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Validation of Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU) among patients admitted to ICU at two centers in Addis Ababa, Ethiopia: A cross-sectional prospective study

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Acronyms and Abbreviations

CAM-ICU	Confusion Assessment method for Intensive Care Unit
CI	Confidence Interval
DSM	Diagnostic and Statistical Manual of Mental Disorder
ICDSC	Intensive care delirium screening checklist
k	kappa
SPSS	Statistical Package for Social Sciences
TASH	Tikur Anbessa Specialized Hospital

Abstract

Background: Confusion Assessment Method for Intensive Care Unit (CAM-ICU) is a widely accepted, easily available, and quick tool for assessment of delirium in ICU. Globally, multiple studies had been conducted to cross culturally translate and validate the tool in order to make it fit to the local setting. However, to the best of the author knowledge, it has not been cross-culturally translated and validated into Amharic language. Therefore this study aims to bridge the gap.

Objective: The study aimed to assess the Validity of Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU) among patients admitted to adult ICU in two centers in Addis Ababa, Ethiopia.

Method and materials: Institution based prospective cross-sectional study was conducted at the intensive care unit of Tikur Anbessa specialized hospital and Menelik-II hospital. A total of 132 eligible patients were included in the study. Data were collected by Nurses and resident physician using Google form from 1-December-2023 to 30-April-2024. Data analysis was done using to SPSS V.27. Descriptive analyses were done using frequency and percentage for categorical variables and mean with standard deviation for continuous variables. Reliability, inter-rater reliability (k), and acceptability of the tool was assessed.

Result: Translation to Amharic version was done by group of experts including anesthesiologists, psychiatrists, language experts, and the primary investigator ensuring content and face validity. A total of 132 patients participated in this study with a response rate of 95.65%. The Amharic version of CAM-ICU had high acceptance (100%), good reliability (Cronbach's alpha=0.718), and substantial inter-rater agreement (k=0.762). 11(8.3%) and 7(5.3%) patients were diagnosed with delirium by doctors and nurses respectively using CAM-ICU Amharic. Moreover, 7(5.3%) patients were diagnosed with delirium concurrently by both physicians and nurses.

Conclusion: Amharic version of CAM-ICU is an acceptable, valid, and reliable tool to assess delirium in ICU. Utilization of CAM-ICU Amharic in clinical practice after provision of proper training would enable better detection of delirium in ICU.

Key words: Validation, CAM-ICU, Amharic version, Delirium, TASH, Menelik-II, Ethiopia

1. Introduction

1.1. Background:

Delirium is a neuropsychiatric condition that can occur in each hospital setting. However, it is more prevalent among patients admitted to ICU with a reported magnitude reaching up to 89% and predilection to those on mechanical ventilation (1-4). Studies conducted in Ethiopia had shown that the magnitude of delirium among admitted patients ranged from 12.6 to 26.6% (5-7). Previous studies done globally had also shown that patients who are critically ill and are admitted to the ICU are at high risk of having delirium (3, 8-10). Although it can significantly affect in ICU morbidity, mortality, Length of stay of patients, it is commonly undetected and underdiagnosed (2, 9, 11).

Globally, there are various tools utilized to assess delirium (10). Confusion Assessment Method for Intensive Care Unit (CAM-ICU) is one tool developed by Dr. Elly and colleagues which is globally used to assess delirium in ICU (12). It was initially developed with intent of improving delirium assessment among patients who are admitted to the ICU and are mechanically ventilated. CAM-ICU has four features which are acute onset of changes or fluctuations in the course of mental status, assessment of inattention, Richmond Agitation Sedation Scale (RASS) scoring, and disorganized thought. The tool was shown to have a high sensitivity (93% and 100%), specificity (98% and 100%), and interrater reliability (k=0.96) while also being a quick and easy to use(12).

CAM-ICU has been validated and compared with standards in multiple global studies. Furthermore, it has been cross culturally translated and validated in 33 languages to date to be used among critically ill ICU patients (13-17). In Africa, the tool has been translated to Egyptian, Zambian, Zulu, and Tunisian versions (17). Moreover, the tool has also been validated by assessing its performance against other standards of assessing delirium such as the diagnosis of delirium experts and psychiatrist's diagnosis using DSM criteria. A recent meta-analysis that compared CAM-ICU with another very commonly used and validated tool known as Intensive Care Delirium Screening Checklist (ICDSC) had shown that the CAM-ICU had better sensitivity and specificity (18).

1.2. Statement of the problem

Delirium is a disease condition that has serious short term and long term health consequences (9). Moreover, it also increases ICU length of stay and hence the cost of care (8). As it is a preventable and treatable condition, early detection is of vital importance (10). Thus, developing a validated tool to facilitate the diagnosis of delirium had been given great emphasis.

There are no studies conducted in Ethiopia regarding the magnitude of delirium among ICU patients. Availing a culturally appropriate and psychometrically validated tool that could assess delirium in ICU is critical to foster research initiatives and nationwide collaboration to generate evidences in Ethiopia. In addition, Amharic is spoken by majority of Ethiopians and this could potentially facilitate assessment of delirium in ICU. To the best of the researcher's knowledge, there is no published study conducted to translate and adapt CAM-ICU to Amharic language.

1.3. Significance of the study

The output of this study would provide Ethiopian health practitioners with an easy to use, well understood, culturally appropriate, and psychometricaly tested CAM-ICU tool for use in local settings to assess in ICU delirium. The study would also serve to generate a reliable tool for Ethiopian researchers who in the future would want to conduct researches on delirium in ICU.

2. Literature review

Delirium is a preventable and treatable condition and early detection in the ICU would enable prompt treatment. Globally, there are about 6 different screening tools that are validated to

diagnose delirium in the ICU, which includes the CAM-ICU, the ICDSC, the Delirium Detection Score, the Neelon and Champagne (NEECHAM) confusion scale, the Cognitive Test for Delirium (CTD), and the abbreviated CTD (9, 19).

Although delirium is highly prevalent in the ICU with prevalence ranging from 16-89% percent (19) (20), it is often unrecognized and associated with adverse outcomes like self-extubation, removal of urinary catheters, prolonged ventilator dependence and prolonged ICU stay, higher mortality rates and consequently greater healthcare costs(19, 21). A study done in Intensive Care Unit of the University of Texas on 224 mechanically ventilated patient showed that delirium positive patients had mortality rate of 3.2 times higher with in 6^{th} months than patients with no delirium.

CAM-ICU is a tool which is an adapted version of the CAM and it was initially developed by Dr. Elly and colleagues in 2001 in United States of America with the aim of improving the assessment of delirium among non-verbal mechanically ventilated patients (9, 19). CAM –ICU Considers three of the four key features of delirium, i.e.,both an acute onset of mental status changes or a fluctuating course and inattention and either disorganized thinking or an altered level of consciousness (i.e., other than alert) (19). The tool was praised for its easiness to use the minimal time consumption to complete the assessment. However, some limitations that were raised by scholars were its inability to grade the severity of delirium and a one point in time nature of the assessment which doesn't correspond with the fluctuating nature of delirium.

Due to the high acceptance of the instrument, CAM-ICU has been translated in 33 languages globally. A study done in Greek in 2012 G.C in two general ICU to validate the Greek version of the CAM-ICU and compare its performance with DSM-5 had shown a sensitivity of 87.5% and 79.0%, and specificity of 91.0% and 87.0% respectively. Furthermore, it was also shown that the inter rater reliability of the study was 0.75 and Cronbachs alpha of the tool was 0.84. However, the study had limitation since the study had only small number of participant (13). Another study done in Spain to validate the Spanish version of CAM-ICU among 29 critical patients in large university hospital ICU has reported a high Cronbachs alpha (0.84), kappa

(0.91), sensitivity (80-83%), and specificity (96%) (22). A study done among 40 ICU patients in Sweden had also shown that the inter-rater reliability for 80 paired observation was k=0.81 which was substantial (15).

Meanwhile, a study done in Japan in a university affiliated hospital ICU on 82 patients to validate the CAM-ICU had demonstrated that the inter-rater reliability kappa was 0.85, Cronbachs alpha was 0.71 showing good reliability of the tool to assess delirium in ICU. Furthermore the sensitivity and specificity of the tool when compared to the DSM-IV was 78-83% and 95-97% respectively. However this study is also limited by the small number of study participants (23). Another study done in the Asian country Thailand to validate the Thai version of CAM-ICU among 70 ICU patients who are above 60 years of age had shown that the instrument had substantial inter-rater agreement (k=0.81) as well as higher sensitivity (92.3%) and specificity (94.7%) (24). Psychometric validation of the Arabic version of the CAM-ICU was done in 2018 in Saudi Arabia among 108 ICU patients showed the tool had moderate inter-rater reliability (k=0.66) (25).

Among African countries, cross cultural translation has been done in Tunisian, Arabic, a ZULU.
A study done in Tunisia in 2017 to validate the Tunisian version of CAM-ICU on 137 ICU patients had demonstrated that the Tunisian version of the tool had high inter-rater reliability (k=0.84) as well as good internal consistency (Cronbachs alpha >0.8). Moreover, the tool had high sensitivity (80.4-95.7%) and specificity (98.9%) of when compared to DSM-V (14). Meanwhile a study done in Cairo Egypt in 2018 to validate the Arabic version of CAM-ICU had revealed that the Arabic version tool had high sensitivity and specificity (>80%) as well as a substantial inter-rater rater reliability(k=0.82) (20). To date, there is no published study done in Ethiopia to translate and validate CAM-ICU in to local languages.
In summary the validation of the CAM-ICU globally had shown that the tool had high internal consistency (Cronbachs alpha= 0.71-084), moderate to high inter-rater reliability (k=0.66-0.85), high specificity, and good sensitivity. However almost all studies had limitation of small sample size intrinsic to pilot studies.

3. Objective

3.1. General objective

- To assess the Validity of Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU) among patients admitted to ICU at two centers in Addis Ababa, Ethiopia

3.2. Specific Objective

- To assess the validity of the Amharic version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU)
- To assess the prevalence of delirium among patients admitted to intensive care unit of Tikur Anbessa specialized hospital and Menelik-II hospital

4. Method and Material

4.1. Study setting:

The study was conducted at Tikur Anbessa Specialized Hospital and Menillik-II hospital which are located in the city of Addis Ababa, the capital city of Ethiopia. Tikur Anbessa specialized hospital, which is the largest hospital in the country, has surgical, medical and pediatric ICU with 6 beds each and a total of 8 mechanical ventilator to the whole ICU ,that is run by a responsible senior Anesthesiologist, Internist and Pediatrician to the respective units. There are also residents of first to final year rotating every month and Interns to SICU. The ICU also has a

total of 55 nurses working in three shifts with one to one patient ratio. There is also cardiac ICU with small distance separated from the major ICU and has 7 beds each having mechanical ventilator. Menillik II hospital has general ICU which has a total of 7 beds with 6 mechanical ventilator and it is led by Anesthesiologist.The study period is from 1-December, 2023 to 30-April, 2024.

4.2. Study design:

An institution based prospective cross-sectional study design was conducted.

4.3. Source population:

All adult patients admitted to the TASH-ICU and Menilik-II ICU and can understand and speak Amharic languages were the source population.

4.4. Study population:

All adult patients admitted to the TASH-ICU and Menilik-II ICU during the study period and can understand and speak Amharic languages were the study population.

4.5 Inclusion and exclusion criteria

i. Inclusion criteria

- All adult patients aged ≥18 years old who are admitted to TASH ICU and Menilik-II and stayed more than 24 hours were eligible for this study
- Patients who are responsive (RASS score > -2)
- Understand and Speak Amharic language well

ii. Exclusion criteria

- Those patients who have prior diagnosis of dementia, psychosis
- Those who have severe auditory impairment (deaf) were excluded from the study as they wouldn't be able to hear verbal questions and commands of feature 4.
- Those who were already diagnosed with delirium prior to assessment.

4.5. Sample size and Sampling procedure

4.5.1. Sample size

Sample size was calculated using single population proportion formula using the following assumptions: 5% level of precision (d), magnitude of delirium (P) 12.6% (7), 95% C.I. It yielded a sample size of 169.

$n = (Z_{\alpha/2})^2 * p*(1-p) / d^2$

$= (1.96)^2 * 0.126*0.874/ (0.05)^2 = 169$

Where n=sample size, Z= confidence interval, P=estimated magnitude of delirium, and d= margin of error.

Finite population correction using total population for the same previous calendar year (N=483) was applied to the initial sample size of 169 subjects.

Nf=N*ni/(N+ni)

=(483*169)/(483+169)=125

After accounting for a 10% non-response, a sample size of 138 was taken to be the final sample size for the study.

4.5.2. Sampling technique

All adult patients admitted to the ICU during the study period were included in the study

4.6. Variables

- Socio-demographic factors: Age and Sex.
- Clinical profile: Admission diagnosis, number of days after admission, mechanical ventilation, history of alcohol abuse, electrolyte abnormality, ICU medication.

4.7. Data collection instrument and procedures:

The original English version of CAM-ICU was used as source language for translation. The tool has 4 features which are acute onset or fluctuating courses, inattention, altered level of consciousness, and disorganized thinking. Cross cultural adaptation using a forward back ward translation of the tool was done by a team of psychiatrists, anesthesiologists, and language experts. First the tool was translated to Amharic version by a team consisting of the primary investigator, two senior anesthesiologists, two psychiatrists, and a language expert fluent in both Amharic and English. Secondly, the Amharic version of the tool was back translated to English

by another language expert who was blinded to the initial translation. Finally, the tool was compared to the original English version of CAM-ICU to check its consistency. Disagreements were settled through discussion between the investigator and the research advisors. Assessments were done on each patient by anesthesiology resident and nurses separated by 1 hour taking in to consideration the fluctuating nature of delirium and reducing risk of bias in assessment. Supervision of the overall data collection activity of the study was managed by the primary investigator.

4.8. Data processing and analysis

After exporting the data from google form, the data were cleaned and verified on Excel sheet. Data analysis was done using SPSS version 27. Descriptive analysis was done to describe the socio-demographic characteristics and clinical profile of the patients. Categorical variables were summarized using frequency and percentage. Continuous variables were summarized using mean and standard deviation after normality of distribution was assessed using Kolmogrov-smirnov test. Cronbach's Alpha was calculated to assess the reliability of the tool and alpha value of ≥ 0.7 was taken as reliable. Response rate and Completeness of the collected data were checked to assess the acceptability of the tool. In addition, agreement between the two assessors was evaluated using inter-rater reliability Cohen's Kappa (k) (26) and classified as fair (0.21-0.4), moderate (0.41-0.6), substantial (0.61-0.8), and perfect agreement (0.81-1.00).

4.9. Data quality assurance

Quality of the collected data was assured by carrying out a careful design of the data collection tool. Collected data were randomly checked for completeness manually by the Principal investigator.

4.10. Ethical consideration

Ethical approval was obtained from the department of anesthesiology, Addis Ababa University, School of Medicine. Informed verbal consent from the participants or the primary care giver was taken which ever appropriate. The retrieved data was kept strictly confidential. After data collection, data was de-identified and no attempts would be made to contact participants for further evaluation.

5. Result

5.1.Socio-demographic and clinical characteristics of respondents

In this study, 132 patients participated with a response rate of 96.56%. More than half of the respondents 75 (56.8%) were females and the mean age of respondents was 41 years (SD= ±15.72). The mean days since admission was 5.45 days (SD= ±6.39). The most common indications for admission were postoperative follow up 39(29.5%), respiratory failure 22(16.7%), and Congestive heart failure 19(14.4%). Of the study participants, 23(17.4%) were on mechanical ventilator and 128(97%) of the patients were on opioids. Furthermore, 6(4.5%) patients had history of alcohol abuse and 29 (22%) had electrolyte abnormality. (**Table 3**)

Table 1. Socio-demographic and clinical characteristics of patients admitted to ICU at TASH and Menilik-II Hospitals Addis Ababa, Ethiopia, 2023-2024

Variables		Frequency (n)	Percentage (%)
Age (mean, SD)		41	15.72
Sex			
	Male	57	43.2
	Female	75	56.8
Days since Admission (mean, SD)		5.45	6.39
Admission diagnosis			
	CHF	19	14.4
	MI	13	9.8
	Post-op	39	29.5
	Pulmonary embolism	8	6.1
	Respiratory failure	22	16.7
	Sepsis	16	12.1
	Shock	6	4.5
	others	9	6.8
Mechanically ventilated			
	Yes	23	17.4
	No	109	82.6
Alcohol abuse			
	Yes	6	4.5
	No	126	95.5
Electrolyte abnormality			
	Yes	29	22
	No	103	78
Medications			
	Opoid	128	97

	Benzodiazepam and opoid	4	3

5.2. Acceptability, Internal consistency, and Inter-rater reliability of CAM-ICU Amharic

5.2.1 Content and Face validity of the tool

A group of experts from various backgrounds, including anesthesiologists, psychiatrists, and language experts, were involved in the translation and adaptation of the tool. In addition, the draft tool was provided for assessment by third year anesthesiology residents, which were potential participants of the study. This ensured the tool has both content and face validity.

5.2.2 Acceptability of the tool

The acceptability of the tool in the study was 100% with all raters in the study completing all sections of the tool without missing data.

5.2.3 Reliability of the tool

In this study, we found that all four features had good reliability with Cronbachs-α for acute onset/fluctuating course, inattention, altered level of consciousness, and disorganized thinking of 0.846, 0.728, 0.888, and 0.729 respectively. The overall reliability of CAM-ICU Amharic was 0.718.

Table 2. Internal consistency of the Amharic version of CAM-ICU for assessement of delirium among patients admitted to ICU at TASH and Menilik-II Hospitals Addis Ababa, Ethiopia, 2023-2024

Features	Cronbach α
Feature 1(Acute onset or fluctuating course)	0.846
Feature 2 (Inattention)	0.728
Feature 3 (Altered level of consciousness)	0.888
Feature 4 (Disorganized thinking)	0.729
Overall	0.718

5.2.4 Inter-rater reliability of the tool

The inter-rater reliability assessment for the acute onset or fluctuating course (k=0.730) and altered level of consciousness (k=0.798) showed a statistically significant substantial agreement. Meanwhile, for inattention (0.570) and disorganized thinking (0.570), there was a statistically significant moderate inter-rater agreement. Regarding the overall CAM-ICU score, there was a statistically significant substantial inter-rater agreement with kappa=0.762.

Table 3. CAM-ICU Amharic Inter-rater reliability between Resident doctors and nurses for assessment of delirium among patients admitted to ICU at TASH and Menelik-II Hospital, Addis Ababa, Ethiopia, 2023-2024

Features	Kappa (k)	p-value
Feature 1(Acute onset or fluctuating course)	0.730	<0.001
Feature 2 (Inattention)	0.570	<0.001
Feature 3 (Altered level of consciousness)	0.798	<0.001
Feature 4 (Disorganized thinking)	0.570	<0.001
Overall score	0.762	<0.001

5.3 Delirium features and delirium assessment

In this study, 19(14.4%) of patient and 15(14.4%) of patient were assessed to have acute or fluctuating course by doctors and nurses respectively. In addition, 17(12.9%) of patient and 21(15.9%) of patient were assessed to have inattention by doctors and nurses respectively. Moreover, 18(13.6%) of patient and 16(12.1%) of patient were assessed to have altered consciousness by doctors and nurses respectively. Furthermore, 27(20.5%) of patient and 33(25%) of patient were assessed to have disorganized thinking by doctors and nurses respectively. Finally, 11(8.3%) of patient and 7(5.3%) of patient were assessed to have delirium

by doctors and nurses respectively. Of these, 7(5.3%) were concurrent diagnosis of delirium by both doctors and nurses.

Table 4: Delirium features assessment by doctors and nurses using CAM-ICU Amharic among patients admitted to ICU at TASH and Menelik-II Hospital, Addis Ababa, Ethiopia, 2023-2024

Features		Doctors assessment		Nurses assessment	
		N	%	N	%
Acute change or fluctuating course					
	Yes	19	14.4	15	11.4
	No	113	85.4	117	88.4
Inattention					
	Yes	17	12.9	21	15.9
	No	115	87.1	111	84.1
Altered consciousness					
	Yes	18	13.6	16	12.1
	No	114	86.4	116	87.9
Disorganized thinking					
	Yes	27	20.5	33	25.0
	No	105	79.5	99	75.0
Delirium based on CAM-ICU score					
	Yes	11	8.3	7	5.3
	No	121	91.7	125	94.7

6. Discussion

This study aimed to translate, psychometrically test, and validate Amharic version of CAM-ICU. We underwent a series of translation and back translation with group of experts composed of

health professionals (psychiatrists and nurses), published Amharic authors, and language experts to ensure the content and face validity.

The Amharic version of CAM-ICU was found to have excellent acceptability without any missing data. Moreover, the tool was found to have a high internal consistency (Cronbachs alpha values of greater than 0.7) for all features of delirium. This finding is comparable to studies conducted in Spain (27), Japan(23), Greek (13), and Tunisia (14) that reported Cronbachs alpha value of 0.84, 0.71, 0.84 and 0.886 respectively. This shows that Amharic CAM-ICU is a reliable assessment tool for delirium among ICU patients.

Furthermore, Amharic CAM-ICU was shown to have a substantial inter-rater reliability between nurses and doctors for feature 1 and 3 but moderate score for inattention and disorganized thinking. This could be related to the subjective nature of assessments for feature 1 and 3 and the difference in level of expertise of the assessors. However, the overall inter-rater reliability between the two groups was substantial. This is in comparative agreement with previous studies conducted in Japan (23), Greek(13), Sweden(15), Tunisia(14), Egypt (20), and Thailand (28) that reported Cohen's Kappa 0.85, 0.75, 0.81 0.844, 0.82, and 0.81 respectively and higher than a study conducted in Saudi Arabia(25) (k=0.66). This shows us that the tool can be used by various groups of professionals after proper training to reliably diagnose delirium. This is specifically important in busy ICU's with limited staffing, as it would enable assessment of delirium by various groups of professionals.

In this study, 7(5.3%) of the patients were concurrently diagnosed with delirium by both nurses and physicians. This is lower than reported by previous studies done globally (13, 25, 28). This difference could be due to the differences in the clinical characteristics of the patients included, the type of professionals included, and differences in methodology. Our study included a comparatively lower proportion of patients that are mechanically ventilated than previous studies. This could potentially decrease the observed magnitude of delirium. Furthermore, previous studies included assessors from same professional categories with near similar experience. This could potentially affect the concordance of assessment of delirium between the assessors included in the study.

Strength and limitation

This study is the first study conducted in Ethiopia to validate an Amharic version of CAM-ICU. The translation to Amharic version was done by a team of professionals with extensive expertise in their respective fields. Furthermore, the study included a comparatively larger sample size than previous studies conducted globally. However, the study was not without limitations. In this study, we were not able to test the sensitivity, specificity, positive predictive value, and the negative predictive value of the tool against gold standard delirium assessment tools like the DSM-V. Secondly, due to multiple competing clinical activities carried out by the assessing professionals, strict adherence to the 1 hour inter-assessment interval was not achieved for some patients.

7. Conclusion and recommendation

Amharic CAM-ICU is an acceptable, reliable, and valid tool for assessment of delirium among patients admitted to ICU.

Based on the findings, the following recommendations were forwarded.

1. We recommend health professionals working in ICU to utilize the Amharic version of CAM-ICU in their daily practice to diagnose delirium.

2. We recommend the department of anesthesiology to adopt the tool, provide training on Amharic CAM-ICU for health professionals and incorporate it into practice.

3. We recommend researchers to utilize the tool in future researches to be conducted on delirium in ICU to enable uniformity of assessment and comparability of output.

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Annex I:

Questionnaire

Information sheet

Date_____ Code_____

Greetings,

Dear respondent, my name is _____. I am a data collector for the study "Validation of Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU) among patients admitted to ICU in Tikur Anbessa specialized hospital". The study's principal investigator is Mahlet Tesfaye, Anesthesiology critical care and pain medicine resident at Addis Ababa University College of health sciences, as a requirement of partial fulfillment of specialty training.

The study aims to Validate Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU) which is a tool used to diagnose delirium. You will be requested to respond the appropriate answer you think to respond. The study will take a maximum of 10 minutes and your name and other personal identifiers will not be recorded. No incentive of any form will be given for your participation. All information you provide is confidential. Your participation is on voluntary basis and you are entitled to skip responses for any question or totally discontinue your participation at any moment without a precondition.

Do you volunteer to proceed with the study?

If not volunteer, thank and stop. If volunteer, continue

Name of the interviewer_____ Sign_____ Date____ _____

Address of the principal investigator

Mahlet tesfaye

Tel: 0919941426

Email: mahtes167@gmail.com

Consent Form

I, the undersigned, have been informed that the purpose of this particular research is to assess Validity of Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU) among patients admitted to ICU in Tikur Anbessa specialized hospital. I have also been informed that the information I give will be used only for the purpose of this study. My identity and the information I provided will be kept confidentially. I have also gotten information that I can refuse to participate in the study or not to respond to questions I am not interested in. Furthermore, I have been informed that I can stop responding to the questions at any time in the process.

Based on the above information, I agreed to participate in the research voluntarily with the hope of contributing (on behalf of one) to the effort of knowing the Validity of Amharic Version of Confusion Assessment Method for Intensive Care Unit (CAM-ICU)

Signature: _____ Date: _____

Address of Investigator:

Mahlet Tesfaye Tel: 0919941426

Email:mahtes167@gmail.com

Annex II:

Questionnaire

Section A: socio-demographic and clinical profile

No.	Variables	Responses	Remarks
1.	Age of respondent (in completed years)	Specify_____	
2.	Sex of respondent	a) Male b) Female	
3.	Days since admission	Specify_____	
4.	Admission diagnosis		
5.	Mechanically ventilated	a) Yes b) No	

Section B: CAM-ICU delirium assessment

DECLARATION OF THE PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the Department and College, in effect at the time of grant is forwarded as the result of this application.

Name of the student: _____

Date. _____ Signature _____

APPROVAL OF THE FIRST ADVISOR

Name of the first advisor: _____

Date. _____ Signature _____

APPROVAL OF THE SECOND ADVISOR

Name of the second advisor: _____

Date. _____ Signature _____