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1. Pindai halama sampul

Malaysian Journal of Medicine and Health Sciences Vol.19 Supp 1, Jan 2023 (eISSN 2636-9346)

**Proceedings of the 2<sup>nd</sup> IPB International  
Conference on Nutrition and Food 2022  
(ICNF 2022)**

*Nutrition and Food Innovation for Better Life*

**Held at the Department of Community Nutrition,  
Faculty of Human Ecology, IPB University,  
Bogor, West Java, Indonesia**

**On 17 – 18 November 2022**

## 2. Panitia pelaksana

Malaysian Journal of Medicine and Health Sciences Vol.19 Supp 1, Jan 2023 (eISSN 2636-9346)

### **The 2nd IPB International Conference on Nutrition and Food 2022 (ICNF 2022)**

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### 3. Panitia pengarah

#### **Editorial Message from the Head of Scientific Committee**

Welcome to the Proceedings of the 2<sup>nd</sup> IPB International Conference on Nutrition and Food 2022 (ICNF 2022) which is published by the Malaysian Journal of Medicine and Health Sciences. Amidst the current global pandemic situation, the conference was successfully organized fully online by the Department of Community Nutrition, Faculty of Human Ecology, IPB University, Bogor, Indonesia on 17 – 18 November 2022.

This conference was aimed to be a platform where academia, researchers, the private sector, and the general audience could get updates on the latest issues in nutrition and food. Recognizing the importance of promoting research and innovation in nutrition and food, we have chosen to focus on “Nutrition and Food Innovation for Better Life” as the theme of the conference this year. The conference speakers, oral presenters, poster presenters, and participants of this conference came from a variety of countries, such as Australia, Indonesia, Malaysia, the Philippines, Thailand, the UK, and the USA.

On behalf of the scientific committee of ICNF 2022, I would like to congratulate all participants who submitted their research papers to the conference, and 90 of them are featured in this issue. The articles covered four main areas: clinical nutrition, community nutrition, food innovation, and sports nutrition. Each of those articles underwent three cycles of a thorough review by two reviewers, to ensure their academic merit and quality. The significant research presented at this conference represents the importance of nutrition and food in improving our quality of life.

I would like to thank the team of reviewers from the Department of Community Nutrition, IPB University, and the Department of Nutrition, Universiti Putra Malaysia for their hard work and commitment to providing valuable input for the authors. Moreover, I would also like to thank the organizing committee of ICNF 2022 and all their supporting partners for ensuring the success of the conference. Finally, I hope that these proceedings serve the need for high-quality research articles in the area of nutrition and food.

**Head of the Scientific Committee of ICNF 2022,  
Prof. Dr. Ir. Ali Khomsan, MS**

#### 4. Daftar isi

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## 5. Bukti kinerja

### EXTENDED ABSTRACT

## Urinary Pyridinium Crosslinks as a Sensitive Biomarker of Linear Growth in Adolescents

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### SUMMARY

The research aimed to assess urine Pyd as an indicator that can be used to detect stunting incidents. The research design was a cross-sectional study. The subjects consisted of 64 selected teenagers (12-15 yo) from SMPN 1 Kampar in Riau Province. Subjects were measured on January 2022. The indicators of nutrition status were urine Pyd and HAZ as gold standards. Curve of receiver operating characteristic was used to assess the ability of diagnostic test. The ability of urine Pyd in diagnosing stunting was good (AUC area of 70.0%). The urine Pyd qualified as a predictor for the incidence of stunting.

**Keywords:** Height, Linear growth indicators, Pyridinium crosslinks, Sensitivity, Stunting adolescents,

### INTRODUCTION

Stunting is a major nutritional issue worldwide (1). One of the efforts to reduce the prevalence of stunting is to provide a reliable stunting detector. Treatment is more effective at an early stage if stunting can be detected at a preclinical stage. The early detection is part of stunting prevention, that is detecting the possibility of experiencing stunting in children without symptoms. The current stunting indicator is height for age z-score (HAZ). The results of measuring height are often dubious obtained by using measuring gauges and standardization of instruments. The urine Pyd is expected to be an indicator of stunting with bone growth disorders associated with bone resorption (2). The Pyd is dissolved by osteoclastic cells and excreted in the urine (3). The objective of this study is to evaluate the validity of urine Pyd against the HAZ gold standard that can be used to measure linear growth related to early detection of stunting.

### MATERIALS AND METHODS

This cross-sectional study involved 64 selected teenagers (12-15 yo) from SMPN 1 Kampar in Riau Province. Subjects were measured on January 2022. The indicators of nutrition status were the urine Pyd and HAZ as gold standard. Height gauges (microtoise) used STATURE METER. The urine was collected between 7:00 and 10:00 am by using sterile pot; it was then stored in freezer at

-20°C (until further analysis). Pyd measurements were performed by using MicroVue™ PYD EIA kit and a Spectrophotometer. The analysis of urine samples was carried out at Prodia Jakarta. The curve of receiver operating characteristic (ROC) was used to assess the ability of the diagnostic test and to determine the cut of point test results from urine Pyd to detect stunting. The ability of a test is declared appropriate if the area under the curve (AUC) is 0.7 (4).

### RESULTS AND DISCUSSION

The prevalence of stunting subjects was 34.4% (Table I). This result revealed that the value was higher than the prevalence of stunted adolescents aged 13-15 years in Riau Province, namely 25.5% (1). The urine Pyd is not only to measure linear growth in the age group of adolescents aged 12-15 years but also applies to the age group of neonates (0-3 days) and the group of children aged 4-6 years (2). In the future, urine Pyd is expected to be used for pregnant women.

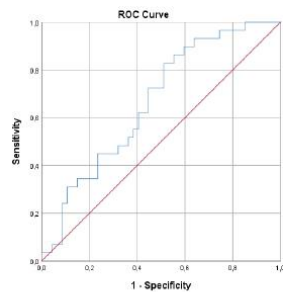
The ability of urine Pyd in diagnosing stunting was good with an AUC area of 0.700 (70.0%) at measurement. The sensitivity of the urine Pyd test to state positive for the ones experiencing stunting was 72.4%. The higher the sensitivity of a test, the more positive test results are obtained in the ones who are stunted or the fewer the number of false negatives (5). The specificity of the urine Pyd test for negative shows that for the ones who did



**Table 1: Indicators of linear growth**

Variable	n	Value*
HAZ		
Stunting	22	-2.4±0.3
Normal	42	-0.5±0.6
Height (cm)		
Stunting	22	145.4±3.5
Normal	42	158.8±5.6
Pyd (nmol/mmol creatinine)		
Stunting	22	173.7±75.0
Normal	42	133.0±69.1

NOTE: Mean ± SD



**Fig 1: Curve of receiver operating characteristic (ROC)**

— Urine Pyd ROC area: 0.7  
 — Reference

not experience stunting was 53.2%; specificity of the urine Pyd test described the number of those who had a negative test result in the ones who were not stunted (number of false positives). The urine Pyd accuracy is the proportion of the correct test's results among all respondents examined, namely 60.5%. The predictive value of negative test that is the proportion of those who were not sick among negative test results was 75.8%. The best cut point of urine Pyd for diagnosing stunting was 133.5 nmol/mmol creatinine.

**CONCLUSION**

The urinary Pyd is considered an acceptable measurement for assessing stunting. The Pyd qualified as a predictor instrument for stunting. The Pyd has a higher sensitivity value than the specificity value. The urinary Pyd needs to be investigated further in the future regarding its reliability in groups of pregnant women and their babies.

**ACKNOWLEDGEMENTS**

Thanks for urine Pyd content analysis facility from Prodia Clinical Laboratory Pekanbaru and Jakarta; and milk assistance from PT Indolakto Jakarta.

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6. Sertifikat



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