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Research Article

Comparison of Reability and Validity Chinese Four-Level and Three-District Triage Standard (CHT) and Australasian Triage Scale (ATS)

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Abstract

Aims: The increase in visits to the emergency room resulted in a buildup of patients and affected the services in the room. The role of the emergency medical team in the initial assessment (triage) is very important to ensure that the right patient is in the right place at the right time and that nothing is missed. Nurses conduct studies and collect data accurately and consistently in 2 ways, namely reliability and validity.
Methods: This type of research is quantitative with a comparative study design. The data collection instrument is primary data using a checklist observation sheet. The analysis used is univariate and bivariate.
Results: Based on the results of the research conducted, it was shown that there were significant differences in the reliability and validity of the Chinese Four-Level and Three-District Triage Standard (CHT) and the Australasian Triage Scale (ATS) in emergency room patients with a p value = 0.000 (p <0.05).
Conclusion: health workers, especially in the emergency room unit, will be able to perform triage quickly and accurately so as to reduce mortality.

Keywords
Triase CHT; ATS; Triage level; reability triase; validity triase

INTRODUCTION

The emergency room is used as a service unit in a hospital that provides initial or advanced treatment for those suffering from illness or injury that can threaten the patient's survival (Decree of the Minister of Health Number 856/Menkes/SK/IX, 2009). Based on the Decree of the Minister of Health of the Republic of Indonesia in 2009, data on patient visits to the emergency room in Indonesia were 4,402,205 patients (13.3%) of the total number of visits to public hospitals (Kundiman, Kumaat, & Kiling, 2019). Some of the causes of overcrowding in the ER are the lack of staff/personnel, inadequate inpatient beds and the increasing demand for the number of patients using the ER (1–3). The increase in visits to the emergency room resulted in an overload (overload of patients) and of course affected the services in that room.

The role of the emergency medical team in the initial assessment (triage) is very important to ensure that the right patient is in the right place at the right time and that nothing is missed (4). The meta-analysis study conducted (5) gave more convincing results, namely the combined coefficient for ATS was 0.428 (95% CI 0.340-0.509) where the reliability for adults was higher than for children. Thus, ATS has demonstrated an acceptable level of overall reliability in the emergency department (6,7)

The meta-analysis study conducted (5) gave more convincing results, namely the combined coefficient for ATS was 0.428

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

(95% CI 0.340-0.509) where the reliability for adults was higher than for children. Thus, ATS has demonstrated an acceptable level of overall reliability in the emergency department (6).

METHODS

This research is a quantitative study and the method used is another research method, namely a comparative study conducted from December 1 to December 30, 2022. Using the Kolmogorov-Smirnov statistical test and followed by paired sample t-test and ANOVA because the data is normally distributed. This study used a behavioral checklist observation sheet. The observation was carried out when the new patient came to the ER until the patient received treatment. In this study the dependent variables were CHT and ATS triage. While the independent variables are reliability and validity.

RESULTS

Univariate Analysis

This analysis was carried out to find out the descriptive description of each variable. The data collected was analyzed descriptively by looking at the percentage of data collected and producing the proportion of each variable measured and presented in the form of a distribution table.

Table 1. Distribution of the percentage of ATS triage

ATS	FREQUENCY (f)	PERCENTAGE (%)
Fast	145 people	38,7
Standard	230 people	61,3
TOTAL	375 people	100

Based on table 1 shows that of the 375 respondents who were examined as many as 145 people (38.7%) were handled by ATS triage officers with fast categories, namely 1-60 seconds, and as many as 230 people (61.3%) were handled by ATS triage officers with the standard category is above 1 minute

Table 2. Percentage Distribution of CHT triage

CHT	FREQUENCY (f)	PERCENTAGE (%)
Fast	148 people	39,5
Standard	227 people	60,5
TOTAL	375 people	100

Data analysis: based on table 2 shows that of the 375 respondents who were examined as many as 148 people (39.5%) were handled by CHT triage officers in the fast category, namely 1-60 seconds, and as many as 227 people (60.5%) were handled by officers ATS triage with a standard category that is above 1 minute.

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

Table 3 Frequency distribution of educational reliability

EDUCATION	FREQUENCY (f)	PERCENTAGE (%)
Tall	269	71,7
Standard	106	28,3
TOTAL	375	100

Based on the research results in table 3 above, it can be seen that respondents who have the first reliability value, namely education in the high category, namely 269 times (71.7%) are able to carry out triage and with standard education 106 times (28.3%) in conducting triage.

Table 4. Frequency distribution of long-time reliability

EDUCATION	FREQUENCY (f)	PERCENTAGE (%)
>5 years	78	20,8
1-5 years	297	79,2
TOTAL	375	100

The long term reliability value of working at the Mekarsari Hospital was in the high category, namely 78 times (20.8%) doing triage, while the standard value was 297 times (79.2%) when doing triage.

Table 5. Frequency distribution of career path reliability

CAREER PATH	FREQUENCY (f)	PERCENTAGE (%)
Tall	123	32,8
Standard	252	67,2
TOTAL	375	100

The third reliability value is the career path at Mekarsari Hospital with a high category of 123 times (32.8%) doing triage, while with a standard category 252 times (67.2%) doing triage.

Table 6. Frequency distribution of reliability training

TRAINING	FREQUENCY (f)	PERCENTAGE (%)
trained	321	85,6
Untrained	54	14,4
TOTAL	375	100

The fourth reliability value is triage training both internally and externally carried out in the Mekarsari hospital environment with the trained category 321 times (85.6%) conducting triage, while the untrained category 54 times (14.4%) in conducting triage.

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p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

Table 7. Frequency distribution of respondent's age validity

AGE	FREQUENCY (f)	PERCENTAGE (%)
Infant (0 – 12 months)	5	1,3
Child (1 – 12 years)	33	8,8
Adult (13 – 45 years)	165	44,0
TOTAL	375	100

Based on the results of the study in table 7 above, it can be seen that the respondents who had the first validity value, namely the age of the patient, obtained the frequency of values for infants (0-12 months) of 5 patients (1.3%), children (1-12 years) of 33 patients (8.8%), adults (13-45 years) a total of 165 patients (44%) and elderly (> 45 years) a total of 172 patients (45.9%) who were admitted to the emergency department of the Mekarsari Hospital during the study.

Table 8. Frequency Distribution of GCS validity

GCS	FREQUENCY (f)	PERCENTAGE (%)
compos mentis	362	96,5
apatis	7	1,9
somnolen	4	1,1
semi coma	1	0,3
coma	1	0,3
TOTAL	375	100

The second validity value is the Glasgow coma scale, it was found that a number of patients during the study had a compos mentis condition of 362 patients (96.5%), apathetic 7 patients (1.9%), somnolence 4 patients (0.3%), semi coma 1 patient (0.3%) and coma 1 patient (0.3%).

Table 9. Frequency Distribution of Systolic Blood Pressure Validity

TDS	FREQUENCY (f)	PERCENTAGE (%)
<120 (normal)	98	26,1
120 -139 (pre-hypertension)	156	41,6
140 - 159 (stage 1 tension)	87	23,2
> 160 (stage 2 tension)	34	9,1
<120 (normal)	98	26,1
TOTAL	375	100

The patient's systolic blood pressure value consisted of several categories, namely with the normal value category (<120) there were 98 patients (26.1%), with the pre-hypertension category (120-139) there were 156 patients (41.6%), with the tension category stage 1 (140-159) there were 87 patients (23.2%) and there were stage 2 tension (> 160) there were 34 patients (9.1%).

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

Table 10. Frequency Distribution of the validity of Diastolic Blood Pressure

TDD	FREQUENCY (f)	PERCENTAGE (%)
<80 (normal)	241	64,3
80 - 89 (pre-hypertension)	88	23,5
90 - 99 (stage 1 tension))	33	8,8
> 100 (stage 2 tension)	13	3,5
<80 (normal)	241	64,3
TOTAL	375	100

The patient's diastolic blood pressure values consisted of several categories, namely in the normal category (<80) there were 241 patients (64.3%), in the pre-hypertension category (80-89) there were 88 patients (23.5%), in the high blood pressure category stage 1 (90-99) there were 33 patients (8.8%) and stage 2 tension category (> 100) there were 13 patients (3.5%).

Table 11. Frequency distribution of temperature validity

TEMPERATURE	FREQUENCY (f)	PERCENTAGE (%)
35 - 37 C (normal)	234	62,4
<35 C (hypothermia)	1	0,3
37,1-41,1 C(Febris)	140	37,3
TOTAL	375	100

The temperature values of the patients consisted of several categories, namely with the normal temperature category (35-370C) there were 234 patients (62.4%), in the hypothermic category (<350C) there was 1 patient (0.3%) and the febrile category (37.1 – 41.10C) there were 140 patients (37.3).

Table 12. Frequency Distribution of Heart Rate validity

HR	FREQUENCY (f)	PERCENTAGE (%)
60 -100 (normal)	236	62,9
> 100 (tachycardia)	139	37,1
TOTAL	375	100

Heart rate (HR) values consist of several categories, namely the normal HR category (60-100x/min) there are 236 patients (62.9%), and the tachycardia category (> 100x/min) there are 139 patients (37.1%).

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

Table 13. Frequency Distribution of the validity of the Respiratory Rate

RR	FREQUENCY (f)	PERCENTAGE (%)
12 - 24 (Normal)	283	75,5
> 24 (Tachypnea)	92	24,5
TOTAL	375	100

The respiratory rate (RR) value consisted of several categories, namely the normal value category (12-24x/min) there were 283 patients (75.5%) and the tachypnea category (> 24x/min) there were 92 patients (24.5%).

Table 14. Frequency distribution of saturation validity

Saturation	FREQUENCY (f)	PERCENTAGE (%)
95% - 100% (Good)	369	98,4
93% - 94% (Not Good)	4	1,1
< 92% (Not Good)	2	0,5
TOTAL	375	100

The saturation value consists of several categories, namely in the good category (95% - 100%) there are 369 patients (98.4%), the category is not good (93% - 94%) there are 4 patients (1.1%) and the category is not good (<92%) there were 2 patients 0.5%).

Normality test

Prior to bivariate analysis, a normality test was first performed on the comparative value of the reliability and validity of CHT and ATS triage in emergency room patients at the hospital. Mekar Sari in 2022. The data normality test was carried out by the Kolmogorov-Smirnov One-Sample Normality test because the number of respondents was > 100. The aim was to find out whether the data was normally distributed or not (8,9).

Table 15. Normality Test One-Sample Kolmogorov-Smirnov Test

Variable	N	Std. Deviation	Statistic	df	Asymp. Sig. (2-tailed)
Keparaan Pruritus	375	0.43406735	0.128	0.117	0.250

Based on table 15, it shows that the results of the One-Sample Kolmogorov-Smirnov normality test show a significance value of 0.250 (> 0.05), so it can be concluded that the residual values are normally distributed.

Bivariate Analysis

This analysis is to determine the effect of an increase in Quick Of Blood (QB), on the severity of pruritis uremia in Hemodialysis patients at the Hospital. Mekar Sari Year 2022, Testing the

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

hypothesis proposed is convincing enough to be accepted or rejected. In this study, the objective was to use the Independent Sample-Test to find out whether there is a difference in the average of two unpaired samples. The requirements of the Independent Sample-Test Test, the parametric statistical test must be normal and homogeneous.

Table 16. Comparison of Reliability and Validity of CHT and ATS with Independent Sample-Test

CHT	sig (2-tailed)	95% Confidence Interval	
		lower	Upper
ATS	0.000	0,861	0,741
	0.000	0,865	0,737

Based on table 16, the parametric test obtained a sig (2-tailed) result of 0.000 (<0.05) so it was concluded that there was a significant comparison in the Reliability and Validity values in CHT and ATS triage in emergency room patients at the hospital. Mekar Sari in 2022.

DISCUSSION

Based on the results of a comparative study of ATS and CHT triage, there were 227 patients who performed standard results (triage was carried out in one minute) with an average value of 1.93. This shows that there is a significant difference p <0.000. The results of research (10–12)state that the reliability comparison between CHT and ATS comes from data collected when the same nurse applies these two triage tools to allocate the same patient, the overall consistency value is 0.654 (95% C1 0.622-0.689) and 0.630 (95% CI 0.594-0.669) with ATS levels 3 and 4 combined. Based on population distribution analysis, category 2 and category 3 CHT and ATS patients accounted for 30% to 40% and 50% to 60% of patients, respectively, indicating that the number of potential crisis or emergency patients visiting the ED is relatively large. from a tertiary hospital. In this two different triage studies, 4 levels of CHT (level 1, level 2, level 3, level 4) and 4 levels (ATS1, ATS2, ATS3, ATS4) showed the greatest value, namely at level 3 there were 255 patients (95% CI 0.394) with a different average at the ATS and CHT levels which is 0.000 (p <0.05). While CHT with zone 3 distric has the highest value in the yellow zone for 260 patients with an average "different" value of 0.01 (p <0.05).

In (13) stated that there were differences in distribution between the ATS groups (p <0.001). When the 2 triages were compared as triage 4 levels, the distributions proved to be significantly different (p < 0.003). For categories 1 and 4, the comparison between other groups was statistically significant, p < 0.05. The results showed that out of 10 professional health workers in the Mekarsari Hospital emergency room, 375 patients were triaged, who were treated with two different triages, namely ATS and CHT with the criteria for health education with a standard educational level (DIII nursing), 269 times triaging patients (95% CI 1.61) for ATS and (95% CI 1.60) for CHT with the same average of 0.817 (p>0.05). While the length of time the health worker worked 297 times was able to do triage with on average there was a significant difference in CHT (0.013) and ATS (0.041), namely working less than 5 years. While the career path at Mekarsari Hospital is assessed that PK1 & PK2 do more triage than PK3 nurses because the number of nurses in the ER is 10 people dominated by junior nurses who work at 1 - 5 years and for the Diploma 3 level of Nursing education. This shows the

p-ISSN : 2354 8428 | e-ISSN: 2598 8727

Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

results of a significant difference in ATS is 0.002 and in CHT is 0.005. Providing with the services of trained health workers (BTCLS) 321 times able to do triage (95% CI 1.58) on ATS and CHT, on average there is a significant difference with the ATS value of 0.001 and CHT is 0.02.

Based on the Regulation of the Minister of Health of the Republic of Indonesia Number 129 of 2008 or based on the patient's dependency level calculated using the Douglas formula, the determination of the type of nursing staff varies, where the standard type of head of room staff is prioritized by Nurses, primary nurses are also prioritized by Nurses, Associate nurses at least DIII Nursing. Some theories also say that the higher the level of one's knowledge, the easier it will be to receive information about objects or related knowledge. (14,15) of the 12 triage nurses who participated in his study there were 7 intermediate nurses (2 with more than 20 years of emergency experience and 5 were junior nurses in terms of professional titles. There was no difference between the 2 groups between nurse instructors and nurse assistants in the distribution of professional positions. Analysis of the reliability of the same triage tool between the 2 groups of nurses was based on data from 254 initial patients with a total consistency of 0.686 (95% CI 0.608-0.757) between the 2 groups of nurses for CHT and 0.731 (95% CI 0.663-0.790)) for ATS That there is no significant difference between the length of time working with the triage handler either ATS or CHT.

The results of the validity study of the patient's age with the highest number of ED admissions were in the elderly (> 45 years) of 172 patients (95% CI 1.63) in ATS and (95% CI 1.60) in CHT. In the results of the ANOVA test, the value of sig 0.173 was obtained for ATS and sig 0.316 for CHT, so the average is said to be the same. The dominant value of GCS in compos mentis was 362 patients (95% CI 1.63) in ATS and CHT. The significance value at ATS is 0.010 and CHT is 0.000, this indicates that the average results are different. (14) stated that most of the patients who entered the ER were middle-aged or elderly with an average age of 58 years. Some data show that the rate of emergency visits increases every year, especially for patients in triage categories 2 and 3. The predominant value of GCS on compos mentis was in 362 patients (95% CI 1.63) on ATS and CHT. The significance value at ATS is 0.010 and CHT is 0.000, this indicates that the average results are different. The results of the study on systolic blood pressure were included in the pre-hypertension category (120-139mmHg) in 156 patients (95% CI 1.71) on ATS and CHT. The "different" average results are known to have a sig ATS value of 0.018 and a CHT of 0.03. The highest results for diastolic blood pressure were in the normal category (<80mmHg) in 241 patients (95% CI 1.65) on ATS and CHT. the average "no difference" in ATS with a sig value of 0.165 and an average "different" of 0.015.

(14) namely at systolic blood pressure the mean blood pressure value (124 – 135mmHg) with an average of no difference with a sig result of 0.042. As for the value of diastolic blood pressure with a mean value (69-97mmHg) has an average of no difference with a value of sig0.036. Several studies have reported that systolic blood pressure is closely related to the severity of the disease. While hypotension (90mmHg) is closely related to hospitalization and death, on the contrary hypertension has a protective effect. No differences in blood pressure according to triage category were found in the ATS and CHT studies, possibly because no stratification analysis was performed. The highest results in the temperature category were normal (35-370C) in 234 patients (95% CI 1.63) on ATS and CHT. The average result of "there is a difference" is known to be the sig ATS value of 0.524 and CHT of 0.254. Normal HR (60-100x/min) in 236 patients (95% CI 1.66) and CHT (1.65) with an average difference known to the sig (2-tailed) ATS and CHT values of 0.013 and CHT of 0.015. (p<0.005). Normal RR (11-24x/min) in 283 patients

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

(95% CI 1.63) and CHT (1.62) average "no difference" ATS and CHT of 0.400 and 0.251. Saturation is a good category (95 %-100%) of 369 patients (95% CI 1.62) on ATS and CHT (95% CI 1.61). The average results show no difference, it is known that the sig ATS value is 0.277 and CHT is 0.296.

(14) namely at a mean temperature of (36.5-36.6) CHT and (36.5-36.7) ATS and has an average difference of significance with a value of <0.001. Physiological indicators such as temperature, respiration, pulse and saturation were strongly associated with the CHT and ATS triage categories (p<0.001).

CONCLUSION

This study compares the differences in the application of the Chinese Four-Level and Three-District Triage Standard (CHT) and the Australasian Triage Scale (ATS) in the reliability of decision making in the speed of patient treatment. The reliability level of CHT and ATS is considered standard/moderate. Both systems can be used to identify critical patients in the Mekarsari Bekasi Hospital Emergency Room. In order to improve the reliability and validity of emergency triage, it is necessary to conduct further studies on the triage system in terms of structure and content. The description of the validity of decision making and the speed of patient treatment using the differences in the application of the Chinese Four-Level and Three-District Triage Standard (CHT) and the Australasian Triage Scale (ATS) validity for the patient's age category has the greatest value in the elderly compared to adults, children and infants. The validity of the GCS category was dominated by the compos mentis GCS value. The validity of the systolic blood pressure category has the most results for normal values and diastolic blood pressure has the highest value for pre hypertension. The validity of the temperature category has the highest value at normal temperature followed by the febrile value. HR category validity has more normal values than tachycardia values. The validity of the RR category has a higher normal value than the tachypnea value. Saturation validity has a dominant value on good results. The description of the reliability of decision making and the speed of patient handling using the difference in the application of the Chinese Four-Level and Three-District Triage Standard (CHT) and the Australasian Triage Scale (ATS) the reliability of the education category results is that higher education is higher than standard. Long working reliability has a value with standard results, namely less than 5 years. The reliability of career paths having the most results is a standard compared to high career paths. The reliability of the training has a high value on the results of the trained compared to the untrained.

REFERENCES

1. Chang AM, Cohen DJ, Lin A, Augustine J, Handel DA, Howell E, et al. Hospital strategies for reducing emergency department crowding: a mixed-methods study. Ann Emerg Med. 2018;71(4):497–505.
2. Chen D, Zhang F, Yu C, Jiao A, Xiang Q, Yu Y, et al. Hourly associations between exposure to ambient particulate matter and emergency department visits in an urban population of Shenzhen, China. Atmos Environ. 2019;209:78–85.
3. Boyle A, Beniuk K, Higginson I, Atkinson P. Emergency department crowding: time for interventions and policy evaluations. Emerg Med Int. 2012;2012.
4. Martin A, Davidson CL, Panik A, Buckenmyer C, Delpais P, Ortiz M. An examination of ESI triage scoring accuracy in relationship to ED nursing attitudes and experience. J Emerg Nurs. 2014;40(5):461–8.
5. Ebrahimi M, Mirhaghi A, Mazlom R, Heydari A, Nassehi A, Jafari M. The role descriptions of triage nurse in emergency department: a Delphi study. Scientifica (Cairo). 2016;2016.

https://doi.org/10.33755/jkk

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Jurnal Keperawatan Komprehensif
Vol. 9 Special Edition June 2023

6. Atmojo JT, Widiyanto A, Yuniarti T. RELIABILITAS SISTEM TRIASE DALAM PELAYANAN GAWAT DARURAT: A REVIEW. Intan Husada: Jurnal Ilmiah Keperawatan. 2019;7(2):23–31.
7. Widiyanto A, Handayani RT, Mahrifatulhijah M, Atmojo JT, Darmayanti AT. The Canadian Emergency Department Triage & Acuity Scale (CTAS) dan Perubahannya: A REVIEW. Avicenna: Journal of Health Research. 2019;2(2):88–95.
8. Mishra P, Pandey CM, Singh U, Gupta A, Sahu C, Keshri A. Descriptive statistics and normality tests for statistical data. Ann Card Anaesth. 2019;22(1):67.
9. Mishra P, Pandey CM, Singh U, Gupta A. Scales of measurement and presentation of statistical data. Ann Card Anaesth. 2018;21(4):419.
10. Zhu A, Zhang J, Zhang H, Liu X. Comparison of reliability and validity of the Chinese four-level and three-district triage standard and the Australasian triage scale. Emerg Med Int. 2019;2019.
11. Zhiting G, Jingfen J, Shuihong C, Minfei Y, Yuwei W, Sa W. Reliability and validity of the four-level Chinese emergency triage scale in mainland China: A multicenter assessment. Int J Nurs Stud. 2020;101:103447.
12. Ng CJ, Chien CY, Seak JCJ, Tsai SL, Weng YM, Chaou CH, et al. Validation of the five-tier Taiwan triage and acuity scale for prehospital use by emergency medical technicians. Emergency Medicine Journal. 2019;36(8):472–8.
13. Elsayed ZM, El-Zeny AB, Moustafa MS, Ellouly HA. Comparison between Australasian triage scale and emergency severity index. The Egyptian Journal of Surgery. 2020;39(2):455–60.
14. Zhu A, Zhang J, Zhang H, Liu X. Comparison of reliability and validity of the Chinese four-level and three-district triage standard and the Australasian triage scale. Emerg Med Int. 2019;2019.
15. Kim JH, Kim JW, Kim SY, Hong DY, Park SO, Baek KJ, et al. Validation of the Korean Triage and Acuity Scale compare to triage by emergency severity index for emergency adult patient: preliminary study in a tertiary hospital emergency medical center. Journal of the Korean Society of Emergency Medicine. 2016;27(5): 436–41.

https://doi.org/10.33755/jkk