, review literature and experience. Reliability of the questionnaires was tested using Cronbach's alpha coefficient.

Results: The ACOLF demonstrated convergent construct validity (KMO = 0.88 and Bartlett's Test; p value <0.001) and explaining 88.95% of the variance of this construct. There were seven factors involved and all factors consisted of a total of 41 variables observed by the weight of the composition of the observed variables ranged from 0.780 to 0.972 at the significance level of 0.05. The reliability of the assessment criteria was tested using Cronbach's alpha coefficient, the total results was at 0.889.

Conclusions: The ACOLF is a short, cover activity, valid, and reliable

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Approval Status

	1	2
version 1		
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Any reports and responses or comments on the article can be found at the end of the article.

instrument for assessment operation control of local security health fund. Based on research findings the tool can be used to comprehensively assess the performance of local security health fund.

Keywords

Local Health Security Fund, Quality Criteria Assessment, indicators

This article is included in the **Health Services** gateway.

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Introduction

World Health Organization (WHO) attention to the policy of creating universal health insurance (Universal Coverage Scheme)¹ and need for collaborative working was highlighted in the 1986 Ottawa Charter for Health Promotion. The health promotion demands coordinated action by all concerned: by governments, by health and other social and economic sectors, by nongovernmental and voluntary organizations, by local authorities, by industry and by the media. The recognition of the role those social determinants play in the health of the population makes it clear that health cannot be the responsibility of just one agency and, over the last three decades, collaboration has been an increasing focus of health promotion internationally.² In 1997 the Jakarta Declaration identified partnerships for health and social development between different sectors as one of its five key priorities. It stressed the need to strengthen existing partnerships and urged the development of new partnerships³ (Jakarta 1997). These priorities were further highlighted in 2005 when the Bangkok Charter stated that “partnerships, alliances, networks and collaborations provide exciting and rewarding ways of bringing people and organizations together around common goals and joint actions to improve the health of populations”⁴ (WHO 2005).

Thailand’s policy on universal health coverage (UHC) has made good progress since its inception in 2002 by National Health Security Office Thailand (NHSO). Every Thai citizen is now entitled to essential health services at all life stages.⁵ The NHSO has a duty to support Coordinate and prescribe rules for local authorities to operate and administer the health insurance system at the local level as readily or appropriately to create health insurance for the population in each region. Well-coordinated district health systems enable individuals to seek care or referral at health units close to home.⁶

The NHSO is working with local governments to establish the Local Health Security Fund (LHF), with the key goal of increasing access to health promotion and disease prevention services in the community. There is a process by community participation in solving health problems that has been ongoing since 2006 to the present. Over the past 10 years, the local health insurance fund has been established and developed continuously. Therefore, the assessment and monitoring tools are very important for the Fund’s development in order to know the factors affecting the coverage of health services such as education level, health, socioeconomic status.⁷ LHF Performance Assessment Emphasis is placed on work processes requiring the creation and development of LHF management evaluation criteria, which must be developed and improved to suit the current situation. In particular, the indicators can indicate that the fund management committee is effective and can reflect the level of strength and sustainability of the LHF.⁸

However, the original LHF efficacy model did not cover all aspects of fund management and people still had insufficient access to local government services.⁹ Therefore, the development of an LHF operated and managed by the local government that can drive the health care of local people more efficiently and sustainably requires the development of an efficient and effective assessment tool to provide an overview of its operations.

In this research, it has been developed and designed to be used as a guideline to assess the quality of LHF management to be effective in the future.

Methods

Study design

Cross-sectional analytical study.

Setting

The study was conducted in eight provinces in central areas of Thailand include Saraburi, Lop Buri, Sing Buri, Ang Thong, Phra Nakhon Si Ayutthaya, Pathum Thani, Nonthaburi and Nakhon Nayok. The subject answered question during a convenient time that did not disturb them from working. The study was conducted from January to December 2019.

Initial development of the assessment criteria

The ACOLF is a 42-item survey with 12 old assessment criteria 26 review literature and four experience items rated on scale from 0-9. The content validity index (CVI) was tested by four experts, which is the primary method used to determine whether a test has content validity that purport to the same content domain and the results item content validity were between 0.76-1.0.

Measures

We collected data from a sample size involved in the local government organization, one representative at a time, using questions made up of three parts, totaling 42 item or a 42 item Observed Variable (OV) survey with 12 old assessment criteria, 26 review literature and four experience items rated on scale from 0-9. The questionnaire was developed to

measure the factors Assessment Criteria for Operation control of Local security health Fund (ACOLF) dividing into 12 Latent Variable (LV): LV1 Fund Management. (Observe variable 2-4) LV2 Fund Allocation. LV3 Support for activities of the Fund. LV4 health benefits. LV5 Organizational Leadership. LV6 Assignment of people in the organization. LV7 Health Strategic Plan Formulation. LV8 Human Resource Development of the Fund. LV9 Health Network Potential Development. LV10 Database Management. LV11 Public Relations of the Fund. LV12 Monitoring and Evaluation. The content of the questionnaire was discussed with the experts in the field and then revised accordingly. Self-reported questionnaire bias may develop recall bias in data collection, which is eliminated by designing questionnaires to be easy to answer in accordance with the participants' regular work activities.

Statistical methods

Sample size

Using the rule of sample size, in the factor analysis at least 300 for the Exploratory Factor Analysis (EFA).¹⁰ Purposive sampling was used to obtain data from a sample group that corresponds to the health fund management questionnaire, including representatives of the Health Security Fund Committee and representatives of health network partners from the public and public sectors. The consent to participate in the research was carried out by sending a questionnaire to the sample group and having the consenting person respond to the questionnaire back to the researcher. The study had 402 participants consisting of 23 local politicians, 343 government officers, 40 Public Health Technical Officers. The subjects were selected by a multi-stage sampling. The study was conducted in the upper central area, Thailand. Ethical permission (number HE 621205) was received from Khon Kaen University Ethics Committee for Human Research. The researcher was aware of the rights of participants and sufficient information was provided to the research participants before making a decision to participate and answering the questionnaire.

Statistical methods

A preliminary data analysis program using Microsoft Excel and EFA analysis was performed using SPSS Statistics for windows version 19, a copyright of Khon Kaen University. Double data entry was used to check for to data duplication and missing. EFA was performed to examine latent variables under the observation variables by grouping or combining variables that were related to one another. The relationship, both positive and negative, were used. Variables within the same element were highly correlated. Each component must have an Eigen value > 1, Factor loading > 0.5, and each group must have two observation variables, which would be appropriate for computation. If not, it would not be included in the model. The statistics used to describe subgroups were Kaiser-Meyer-Olkin (KMO) and Bartlett's test.

Results

Construct validity

Data obtained from the questionnaire were analyzed by factorial analysis using EFA.²³ Seven components were identified, each with Eigen value > 1, Factor loading > 0.5, Bartlett's test p-value < 0.001, can explain the variance = 88.95%. The results are shown in [Tables 1-2](#) and can be expressed as Factor loading in the [Table 3](#).

When analyzing by EFA, the latent factor was left with seven factors and the related observed variable was reduced to 41. The seven latent factors and their observation factor were as follows: LV1 Basic management has been component OV2-6 and factor loading were between 0.79-0.95. LV2 Service deliver for health care has been component OV7-11 and factor loading were between 0.78-0.85. LV3 Leadership and governance has been component OV12-17 and factor loading were between 0.78-0.88. LV4 Strategic planning has been component OV18-24 and factor loading were between 0.85-0.93. LV5 Human resource development has been component OV25-30 and factor loading were between 0.83-0.97. LV6 Health information system has been component OV31-37 and factor loading were between 0.79-0.95. LV7 Monitoring and evaluation has been component OV38-42 and factor loading were between 0.79-0.96.

Table 1. Test adequate sample.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.880
Bartlett's Test of Sphericity	Approx. Chi-Square	62722.96
	df	861
	Sig.	0.00

Table 2. Orthogonal factors.

Component	Initial Eigen values			Extraction sums of squared loadings			Rotation sums of squared loading		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
LV1	13.69	32.60	32.60	13.69	32.60	32.60	6.74	16.05	16.05
LV2	5.14	12.25	44.86	5.14	12.25	44.86	6.20	14.77	30.83
LV3	4.61	10.99	55.86	4.61	10.97	55.86	5.46	13.01	43.84
LV4	4.01	9.55	65.41	4.01	9.55	65.416	4.79	11.40	55.25
LV5	3.33	7.93	73.34	3.33	7.93	73.34	4.40	10.47	65.73
LV6	3.04	7.24	80.59	3.04	7.24	80.59	4.313	10.27	76.01
LV7	2.22	5.28	85.87	2.22	5.28	85.87	4.02	9.59	85.59
LV8	1.29	3.07	88.95	1.29	3.07	88.95	1.40	3.35	88.95
LV9	0.89	2.13	91.08						
LV10	0.84	2.01	93.09						
LV11	0.50	1.21	94.30						
LV12	0.33	0.79	95.10						
LV13	0.25	0.601	95.70						
LV14	0.23	0.56	96.26						
LV15	0.22	0.54	96.81						

Table 3. Correlation matrix.

	LV1	LV2	LV3	LV4	LV5	LV6	LV7
LV1	1						
LV2	.647**	1					
LV3	.387**	.502**	1				
LV4	.479**	.533**	.684**	1			
LV5	.278**	.336**	.575**	.521**	1		
LV6	.456**	.505**	.623**	.614**	.554**	1	
LV7	.570**	.522**	.612**	.612**	.558**	.659**	1

Pearson correlation, * $p < .05$, ** $p < .01$.

Relevant measures

To further test whether the variable in the study will can be used to analyze the causal relationship (Causal model) with the Structural Equation Modeling (SEM) method, the relationship between the two variables was tested to make sure that there was no Multicollinearity. Details of the relationship between observed variables are shown in Table 3.

The variables were both positive and correlated. The observed variables were positively correlated between 0.278 and 0.684, and the seven highest positive correlation coefficients were: LV2 and LV1 ($r = 0.647$, p -value $< .01$), LV4 and LV3 ($r = 0.684$, p -value $< .01$), LV6 and LV3 ($r = 0.623$, p -value $< .01$), LV7 and LV3 ($r = 0.612$, p -value $< .01$), LV6 and LV4 ($r = 0.614$, p -value $< .01$), LV7 and LV4 ($r = 0.612$, p -value $< .01$) and LV7 and LV6 ($r = 0.659$, p -value $< .01$). The couple with the least positive relationship were the observation which was made by LV5 and LV1 ($r = 0.278$, p -value $< .05$). When considering the correlation coefficients of the observed variables, it was found that none of the variables had a relationship greater than 0.85,¹¹ which might cause linearity problems (Multicollinearity).

Therefore, when considering the Pearson product moment correlation coefficient between variables, the value was not higher than the set value. It can be concluded that all variables do not have multiple linear states. The data in this set can be used to analyze the linear equation modeling (SEM).

Reliability

Cronbach's alpha was calculated for the ACOLF LV1-LV7 to measure the extent to which the items within the subscales correlated with each other and measured a similar construct. The five LV1 items had a Cronbach's alpha of 0.86 and average inter-item covariance 232.48. The five LV2 items had a Cronbach's alpha of 0.86 and average inter-item covariance of 234.04. The six LV3 items had a Cronbach's alpha of 0.83 and average inter-item covariance of 234.52. The seven LV4 items had a Cronbach's alpha of 0.83 and average inter-item covariance of 222.47. The six LV5 items had a Cronbach's alpha of 0.86 and average inter-item covariance of 245.97. The seven LV6 items had a Cronbach's alpha of 0.83 and average inter-item covariance of 227.73. The five LV7 items had a Cronbach's alpha of 0.83 and average inter-item covariance of 240.34.

Discussion

Analysis of factors related to effective LHF management found that seven items were derived from the accompanying analysis. It was found that some factors were not variables for the implementation of local health insurance funds. The variables that the researcher chose to exclude variables from the statistic were values less than 0.5 out of the 1 variable (LV1). By collecting data from a sample group covering each size of LHF representatives in Thailand, both urban and rural communities, each category of the assessment had different assessment questions as follows.

In item 1 (LV1) Basic management was component OV2-6. which contains questions about fund management by carrying out activities in the development of the LHF in order to achieve its goals. A Case Study on Tacoma–Pierce County, Washington, in Assessing the Role of State and Local Public Health in Outreach and Enrollment for Expanded Coverage, found action by local governments in health care to obtain funding. Government sectors need to have good financial management or planning.¹² A study of key factors for inefficient district health management practices in Ghana found inadequate planning in health management.¹³

In LV2 Service deliver for health care has been component OV7-11 is a measure of individual health care services. It is a measure of the effectiveness of LHF health services. Several studies have been conducted on the effectiveness of

collaboration between government and local governments in evaluating public health promotion actions. Randomized controlled trials occurred in the Jerusalem region, Israel,¹⁴ to investigate the effectiveness of local government health services, measure illness-related absenteeism, handwashing behaviors before lunch and after using the bathroom. In 2008, a study in Copenhagen and Aarhus, Denmark¹⁵ measured Symptoms on the Scale for Assessment of Psychotic Symptoms and others to measure the effectiveness of local government health services. It was found that the knowledge and attitudes of the people towards the health services of the local government were measured.^{16,17}

LV3 Leadership and governance has been component OV12-17. It measures the part of organizational leaders in managing policies and managing funds for maximum efficiency. Several studies have found that the management or decision-making of a leader in health administration is extremely important. The study Assessing the Role of State and Local Public Health in Outreach and Enrollment for Expanded Coverage to determine Factors influencing the work efficiency of district health managers 12 found that one important factor was a narrow decision space that constrains the authority of health leaders. A 2007 study in Tanzania¹⁸ found that corporate leaders play a key role in managing the Community Health Fund.

LV4 Strategic planning has been component OV18-24. This section assesses management planning to ensure that the Fund implements health activities in the best interests of the people. A Philippine Local Government Health Administration study found that lack of Strategic planning would result in less inequality and less access to local government health care systems among citizens.^{19,20}

LV5 Human resource development has been component OV25-30. A study by Bruzzese *et al.*²¹ in 2006 examined the management of asthma between schools, families, and primary care providers similar to health management with the participation of government or local residents. It was found that the potential development of personnel in the patient care network required training. Developing potential to have knowledge to be able to work effectively.

LV6 Health information system has been component OV31-37. We believe that the provision of health information and information management will lead to the most efficient management of the LHF. A 2011 study by Florence *et al.*²² found that an information sharing partnership between health services, police, and local government in Cardiff, Wales, altered policing and other strategies to prevent violence based on information collected from patients treated in emergency departments after injury sustained in violence.

LV7 Monitoring and evaluation has been component OV38-42. It is an important process to monitor the progress and results of LHF activities to ensure continuity and maximum efficiency. Kamuzara and Gilson (2007)¹⁸ study found that the influencing factors in the implementation of local health funds in Tanzania suggests that a lack of good management plans prevents the inability to assess or monitor the progress of implementation. This will affect future follow-up supervision.

Conclusions

In summary, the ACOLF is a 41-item survey rated on a sliding scale from 0-9, with 5 Basic management, 5 Service deliver for health care, 6 Leadership and governance, 7 Strategic planning, 6 Human resource development, 7 Health information system and 5 Monitoring and evaluation. The ACOLF subscales demonstrated convergent validity, internal consistency and reliability. The ACOLF is a concise, valid, and reliable instrument for evaluating local organization management differences in Basic management, Service delivers for health care, Leadership and governance, Strategic planning, Human resource development, Health information system and Monitoring and evaluation. This measure provides a new tool for ranking operation control of local security health fund in Thailand.

Author roles

Boonmee P.: Conceptualization, Data Curation, Formal Analysis, Methodology, Software, Writing – Original Draft Preparation; Kessomboon P.: Conceptualization, Methodology, Supervision, Writing – Review & Editing; Thongjit S.: Data Curation, Formal Analysis, Methodology, Visualization, Writing – Review & Editing.

Grant information

This study was granted by Faculty of Medicine, Khon Kaen University, Thailand; IN 63202.

Data availability

Underlying data

Data Archiving and Networked Services: Developing Assessment Criteria for Operation Control of Local Security Health Fund in the Upper Central Area, Thailand, <https://doi.org/10.17026/dans-245-3wxu>.²³

This project contains the following underlying data:

- [DATA_EFA prapot_F1000.dat](#)
- [DATA_EFA prapot_F1000.dta](#)
- [DATA_EFA prapot_F1000.sav](#)
- [DATA_EFA prapot_F1000.sps](#)

The name of data set shown is different in the file type so that it can be used in accordance with that program, for example file type “.sps” can be analyzed in the SPSS program.

Data are available under the terms of the [Creative Commons Zero “No rights reserved” data waiver](#) (CC0 1.0 Public domain dedication).

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Thank you to the authors for the excellent work in this article.

- The authors have clearly stated the purpose of the study along with the novelty. The Assessment Criteria for Operation Control of Local Security Health Fund (ACOLF) was made to improve the old assessment criteria.
- In the abstract, it would be better if the authors also mention the significant value of the statistical test.
- Current literature is a crucial aspect, it provides general and specific information about the problem, and also supports the authors' idea in delivering solutions. In this manuscript, from 23 references only a few articles are from the last five years. This could be because the authors want to give insight into the previous policy of operation control, so the authors used references from the last ten years, but it would be much better if the authors enrich the supporting idea with the newest sources.
- The authors have clearly explained the method used. Explain it step by step beginning with the latent variables which become the focus of novelty.
- In the sample size, they also explained how many participants participated in the study, consisting of different backgrounds, such as local politicians, government offices, and public technical officers. It would be much clearer for the readers the reason behind this selection. The authors may use inclusion and exclusion criteria to explain this part.
- The authors already provide ethical permission which is a good point.

- The assessment criteria that the authors try to develop may bring a good insight into the academic field, not only fixing the previous criteria, but the authors also improve new assessment with literature and experience item.
- This study was a cross-sectional analytical study. The ACOLF was tested by four experts to check the validity of the instrument. It is recommended for the authors to also explain the responsibility of each expert and also what is the expert criteria for this study.
- The authors have mentioned the content validity was between 0.76-1.0. It is a good point for the readers, if, in the future, the same study will be conducted, then this article could be one of the reliable references.
- The bias in the questionnaire in data collection was eliminated by designing questionnaires to be easy to answer. The authors may add some explanation about this. Whether the method to collect the data using the online method, giving form directly to the participant, or something else? Also, if the participant was unable to answer the questionnaire, what did the authors do to handle it?
- The authors have explained all the latent variables in the discussion and provided previous research to support the findings. It could be much improved by adding some of the authors' opinions in each latent variable explanation. Starting with the gap that is found in Thailand or comparing it with the 'status quo' or current situation.
- In the conclusion, the authors have summarized each item from ACOLF. In the last sentence, the authors can add recommendations not only for the local security health fund in Thailand but also for other countries that may have similar problems.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Yes

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Medical surgical nursing; tropical disease

We confirm that we have read this submission and believe that we have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however we have significant reservations, as outlined above.

Reviewer Report 05 January 2022

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Bhunyabhadh Chaimay

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The comments are as follows;

1. The research title mentioned the specific areas in the upper central area, Thailand, but the introduction part does not mention that related to this area. In addition, the gap of knowledge of developing assessment criteria is not clear why to perform this.
2. The authors mentioned that this study is a cross-sectional analytic study. In my opinion, this is a survey study or descriptive study, and there is no comparison group as an analytic study. This should be reviewed correctly.
3. The sampling method should be clarified. The sampling method as mentioned in this study seems to be the purposive sampling method. It is due to having no details of the multi-stage sampling and sampling frame.

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Partly

If applicable, is the statistical analysis and its interpretation appropriate?

Yes

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Public Health, Epidemiology

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

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