



# CERTIFICATE

## Of Appreciation

This to certify that

**Nurul Hidayah, SKM., M.Kes**

Has participated in 4th International Conference on  
Environmental Risks and Public Health (ICER-PH 2022)

**"Environmental Health Challenge in Pandemic on Global Maritime"**

It was held on August 29th - 30th via Zoom Cloud Meeting

**As a Presenter**

**Organized by :**

Department of Environmental Health  
Faculty of Public Health  
Hasanuddin University



Prof. Sukri Palutturi, SKM., M.Kes., M.Sc.PH.,Ph.D  
**Dean of Public Health Faculty**



Dr. Agus Bintara Birawida, S.Kel.,M.Kes  
**Organizing Committee**



Health Environment Dept.  
Faculty of Public Health  
Hasanuddin University



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4TH INTERNATIONAL CONFERENCE ON  
ENVIRONMENTAL RISKS AND PUBLIC  
HEALTH (ICER-PH 2022)

# The Equation Modeling of Environmental Risk Factors for The Existence of *Aedes aegypti* Larvae

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Health Promotion  
Department



# Introduction



Dengue Fever:



South Kalimantan

2020: CFR=0.68%

2021: CFR=0.72%

2020: 129,650 cases; 1,071 died (IR=50.75; CFR = 0.83%)  
2021: 204,171 cases ; 1,598 (IR = 78.85; CFR = 0.78%)



11 endemic areas (47.8%)

17 sub-district; 23 public health center.

Martapura District

Larvae Existence



One of the efforts that can be done as an action to control the dengue fever vector is to **make the best model for predicting the presence of larvae.**

The prediction model is in the form that can provide an overview of the **dominant factors causing the existence of larvae.**

One indicator of the Dengue Fever risk.



# Method



## Study Design

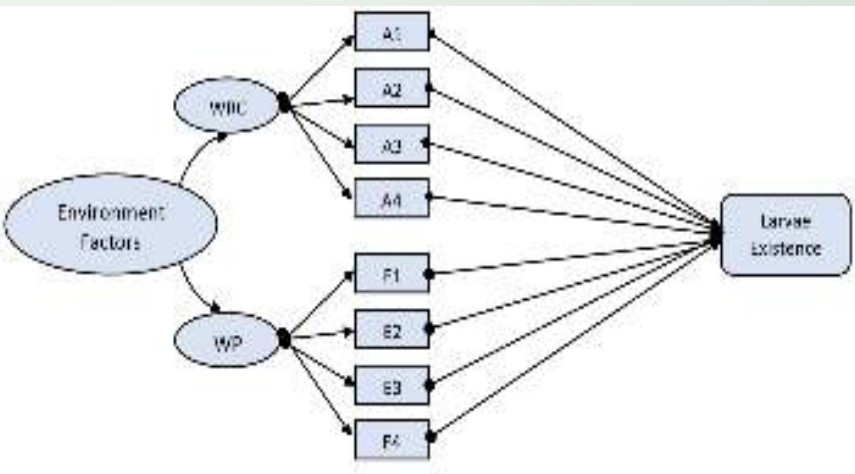
An analytical observational study with a cross-sectional approach

## Subject

The 86 houses in the endemic area of Martapura District spread over 5 villages (Tanjung Rema Darat, Sekumpul, Sungai Paring, Indrasari, and Tanjung Rema) were obtained using a simple random sampling method.

## Statistical Analysis

Data were analysed using Continuity Correction and Logistics Regression tests. The quality measurement of the equation model was using the Receiver Operating Curve (ROC) method for the discrimination test and using the Hosmer and Lameshow method for the calibration.



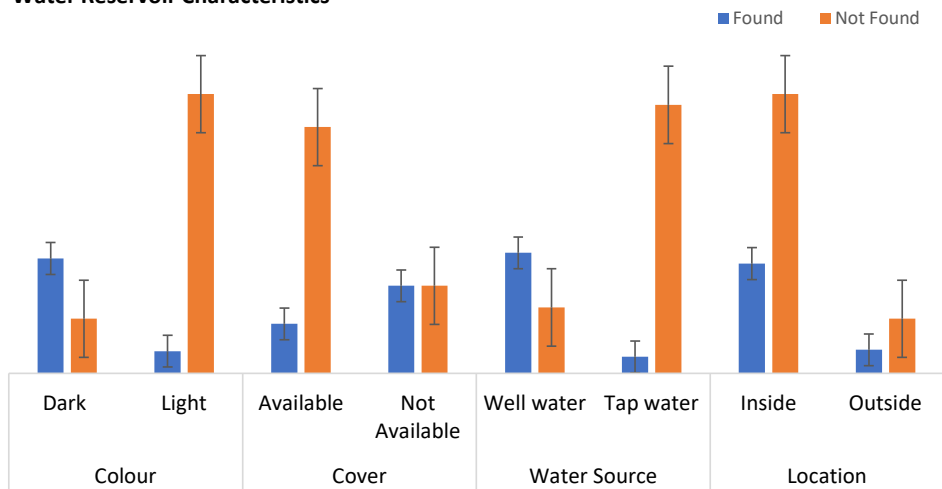
WRC: Water Reservoir Characteristics; WP: Water Parameters  
A1: Colour; A2: Cover availability; A3: Water source type; A4: Location; F1: Salinity; F2: Dissolved Oxygen; F3: Temperature; F4: pH



# Result & Discussion

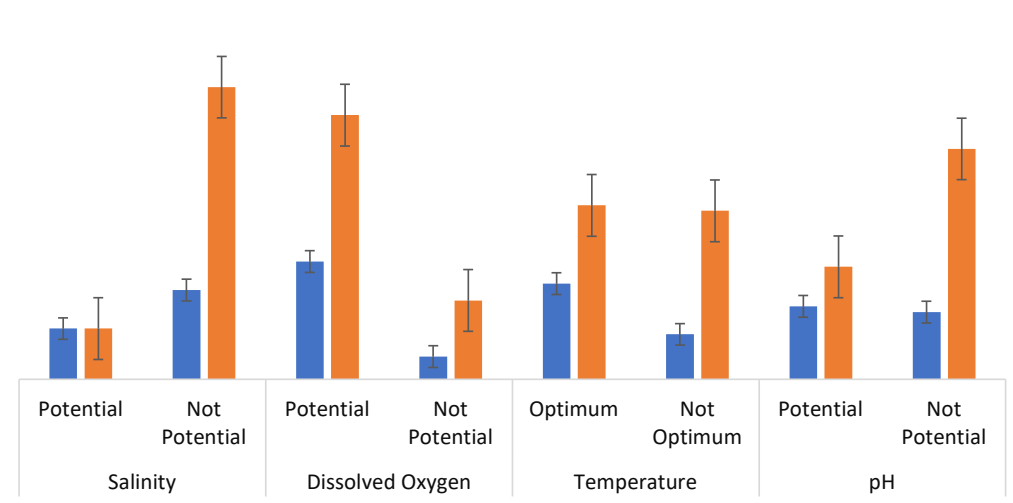


Water Reservoir Characteristics



Larvae were most commonly found in **dark-colored** reservoirs (24.4%), **did not have a cover** (18.6%), **well water** type (25.6%), and **inside** location (23.3%).

Water Parameters



Larvae were mostly not found in water with **potential salinity** (10.5%), **potential dissolved oxygen** (54.7%), **optimum temperature** (36.0%), and **potential pH** (23.3%)



# Result & Discussion



**Tabel 1. The Association of Environmental Risk Factors with The Existence of Aedes aegypti Larvae**

Environmental Risk Factors		RR (95% CI)	p-value	Remarks
<b>Water Reservoir Characteristics</b>				
Colour	Dark	0.037	0.000	Correlated
	Light			
Cover availability	Available	0.200	0.002	Correlated
	Not Available			
Water source type	Well water type	0.033	0.000	Correlated
	Tap water type			
Location	Inside	0.784	0.757	Non-Correlated
	Outside			
<b>Water Parameters</b>				
Salinity <sup>a</sup>	Potential	0.308	0.056	Non-Correlated
	Not Potential			
Dissolved Oxygen (DO) <sup>b</sup>	Potential	0.639	0.669	Non-Correlated
	Not Potential			
Temperature <sup>c</sup>	Optimum	0.486	0.223	Non-Correlated
	Not Optimum			
pH <sup>d</sup>	Potential	0.450	0.156	Non-Correlated
	Not Potential			

## The Result of Continuity Correction Test

<sup>a</sup> Potential (4-6 gr/l); Not Potential (<4 gr/l or >6 gr/l)

<sup>b</sup> Potential (5.86-8.98 ppm); Not Potential (<5.86 ppm or >8.98 ppm)

<sup>c</sup> Optimum (27-30 °C); Not Optimum (<27 °C or >30 °C)

<sup>d</sup> Potential (≤7.5); Not Potential (>7.5)



# Result & Discussion



Tabel 2. The Logistic Regression Model for Association of Environmental Risk Factors for The Existence of Aedes aegypti Larvae

Factors	B	p-value	OR	95% CI
<b>4<sup>th</sup> STEP</b>				
Colour	2.671	0.001	14.448	2.933 – 71.163
Cover existance	2.082	0.014	8.022	1.532 – 42.006
Water source type	2.820	0.001	16.777	3.183 – 88.442
Constant	-4.676			

$$y = -4.676 + 2.820 (\text{water source type}) + 2.671 (\text{colour}) + 2.082 (\text{cover availability})$$

The Result of  
Prediction Model  
Quality Test:  
Calibration

Tabel 3. Result of Hosmer and Lameshow Test

STEP	Chi-square	p-value
1 <sup>st</sup>	6.145	0.407
2 <sup>nd</sup>	5.074	0.534
3 <sup>rd</sup>	3.794	0.705
4 <sup>th</sup>	2.473	0.649

The prediction model has a good calibration

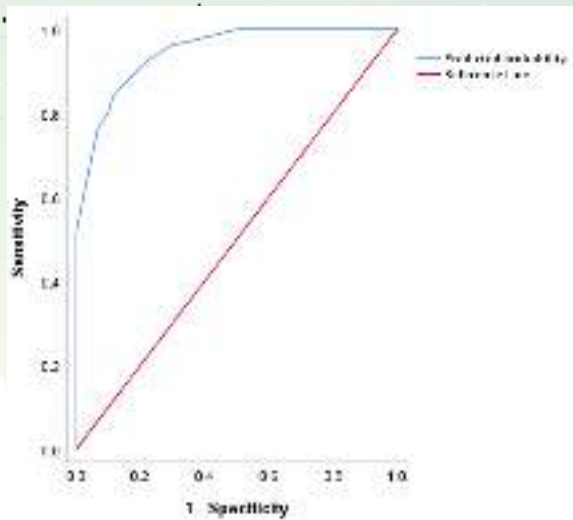


# Result & Discussion

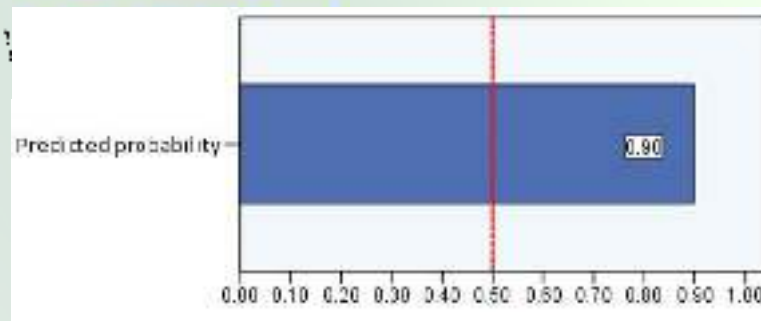


## The Result of Prediction Model Quality

### Test: Discrimination



The curve of AUC ROC analysis (0.945; 95% CI = 0.899-0.992; p-value = 0.000) -- a very good discrimination value



Overall model quality

A good model prediction should have a value **above 0.5**.  
A value less than 0.5 indicates the model is **no better than random prediction**.

## Conclusion

The equation model obtained has a good calibration and sufficient discrimination.





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Universitas Hasanuddin, Makassar  
17082022

# Thank You

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# YAYASAN INDAH BANJARMASIN UNIVERSITAS SARI MULIA FAKULTAS KESEHATAN

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## SURAT TUGAS

**No. 112.1/ST/SM.DK1/UNISM/VIII/2022**

Yang bertanda tangan di bawah ini:

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Dengan ini menugaskan kepada:

NO	NIK	NAMA
1	1166082016091	Nurul Hidayah, SKM., M.Kes

Sebagai *Oral Presenter* dalam acara *International Conference on Environmental Risks and Public Health (ICER-PH 2022)* yang diadakan oleh Universitas Hasanuddin, Makassar yang akan dilaksanakan pada:

Hari : Senin-Selasa

Tanggal : 29-30 Agustus 2022

Waktu : Pukul 09.30 – 17.30 WIB

Aplikasi : *Zoom*

Surat tugas ini dibuat untuk dilaksanakan dengan penuh tanggung jawab

Banjarmasin, 26 Agustus 2022

Universitas Sari Mulia

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