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Evaluation Of New Havun And ALT-70 Predictive Models In Patients With Cellulitis

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I. Introduction

Cellulitis is a bacterial skin infection characterized by erythema, warmth, swelling, and tenderness, typically affecting the lower extremities. This infection can advance swiftly and, if not addressed, may result in severe complications like abscesses, sepsis, and necrotizing fasciitis. Worldwide, cellulitis contributes significantly to emergency department visits, with over 2.9 million cases reported annually in the United States alone. In the UK, around 317,522 cases were identified in hospitals during the 2017-18 period, with an even greater number likely treated in primary care environments. [1] Despite its widespread nature, diagnosing cellulitis can be difficult, mainly due to its resemblance to various conditions that mimic it, referred to as "pseudocellulitis." [2] These mimicking conditions, such as venous stasis dermatitis, deep vein thrombosis, and contact dermatitis, often display overlapping symptoms with cellulitis, resulting in frequent misdiagnoses.

In India, cellulitis and various skin infections place a significant burden on the healthcare system. The Global Burden of Disease Study noted a 53.7% rise in years lived with disability due to skin and subcutaneous disorders from 1990 to 2017, with bacterial skin infections playing a major role in this increase. In 2017 alone, cellulitis and other skin infections were responsible for more than 44,000 new cases, highlighting an escalating challenge within India's public health scenario. [3, 4]

Given the high incidence of cellulitis and the associated complications, accurate and timely diagnosis is crucial to prevent unnecessary hospitalizations, overuse of antibiotics, and to avoid complications like abscess formation, sepsis, and necrotizing fasciitis

Misdiagnosis of cellulitis presents a worldwide healthcare issue, leading to unwarranted antibiotic prescriptions, hospital admissions, and elevated healthcare expenses. Research indicates that between 30% to 90% of cellulitis diagnoses are inaccurate, resulting in 50,000 to 130,000 avoidable hospitalizations and an additional healthcare expenditure of 195 to 515 million dollars each year. Furthermore, the improper use of antibiotics worsens the challenge of antibiotic resistance, which remains a significant public health threat. Given the absence of a definitive diagnostic tool for cellulitis, clinical decision-making relies heavily on clinical judgment, often without support from microbiological or imaging data. To address this diagnostic dilemma, predictive models such as the ALT-70 and NEW HAvUN scoring systems have been developed**.** [5]

The ALT-70 score was developed to help distinguish between cellulitis and pseudocellulitis during the initial evaluation. This model incorporates four clinical variables: asymmetry, leukocytosis, tachycardia, and patient age over 70. These objective measures are then combined to generate a score, with higher scores favoring a diagnosis of cellulitis. The ALT-70 score has been prospectively validated in emergency department settings, demonstrating its effectiveness in differentiating cellulitis from its mimickers. Moreover, recent research indicates that the ALT-70 score maintains its predictive accuracy at 24 and 48 hours post-initial presentation, making it a useful tool in both acute and subacute circumstances. [5]

In contrast, the NEW HAvUN score is a more recent development aimed at improving the accuracy of cellulitis diagnosis. It evaluates seven clinical criteria: new onset, erythema, warmth, history of trauma, ache, unilaterality, and leukocytosis Each criterion is scored, with higher cumulative scores indicating a higher likelihood of true cellulitis. The NEW HAvUN model is particularly useful in distinguishing cellulitis from common mimicking conditions such as venous stasis dermatitis and lipodermatosclerosis, which are often confused with cellulitis due to similar clinical presentations. Initial studies on the NEW HAvUN score have demonstrated its potential as a reliable tool for stratifying patients with suspected cellulitis, thereby reducing unnecessary antibiotic use and hospital admissions**.** [2]

Despite the validation of both ALT-70 and NEW HAvUN scores, a direct comparison of these models in a clinical context is still lacking. While both models provide useful resources for enhancing diagnostic accuracy,

their comparative effectiveness in differentiating cellulitis from similar conditions has not been thoroughly investigated. This gap in knowledge is especially crucial in resource-constrained environments where sophisticated diagnostic methods like imaging or microbiological tests might not be easily accessible.

The primary objective of this study is to assess the utility of the NEW HAvUN score and the ALT-70 score in patients presenting with suspected cellulitis. By comparing these two models, the study aims to determine which predictive score is more effective in differentiating cellulitis from its mimickers, thereby improving diagnostic accuracy and guiding appropriate clinical management. This research will provide clinicians with robust evidence on the utility of these models, particularly in settings with limited access to advanced diagnostic resources.

II. Aims And Objectives Of The Study:

1. To assess the utility of the NEW HAvUN score and ALT-70 score in patients with cellulitis
2. To compare NEW HAvUN score and ALT-70 score models as a means of differentiating cellulitis from its mimickers

III. Methodology:

Study Design: This was a prospective observational study conducted in the Department of General Surgery at A.J. Institute of Medical Sciences and Research Centre, Mangalore.

Study Period: The study was conducted from April 2023 to April 2024.

Sample Size: Based on a study by Sean Singer et al., with a sensitivity of 51.0% and specificity of 80.3%, and considering the burden of cellulitis admissions to be 0.17, a sample size of 61 was determined. This calculation assumed a 95% confidence level, 80% power, and an allowable error of 10%.

Sampling Technique: Purposive sampling was employed.

Inclusion Criteria:
a. Patients above 18 years of age
b. Patients with unilateral lower limb swelling
c. Patients who gave consent for the study

Exclusion Criteria:
a. Patients with IV cannulation in lower limb
b. Patients with known history of osteomyelitis
c. Patients with indwelling hardware at the site of cellulitis
d. Patients with known history of diabetic ulcer in the limb with cellulitis

Data Collection: After obtaining approval from the institutional ethics committee, patients fulfilling the inclusion criteria were enrolled in the study after providing informed consent. Data was collected using a specially designed proforma, which included patient particulars, clinical history, physical examination findings, investigations, and diagnoses.

Assessment Tools: Demographic data, clinical history, physical examination, laboratory investigations, and the particulars of each scoring system (NEW HAvUN and ALT-70) were used as assessment tools.

Investigations: In addition to routine investigations, the following were performed:
• Complete Blood Count (CBC)
• Venous Doppler
• Ultrasonography

Statistical Analysis: Categorical data was expressed as percentages. Chi-square test was used to test the association of the two scoring systems with each other and the final clinical diagnosis. A p-value < 0.05 was considered statistically significant. Sensitivity, specificity, positive predictive value, and negative predictive value were calculated for both scoring systems.

Ethical Considerations: The study was conducted after obtaining clearance from the institutional ethics committee. All surgical procedures, medical management, and investigations were conducted under the direct guidance and supervision of the study guide.

IV. Results

Table :1 Mean Age Of The Study Participants				
N	**Mean**	**SD**	**Minimum**	**Maximum**
61	52.7	14.8	20	83

Table:2 Frequencies Of Gender		
Gender	**N**	**%**
Female	21	34.40%
Male	40	65.60%
Total	61	100%

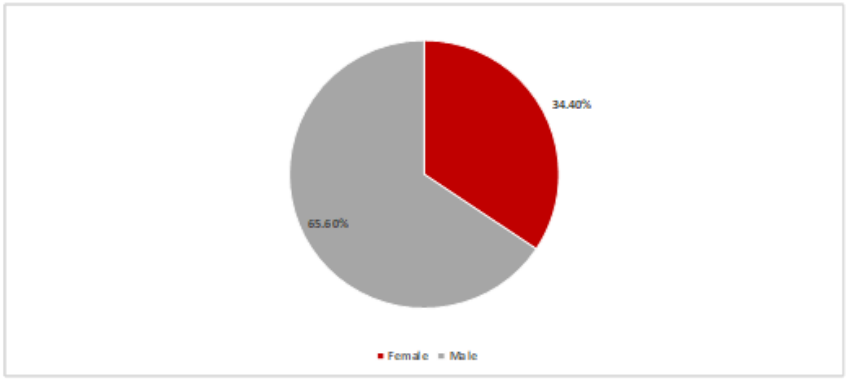

Table:3 Frequencies Of Side Involved		
Site	**N**	**%**
Left Lower Limb	35	57.40%
Right Lower Limb	25	41.00%
Right Upper Limb	1	1.60%
Total	61	100%

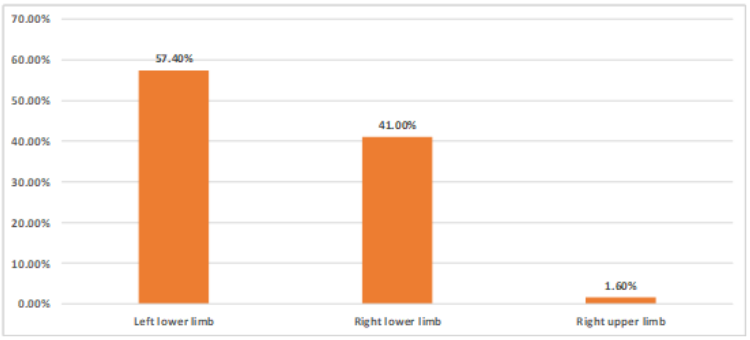

Table: 4 Cross Table Cellulitis Vs Gender							P Value (Chisquare Test)
Gender	**Cellulitis**		**Non-Cellulitis**		**Total**		
	N	**%**	**N**	**%**	**N**	**%**	
Female	16	76.20%	5	23.80%	21	100	0.48 NS
Male	27	67.5	13	32.50%	40	100	
Total	43	70.50%	18	29.50%	61	100	

Table: 5 ALT-70 Model Evaluation For Cellulitis							P Value (Chisquare Test)
ALT -70 Model	Cellulitis		Non-Cellulitis		Total		
	N	%	N	%	N	%	
Positive For Cellulitis	18	41.90%	1	5.60%	19	31.10%	0.005 S
Negative For Cellulitis	25	58.10%	17	94.40%	42	68.90%	
Total	43	100%	18	100%	61	100%	

Table: 6 ALT-70 Evaluation Parameters	
Sensitivity	41.90%
Specificity	94.40%
PPV	94.74%
NPV	40.48%

Table: 7Median ALT-70 Scores Difference Among 2 Groups					P Value (Mann Whitney U-Test)
Group	**N**	**Mean**	**Median**	**SD**	
Cellulitis	43	4.37	4	1.09	<0.01 S
Non-Cellulitis	18	3.11	3	1.13	

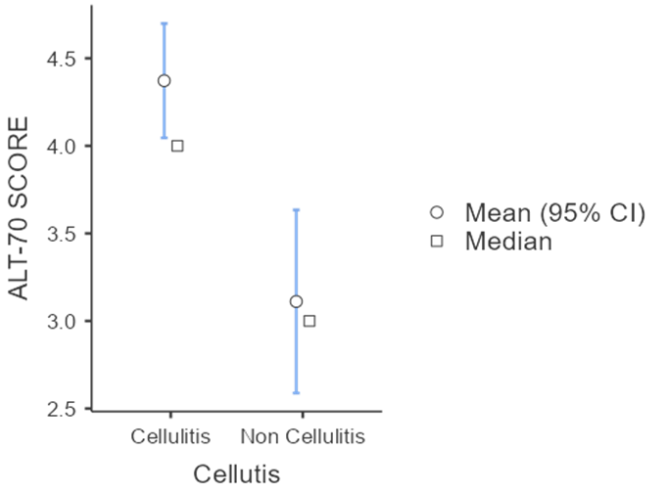

Table: 8 Cut Value And AUC For ALT-70 SCORE						
Cut Of Point	**Sensitivity (%)**	**Specificity (%)**	**PPV (%)**	**NPV (%)**	**Youden's Index**	**AUC**
4	76.74%	66.67%	84.62%	54.55%	0.434	0.782

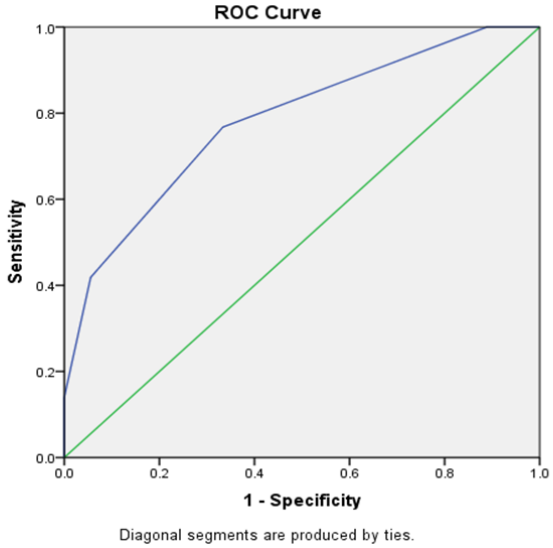

Table:9 Sensitivity Of Individual Clinical Parameter Of ALT-70 In Detection Of Cell Litis				
Patients (N)	**43**	**18**	**61**	**P Value**
Age	10 (23.30%)	0	10 (16.40%)	0.025 S
Leukocytes	21 (48.80%)	3 (16.70%)	24 (39.30%)	0.019 S
Pulse Rate	19 (44.2%)	5 (27.8%)	24 (39.3%)	0.232 NS
Asymmetry	43 (100%)	16 (88.9%)	59 (96.7%)	0.026 S

Table:10 NEW Havun Model Evaluation For Cellulitis							P Value (Chisquare Test)
NEW Havun SCORE Diagnosis Model	**Cellulitis**		**Non Cellulitis**		**Total**		
	N	**%**	**N**	**%**	**N**	**%**	
Positive For Cellulitis	26	60.50%	3	16.70%	29	47.50%	0.002 S
Negative For Cellulitis	17	39.50%	15	83.30%	32	52.50%	
Total	43	100%	18	100%	61	100%	

Table: 11 NEW Havun Evaluation Parameters	
Sensitivity	60.50%
Specificity	83.30%
PPV	89.66%
NPV	46.88%

Table: 12 Median NEW Havun SCORE Difference Among 2 Groups					P Value (Mann Whitney U-Test)
Group	**N**	**Mean**	**Median**	**SD**	
Cellulitis	43	3.91	4	1.32	<0.01 S
Non-Cellulitis	18	2.39	2	1.14	

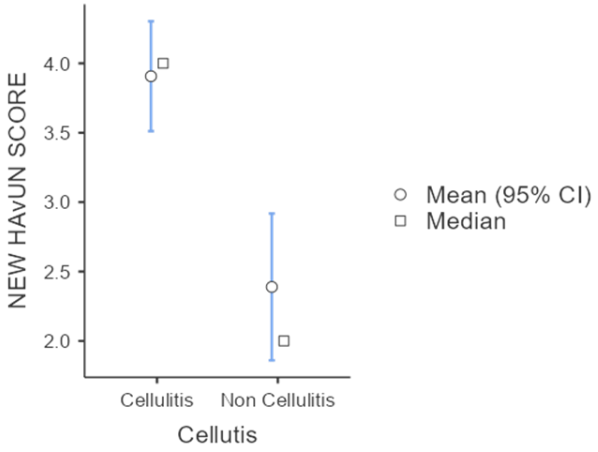

Table:13 Sensitivity Of Individual Clinical Parameter Of New Havun Model In Detection Of Cellulitis				
Patients (N)	**43**	**18**	**61**	**P Value**
Onset (Days)	19 (44.20%)	6 (33.30%)	25 (41%)	0.432 NS
Leukocytes	21 (48.80%)	3 (16.70%)	24 (39.30%)	0.019 S
Erythema	28 (65%)	3 (16%)	31 (50.3%)	0.002 S
Pyrexia >100.40 F	11 (25.6%%)	0 (0%)	11 (18%)	0.031 S
Tenderness	39 (90.7%)	13 (72.2%)	52 (85.2%)	0.078 NS
H/O Trauma	13 (30.2%)	2 (11.1%)	15 (24.6%)	0.114 NS

Table:14 Cut Values And AUC For NEW Havun SCORE						
Cut Of Points	**Sensitivity (%)**	**Specificity (%)**	**PPV (%)**	**NPV (%)**	**Youden's Index**	**AUC**
3	86.05%	61.11%	84.09%	64.71%	0.472	0.803
4	60.47%	83.33%	89.66%	46.88%	0.438	0.803

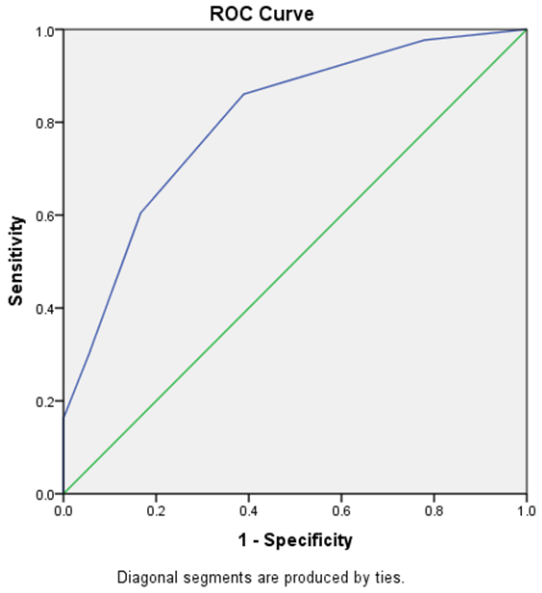

Table:15 Difference Between The Area Under The Curve Of ALT-70 And New Havun Score		
AUC ALT-70	0.782	Difference 0.021
AUC New Havun	0.803	
P Value (Delong Test Of Difference Between Aucs)	0.776 NS	

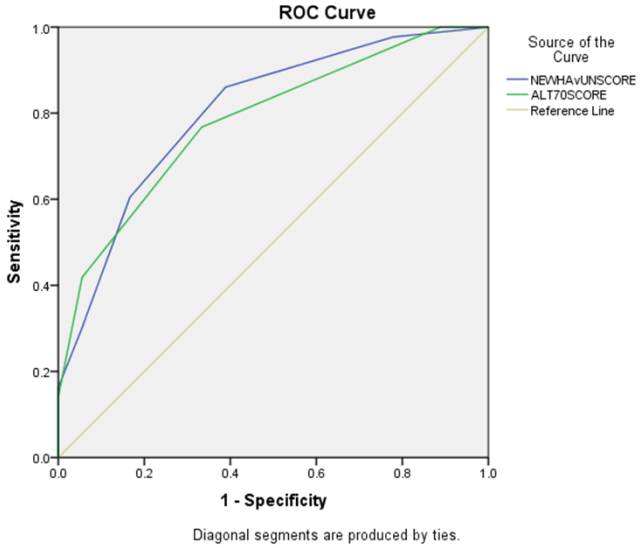

Table :16 Comparing The Two Scores				P Value (Chi-Square Test Of Independence:)
Outcome	**ALT-70 Positive**	**ALT-70 Negative**	**Total**	
NEW Havun Positive	17	12	29	0.0128 S
NEW Havun Negative	2	30	32	
Total	19	42	61	

Table 1: Mean Age of Study Participants

The study included 61 participants. The mean age of the participants was 52.7 years, with a standard deviation (SD) of 14.8 years. The youngest participant was 20 years old, while the oldest was 83 years old. This indicates a wide age range in the study population, with a middle-aged average. (Table 1)

Table 2: Frequencies of Gender

The study population consisted of:
- 21 females (34.40% of the total)
- 40 males (65.60% of the total)

This shows that the cellulitis is common in males, with nearly twice as many males as females. (Table 2)

Table 3: Frequencies of Side Involved

The distribution of cellulitis cases by body part was:
- Left lower limb: 35 cases (57.40%)
- Right lower limb: 25 cases (41.00%)
- Right upper limb: 1 case (1.60%)

The data indicates that cellulitis was predominantly found in the lower limbs, with a slightly higher occurrence in the left lower limb. Upper limb involvement was rare in this study population. In all cases the cellulitis was unilateral. (Table 3)

Table 4: Cross Table Cellulitis vs Gender

This table compares the occurrence of cellulitis between genders:
- Females: 16 out of 21 (76.20%) had cellulitis, 5 (23.80%) did not
- Males: 27 out of 40 (67.5%) had cellulitis, 13 (32.50%) did not
- Total: 43 out of 61 (70.50%) had cellulitis, 18 (29.50%) did not

The p-value of 0.48 (considered not significant, NS) suggests that there is no statistically significant difference in cellulitis occurrence between males and females in this study. Both the group are equally susceptible for the same. (Table 4)

Table 5: ALT-70 Model Evaluation for Cellulitis
This table evaluates the performance of the ALT-70 model in predicting cellulitis:
- Of the 43 cellulitis cases:
- 18 (41.90%) were correctly identified as positive
- 25 (58.10%) were incorrectly identified as negative
- Of the 18 non-cellulitis cases:
- 1 (5.60%) was incorrectly identified as positive
- 17 (94.40%) were correctly identified as negative

The p-value of 0.005 (significant, S) indicates that the ALT-70 model has a statistically significant ability to differentiate between cellulitis and non-cellulitis cases. Even though the sensitivity is relatively less. The specificity is acceptably high. (Table 5)

Table 6: ALT-70 Evaluation Parameters
This table provides the performance metrics for the ALT-70 model:
- Sensitivity: 41.90% (ability to correctly identify cellulitis cases)
- Specificity: 94.40% (ability to correctly identify non-cellulitis cases)
- Positive Predictive Value (PPV): 94.74% (probability that a positive result is truly positive)
- Negative Predictive Value (NPV): 40.48% (probability that a negative result is truly negative)

These results suggest that the ALT-70 model is better at ruling in cellulitis (high specificity and PPV) than ruling it out (lower sensitivity and NPV). (Table 6)

Table 7: Median ALT-70 Scores Difference Among 2 Groups
This table compares the ALT-70 scores between cellulitis and non-cellulitis groups:
- Cellulitis group (n=43): Mean score 4.37, Median 4, SD 1.09
- Non-cellulitis group (n=18): Mean score 3.11, Median 3, SD 1.13

The p-value <0.01 (significant, S) indicates a statistically significant difference in ALT-70 scores between the two groups, with cellulitis cases having higher scores on average. (Table 7)

Table 8: Cut Value and AUC for ALT-70 Score
This table provides the optimal cut-off point for the ALT-70 score:
- Cut-off point: 4
- Sensitivity: 76.74%
- Specificity: 66.67%
- PPV: 84.62%
- NPV: 54.55%
- Youden's index: 0.434
- Area Under the Curve (AUC): 0.782

The AUC of 0.782 suggests good discriminatory power for the ALT-70 score in distinguishing cellulitis from non-cellulitis cases. (Table 8)

Table 9: Sensitivity of Individual Clinical Parameters of ALT-70 in Detection of Cellulitis
This table breaks down the sensitivity of each component of the ALT-70 score:
- Age: 23.30% sensitive (p=0.025, significant)
- Leukocytes: 48.80% sensitive (p=0.019, significant)
- Pulse Rate: 44.2% sensitive (p=0.232, not significant)
- Asymmetry: 100% sensitive (p=0.026, significant)

Asymmetry was the most sensitive parameter, while age was the least sensitive. Leukocytes and pulse rate had moderate sensitivity. (Table 9)

Table 10: NEW HAvUN Model Evaluation for Cellulitis
This table evaluates the performance of the NEW HAvUN model:
- Of the 43 cellulitis cases:
- 26 (60.50%) were correctly identified as positive
- 17 (39.50%) were incorrectly identified as negative
- Of the 18 non-cellulitis cases:
- 3 (16.70%) were incorrectly identified as positive
- 15 (83.30%) were correctly identified as negative

The p-value of 0.002 (significant) indicates that the NEW HAvUN model has a statistically significant ability to differentiate between cellulitis and non-cellulitis cases. (Table 10)

Table 11: NEW HAvUN Evaluation Parameters
This table provides the performance metrics for the NEW HAvUN model:
- Sensitivity: 60.50%
- Specificity: 83.30%
- PPV: 89.66%
- NPV: 46.88%

These results suggest that the NEW HAvUN model has a good balance of sensitivity and specificity, with particularly high PPV. It seems the test is moderately sensitive and specific in identifying and ruling out diseases. (Table 11)

Table 12: Median NEW HAvUN Score Difference Among 2 Groups
This table compares the NEW HAvUN scores between cellulitis and non-cellulitis groups:
- Cellulitis group (n=43): Mean score 3.91, Median 4, SD 1.32
- Non-cellulitis group (n=18): Mean score 2.39, Median 2, SD 1.14

The p-value <0.01 (significant) indicates a statistically significant difference in NEW HAvUN scores between the two groups, with cellulitis cases having higher scores on average. (Table 12)

Table 13: Sensitivity of Individual Clinical Parameters of New HAvUN Model in Detection of Cellulitis
This table breaks down the sensitivity of each component of the NEW HAvUN score:
- Onset (Days): 44.20% sensitive (p=0.432, not significant)
- Leukocytes: 48.80% sensitive (p=0.019, significant)
- Erythema: 65% sensitive (p=0.002, significant)
- Pyrexia >100.4°F: 25.6% sensitive (p=0.031, significant)
- Tenderness: 90.7% sensitive (p=0.078, not significant)
- H/o Trauma: 30.2% sensitive (p=0.114, not significant)

Tenderness and erythema were the most sensitive parameters, while pyrexia and history of trauma were the least sensitive. (Table 13)

Table 14: Cut Values and AUC for NEW HAvUN Score
This table provides two potential cut-off points for the NEW HAvUN score:
A. Cut-off point: 3
- Sensitivity: 86.05%
- Specificity: 61.11%
- PPV: 84.09%
- NPV: 64.71%
- Youden's index: 0.472

B. Cut-off point: 4
- Sensitivity: 60.47%
- Specificity: 83.33%
- PPV: 89.66%
- NPV: 46.88%
- Youden's index: 0.438

The Area Under the Curve (AUC) is 0.803, indicating good discriminatory power for the NEW HAvUN score. (Table 14)

Table 15: Difference Between the Area Under the Curve of ALT-70 and New HAvUN Score
This table compares the performance of the two models:
- AUC ALT-70: 0.782
- AUC NEW HAvUN: 0.803
- Difference: 0.021

The p-value of 0.776 (not significant) from the DeLong Test of Difference between AUCs suggests that there is no statistically significant difference in the overall performance of the two models. The performance level of both the test are almost similar in differentiating cellulitis cases from non-cellulitis cases. (Table 15)

Figure: Comparison of ROC Curves for ALT-70 and NEW HAvUN Scores

This graph visually compares the ROC curves of both models, illustrating their similar performance in distinguishing cellulitis from non-cellulitis cases. (Figure no:)

Table 16: Comparing the Two Scores

This table compares the agreement between the ALT-70 and NEW HAvUN scores:
- 17 cases were positive on both scores
- 30 cases were negative on both scores
- 12 cases were positive on NEW HAvUN but negative on ALT-70
- 2 cases were positive on ALT-70 but negative on NEW HAvUN

The p-value of 0.0128 (significant) indicates that there is a statistically significant association between the two scoring systems, although they do not always agree. (Table 16)

Chi-Square Test indicates a significant difference ($p = 0.0128$), showing that the two models perform differently in distinguishing between cellulitis and its mimickers, meaning that there is a significant change in classification between the models. Even though the sensitivity not very high among both the models. (Table 16)

V. Discussion

This study evaluated and compared two clinical prediction models - the NEW HAvUN score and ALT-70 score - for differentiating cellulitis from its mimickers. The findings provide important insights into the utility and limitations of both scoring systems in clinical practice.

Our study included 61 patients, with a mean age of 52.7 years (SD 14.8). The gender distribution showed a male predominance (65.6%), which differs from some previous studies. For instance, Ezaldein et al.'s study had a more balanced gender distribution with 32 males and 25 females. [2] This difference might be attributed to more incidence of cellulitis among males.

In our study, the ALT-70 model exhibited performance characteristics with a sensitivity of 41.90%, specificity of 94.40%, positive predictive value (PPV) of 94.74%, and negative predictive value (NPV) of 40.48%. These findings demonstrate notable variations when compared to previous validation studies. The original research by Raff reported more balanced performance metrics, with a higher sensitivity of 61.3% and a lower specificity of 70.9% for a score threshold of ≥5. [7] Similarly, Li and colleagues' validation study, which employed a lower threshold score of ≥3, demonstrated markedly different results with substantially higher sensitivity (97.8%) but reduced specificity (47.6%). Based on our findings, the ALT-70 score appears to be more effective in our population for confirming the presence of cellulitis (as evidenced by high specificity and PPV) rather than excluding it, suggesting its primary utility may be as a rule-in diagnostic tool.

Our analysis of ALT-70 components revealed that asymmetry exhibited the highest sensitivity at 100% (p=0.026), while leukocyte levels showed moderate sensitivity of 48.80% (p=0.019), and age demonstrated the lowest sensitivity at 23.30% (p=0.025). These findings align with Raff et al.'s research, where unilateral involvement emerged as a significant predictor (OR 8.65, 95% CI 3.88-19.26). [7] However, our study found a lower sensitivity for leucocytosis compared to previous investigations.

In our evaluation of the NEW HAvUN model, we observed a sensitivity of 60.50%, specificity of 83.30%, positive predictive value of 89.66%, and negative predictive value of 46.88%. These results stand in notable contrast to Ezaldein's original research, which reported substantially higher values with a sensitivity of 100% and specificity of 95% when using 4 out of 7 criteria. [2] The considerable difference in performance metrics might be explained by the distinct populations and settings examined, particularly given that Ezaldein's study was limited to dermatologist-confirmed cases.

Our analysis of NEW HAvUN criteria revealed that tenderness exhibited the highest sensitivity at 90.7% (p=0.078), followed by erythema with 65% sensitivity (p=0.002), while pyrexia showed the lowest sensitivity at 25.6% (p=0.031). These results partially correspond with Ezaldein's study, which found erythema present in 95% of cellulitis cases (OR 10.3). [2] However, our observed lower sensitivity for pyrexia stands in contrast to their research, which reported 85% sensitivity for temperature exceeding 100.4°F.

The ROC curve analysis demonstrated strong discriminatory capabilities for both models, with ALT-70 achieving an AUC of 0.782 and NEW HAvUN showing an AUC of 0.803, resulting in a minimal difference of 0.021 (p=0.776). This small difference in performance indicates comparable overall effectiveness between the two models, which aligns with Singer et al.'s research demonstrating the sustained predictive value of ALT-70 over time. [5]

Analysis of the NEW HAvUN scoring system revealed optimal performance at two distinct cut-off points. At a score of ≥3, the model demonstrated a sensitivity of 86.05% and specificity of 61.11%, while at a score of ≥4, it showed a sensitivity of 60.47% and specificity of 83.33%. These results suggest that clinicians can

adjust cut-off points based on whether they prioritize ruling in or ruling out cellulitis, similar to the flexibility demonstrated in ALT-70 studies. [7]

The significant misdiagnosis rates reported by Rrapi et al. (30-74%) highlight the importance of accurate diagnostic tools. [6] Our study demonstrates that both scoring systems can contribute to improved diagnostic accuracy, potentially reducing unnecessary interventions and healthcare costs.

The complementary relationship between these scoring systems is demonstrated through their distinct performance characteristics: ALT-70 exhibits high specificity at 94.40%, while NEW HAvUN offers a more balanced profile with a sensitivity of 60.50% and specificity of 83.30%. The significant association between the two scores (p=0.0128) further supports their complementary nature.

VI. Limitations And Future Research:

This study faced several methodological limitations, including a relatively small sample size of 61 participants and its single-center framework, which may limit the generalizability of findings. The purposive sampling approach potentially introduced selection bias, while the absence of long-term follow-up data restricted our understanding of extended outcomes. Moving forward, future research endeavors should address these limitations by conducting larger, multi-center validation studies to enhance the robustness of findings. Additionally, there is a pressing need to examine the model's performance across specific patient subgroups and explore its integration with complementary diagnostic modalities. Furthermore, thorough cost-effectiveness analyses are crucial to assess the practical ramifications of implementing these scoring systems in everyday clinical practice, ensuring both clinical relevance and efficient use of resources.

VII. Conclusion

Both scoring systems are useful for distinguishing cellulitis from similar conditions, but their performance features indicate that they have complementary functions instead of one being superior to the other. The ALT-70 score excels in specificity, while the NEW HAvUN score offers more balanced sensitivity and specificity. The choice between these tools may depend on the clinical context and whether the priority is ruling in or ruling out cellulitis. The adoption of these scoring systems could enhance diagnostic precision and better utilize resources in the management of cellulitis.

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