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Environmental Differences Affecting Metabolic Disorders in Krangkeng and Karangjaladri Villages, West Java, Indonesia

Rini Hendriani*[1], Aria Aristokrat[2], Yuni E. Hadisaputri[2], and Iyan Sopyan[3]

[1]Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran
[2]Pharmaceutical Biology, Faculty of Pharmacy, Universitas Padjadjaran
[3]Pharmaceutics and Pharmaceutical Technology, Faculty of Pharmacy, Universitas Padjadjaran

Abstract

Environmental factors, such as weather, proximity to the sea, temperature, and water quality, can influence lifestyle and diet intake, thereby affecting the body's metabolism. This study was conducted in Krangkeng and Karangjaladri Villages, West Java, Indonesia, because the two villages have different geographical locations and main livelihoods, where the majority of the population of Krangkeng Village work as farmers and Karangjaladri Village as fishermen. This study aimed to determine the effect of the differences in environmental factors in the two villages on metabolic disorders by comparing random blood sugar, total cholesterol, and uric acid levels. The type of study was an analytical cross-sectional and quantitative, non-experimental research design using accidental sampling technique, and data were analyzed using SPSS Statistics. The number of respondents in this study was 162, and each participant underwent blood sugar, total cholesterol, and uric acid measurements using the Multi-Monitoring System Autocheck 3 in 1. The results of the analysis showed a significant difference (p=0.031) in random blood sugar of Krangkeng village (184.59±123.35 mg/dL) with Karangjaladri village (130.94±62.66 mg/dL). There was also a significant difference in total cholesterol (p=0.000) between Krangkeng village (226.78±50.28 mg/dL) and Karangjaladri village (197.66±40.94 mg/dL). The uric acid levels in men were significantly different (p=0.035) between Krangkeng village (5.99±1.39 mg/dL) and Karangjaladri village (6.94±1.58 mg/dL). Meanwhile, there was no significant difference in uric acid levels in women (p=0.544) between Krangkeng Village (5.45±1.54 mg/dL) and Karangjaladri Village (5.6±1.62 mg/dL). Differences in work, lifestyle, water quality, and weather from the two villages could contribute to the difference in the occurrence of metabolic disorders. The study concluded that differences in environmental factors had an effect on metabolic disorders in the two villages studied, as seen from the significant differences in random blood sugar, total cholesterol, and uric acid in male residents of Krangkeng and Karangjaladri villages.

Keywords: Environmental Factor, Lifestyle, Metabolic Disorders, Public Health

Corresponding author: Rini Hendriani. Department of Pharmacology and Clinical Pharmacy, Faculty of Pharmacy, Universitas Padjadjaran. Email: rini.hendriani@unpad.ac.id
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Introduction

These days, the prevalence of metabolic disorders is gradually increasing and leading to negative consequences for individuals, the general public, and even national economies. A metabolic disorder is an abnormal human body metabolism that includes conditions such as hypertension, obesity, insulin resistance, and dyslipidemia. It can also increase the risk of developing diabetes mellitus, arteriosclerosis, and kidney stones[1]. Worldwide, adults with metabolic disorders are thought to make up 20–25% of the population. This pattern is also seen in Indonesia, where 17.5% of people have metabolic disorders[2]. According to studies, people with metabolic disorders had a 3 times higher risk of heart disease and stroke, a 2 times higher risk of dying, and a 5 times higher risk of developing diabetes mellitus than people without metabolic disorders[3]. In Indonesia, the prevalence of diabetes mellitus is increasing from year to year. It is predicted that by 2030, there will be a rise from 8.4 to 21.3 million people[4].

The environment can be one of the factors that cause metabolic disorders, because a poor environment, such as waste, pollution, and environmental contamination, can affect health[5]. In addition, the environment is related to lifestyle[6], occupation[7], and daily food[8] which affect the body's metabolism.

Diabetes mellitus, dyslipidemia, and hyperuricemia are related to each other.9 hyperuricemia has been associated with various diseases, such as dyslipidemia, obesity, hypertension, and diabetes[10] If suffer from one of those factors, it will increase the possibility of developing other disorders[1,11], Therefore, early screening for the disease is very much needed. Random Blood Glucose (RBG) becomes one of the parameters and early manifestations for diabetes mellitus. High Total cholesterol (TC) can be an early indication when the body can no longer tolerate fat levels or dyslipidemia. On the othe hand, high uric acid (UA) in the blood means that the body can no longer metabolize uric acid, leading to the onset of hyperuricemia. This early diagnosis is very important because if the biochemical parameters of the blood exceed normal levels and are rarely monitored, it will lead to more severe and complicated diseases.

Krangkeng and Karangjaladri Village are two villages located in the same province, namely West Java, Indonesia, but have different environments, making them interesting to study in relation to metabolic disorders that occur there. Krangkeng Village is far from the beach and the majority of its residents work as farmers, while Karangjaladri Village is near the coast and the majority of its residents work as fishermen. Both villages have different cultures and food consumption patterns.

Currently, there is no research that discusses the influence of environmental factors on metabolic disorders from both villages. Therefore, this study aimed to determine the effect of differences in environmental factors in the two villages on metabolic disorders by comparing random blood sugar, uric acid, and cholesterol levels. The results of this study, it is expected to provide an overview of metabolic disorders that occur there, so that people can improve their lifestyles influenced by the environment. This will help improve public health through health promotion.

Based on the above description, the researcher was interested in conducting a study on adverse events/side effects of metabolic syndrome from atypical antipsychotic therapy, particularly on the use of clozapine, olanzapine, and risperidone, whether alone or in combination therapy, in schizophrenia patients at outpatient clinics in hospitals in the city of Palu.

Method

Design Study and Participant

The type of study was an analytical cross-sectional and quantitative, non-experimental research design using an accidental sampling technique. Data was collected during social services on August 26, 2020 in Krangkeng Village, Kangkeng Prefecture, Indramayu District, West Java, Indonesia and on September 24, 2020 in Karangjaladri Village, Parigi District, Pangandaran District, West Java, Indonesia. The minimum number of samples in this study was calculated using the Lemeshow The minimum number of samples in this study was calculated using the Lemeshow formula because the target population was too large and had varying numbers. The results obtained showed that the minimum number of samples needed was 96 respondents. The total number of respondents in this study was 162 participants with inclusion criteria being adults, both male and female, who live in each village studied and could be present at the research site. In comparison, the exclusion criteria were people who refused to undergo the blood tests. There were 103 participants from Krangkeng village consisting of 22 men and 81 women with an average age of 52.9±10.4, and from Karangjaladri village were 59 participants consisting of 26 men and 38 women with an average age of 45±12.

Data Collection

Each participant underwent RBG, TC, and UA measurements. Blood was drawn from the fingertips of participants in both villages in the morning under random body condition. RBG, UA, and TC were measured using the Multi-Monitoring System Autocheck 3 in 1 (General Life Biotechnology Co., Ltd, New Taipei City 242, Taiwan), and the results were in mg/dL. A brief interview was conducted regarding daily activities as well as eating and drinking habits, other data were obtained from literature studies. The dependent variable in this study was the biochemical blood results. Meanwhile, the independent variables were Krangkeng Village and Karangjaladri Village groups.

Statistics and Data

The normality of the data was tested with the Kolmogorov-Smirnoff test, when an abnormal data was obtained then a non-parametric test was performed. The data analysis was done with the Independent T-Test for the parametric tests and the Mann-Whitney U test for the non-parametric tests. The confidence interval in this study was 95% so that if the p-value is < 0.05 then it could be stated as meaningful in statistics. The test using IBM SPSS Statistics 25.

Result and Discussion

This study provides an overview of metabolic disorders that occur in Krangkeng Village and Karangjaladri Village by comparing RBG, UA, and TC levels so that the community could improve lifestyles that are influenced by the environment, since the two villages have different geographical locations and main livelihoods, this will help improve public health through health promotion.

Blood biochemical measurements have been carried out, RBG, UA, and TC, from 162 participants, consisting of 103 people from Krangkeng village and 59 people from Karangjaladri village. The majority of the subjects were middle-aged, 45-59 years. The gender of the subjects from both villages is predominantly female compared to male. In Krangkeng village, the number of female subjects is 81 and the number of male subjects is 22. In Karangjaladri village, the number of female subjects is 38 and the number of male subjects is 26. The results of the subject

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characteristics data can be found in Table 1.

The measured RBG, UA, and TC levels were shown in Table 2. The result showed that 52 people (50,98%) in Krangkeng had RBG above normal (>120 mg/dL), while in Karangjaladri there were 24 people (40,67%). The difference in RBG levels at both locations was statistically significant (p = 0,031). There were 68 people (66,02%) in Krangkeng and 27 people (45,76%) in Karangjaladri had TC above normal values (>200 mg / dL). The TC values at the two locations were statistically different (p= 0,00). The measured blood UA levels, there were 23 people (28.39%) of women in Krangkeng and 11 people (33.33%) in Karangjaladri who had blood UA levels above normal (> 6 mg/dL), but the values in the two locations were not statistically different (p = 0.544). There were 6 men (27.27%) in Krangkeng and 13 men (50%) in Karangjaladri who had blood UA levels above normal (>7 mg/dL) and the values in the two locations were statistically significantly different (p=0.035).

From the results of blood tests conducted, it was found that the value of RBG and TC in Krangkeng village were greater than that in Karangjaladri village and these values were statistically significantly different. The value of blood UA in men was greater in Karangjaladri village than in Krangkeng village and these values were statistically different. The value of UA in women was also greater in Karangjaladri village than that in Krangkeng village but not statistically different. The differences in RBG, TC, and UA, will be linked to the environmental factors of these two villages.

Blood sampling is performed to observe the biochemical aspects of blood such as RBG, UA, and TC, which are initial screenings and early diagnosis of metabolic disorders. RBG is one aspect for screening type 2 diabetes mellitus. Excessive UA in the blood can be one aspect for screening hyperuricemia. Whereas TC above the normal limit can be a screening for dyslipidemia. The biochemical aspect of the blood is performed because it tends to be easy, quick, inexpensive, and the subjects are generally willing to do it.

Krangkeng Village is one of the villages in Krangkeng Sub-district, Indramayu Regency, West Java and it has an area of 11.71 km2. The livelihoods of the people of Krangkeng Village are varied, there are farmers, fishermen, laborers, and so on, but the majority of Krangkeng villagers are farmers[12].

Karangjaladri Village is one of the villages in Parigi Subdistrict, Pangandaran Regency, West Java with an area of 3.9495 km2. The residents of Karangjaladri village also have varied livelihoods such as fishermen, farmers, livestock cultivation, and so on, but the majority of Karangjaladri villagers work as fishermen[13], in particular, Karangjaladri village is directly bordered by the sea.

One of the early detections for type 2 diabetes mellitus is by measuring RBG which the normal levels are <120 mg/dL. The average RBG from Krangkeng village (184.59 ± 123.35 mg/dL) and Karangjaladri village (130.94 ± 62.66 mg/dL) were higher than the normal level and statistically significantly different (p = 0.031) as shown in Table 2. Based on the results of interviews with residents in both villages, the people of Krangkeng village prefer to consume sweetened iced tea daily compared to the people of Karangjaladri village. They consume sweetened iced tea as a common habit in their community. Consuming too much sweetened iced tea containing sugar can be a risk factor for type 2 diabetes mellitus[14]. In addition, many Krangkeng villagers are farmers so they may consume excessive rice, which is one of the factors that increase RBG

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levels[15].

Blood UA levels of women in Karangjaladri village were higher (5.6 ± 1.62 mg/dL) compared to that of women in Krangkeng village (5.45 ± 1.54 mg/dL) but not statistically significantly different (p = 0.544) as shown in Table 2. Normal blood UA levels in women are <6 mg/dL. Blood UA levels of men in Karangjaladri village were higher (6.94 ± 1.58 mg/dL) compared to men in Krangkeng village (5.99 ± 1.39 mg/dL) and statistically significantly different (p = 0.035) shown in Table 2. Normal blood UA levels in men are <7 mg/dL. Consumption of foods rich in purines such as seafood can increase UA levels in the body[16]. So that residents in areas close to the sea such as Karangjaladri Village where there are many fishermen and high number of marine fish consumption will have high UA levels. However, UA levels in both villages were within the normal range. This may be related to high daily activities as farmers (Krangkeng village) and fishermen (Karangjaladri village). Increasing physical activity in daily life may prevent metabolic disorder[17].

Dyslipidemia is strongly associated with TC levels. Normal TC levels are < 200 mg/dL. TC in Krangkeng village (226.78 ± 50.28 mg/dL) was greater than that in Karangjaladi village (197.66 ± 40.94 mg/dL) and statistically significantly different (p = 0.000) as shown in Table 2. Karangjaladri villagers regularly consume marine fish while Krangkeng villagers consume freshwater fish. Marine fish have high levels of omega 3 and low saturated fat compared to freshwater fish. Even marine fish contains polyunsaturated fatty acids (PUFA) which are good for health and metabolism, one of which is to control cholesterol levels[18,19]. In addition to fish consumption, Krangkeng villagers regularly consume shrimp crackers and shrimp paste sauce. Shrimp itself is very low in total fat but high in cholesterol. However, shrimp also has PUFA and other fats that are good for health. Shrimp in this village is fried using oil while high oil levels can lead to increased TC levels and cooking by frying using oil will reduce the benefits of shrimp[20].

There are many differences between Krangkeng village and Karangjaladri village based on various factors. The most significant difference is that the main livelihoods of the residents of the two villages are different, which is related to the different locations of the villages. The location of Karangjaladri Village is closer to the beach, so the majority of the population's livelihood is as fishermen. Meanwhile, in Krangkeng Village, which is located far from the coast, the majority of people there work as farmers. In addition, the land in Krangkeng village is more fertile than that in Karangjaladri village, so the land in Karangkeng village is more suitable for planting various crops including rice plants.

Environmental factors also influence the diet of the population. Karangjaladri villagers consume seafood more often than Krangkeng villagers, because Karangjaladri located nearer to the sea compared to Krangkeng. Different dietary patterns due to differences in geographic regions may increase the risk of metabolic disorder[21]. The people of Karangjaladri village utilize the potential of marine fish as a source of feed.

Climate and temperature in the two villages are not too different. The average temperature during the day in Krangkeng village is 32^{o}C while Karangjaladri village is 34^{o}C. From interviews with residents in both villages, people in both villages have jobs that are high in physical activity. The temperature and high physical activity can also lead to metabolic disorders[22].

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Lifestyle factors can influence metabolic disorder and further cause metabolic syndrome, including diabetes mellitus, dyslipidemia and hyperuricemia which were examined in this study. Type 2 diabetes mellitus can be caused by excessive sugar consumption on an ongoing basis which causes fatigue, dizziness, and headaches[23]. Dyslipidemia is caused by high levels of lipids in the body which causes the neck to feel heavy and sore[24]. High uric acid is caused by a body that is unable to metabolize purines so that it can cause pain in several joints when it is moved or in chronic conditions known as gout[25]. All three diseases are included in metabolic syndrome and can be risk factors for cardiovascular disease[26].

The water conditions in these two villages are also different. During the dry season, Krangkeng village struggles to obtain clean water[27]. Clean water and good sanitation greatly affects public health[28]. Even though Karangjaladri village does not have an issue with obtaining clean water, sometimes it is risky to get contaminated by the sea since the location is close to the coast. This can also threaten the health of the local community[29], thereby affecting the health of the local community.

It cannot be denied that this research is merely the beginning and foundation for understanding the relationship between environmental factors and metabolic disorders. In subsequent research, it would be better if the number of respondents was increased and they were asked to fast for 8-12 hours before undergoing a blood test so that the results would be better. Further research from the geographical sector is needed to analyze the regional conditions more comprehensively.

With this research, it is hoped that the community and healthcare workers will be more aware of the impact of the environment on metabolic disorders. Social services can be conducted in the form of health promotion to educate about a healthy lifestyle, such as maintaining a balanced diet and exercising regularly. This is because the environment can influence the eating habits and activities of the people living in that environment. This will certainly support the improvement of better public health.

Conclusion

Based on statistical analysis in this study, it can be concluded that the use of atypical atipsychotics, both single and combined, does not have a significant impact on the side effects of metabolic syndrome. However, there was an increase in the value of one or two of the five criteria for metabolic syndrome in schizophrenia patients.

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In conclusion, the environment influences daily activity, main livelihoods, food intake, water quality, and lifestyle. These factors are one of the causes of significant differences in RBG, TC, and UA in male residents of Krangkeng and Karangjaladri villages, whereas UA in women were not significantly different between the two villages. Therefore, education and health promotion are needed in areas that have a risk of environmental factors leading to metabolic disorders to improve public health. This study only discusses several environmental factors affecting RBG, UA, and TC. Future research is expected to examine in more detail other factors affecting a more comprehensive blood biochemical parameter.

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Conflict of Interest
There is no conflict of interest in this study

References
1. Rochlani Y, Pothineni NV, Kovelamudi S, Mehta JL. Metabolic syndrome: pathophysiology, management, and modulation by natural compounds. *Therapeutic advances in cardiovascular disease*. 2017;11(8):215-225. doi:10.1177/1753944717711379
2. Yulianto MFD, Wahyono TYM, Helda. Sindrom Metabolik dan Kejadian Stroke pada Penduduk Berusia > 15 Tahun di Indonesia: Analisis Data Riskesdas 2018. *Jurnal Epidemiologi Kesehatan Indonesia*. 2023;7(1). doi:10.7454/epidkes.v7i1.6959
3. Wahidin M, Achadi A, Besral B, et al. Projection of diabetes morbidity and mortality till 2045 in Indonesia based on risk factors and NCD prevention and control programs. *Sci Rep*. 2024;14(1):5424. doi:10.1038/s41598-024-54563-2
4. Suastika K. The challenges of metabolic disorders in Indonesia: focus on metabolic syndrome, prediabetes, and diabetes. *Medical Journal of Indonesia*. 2020;29(4):350-353. doi:10.13181/mji.com.205108
5. Khalil WJ, Akeblersane M, Khan AS, Moin ASM, Butler AE. Environmental Pollution and the Risk of Developing Metabolic Disorders: Obesity and Diabetes. *Int J Mol Sci*. 2023;24(10):8870. doi:10.3390/ijms24108870
6. Oka M, Yamamoto M, Mure K, Takeshita T, Arita M. Relationships between Lifestyle, Living Environments, and Incidence of Hypertension in Japan (in Men): Based on Participant's Data from the Nationwide Medical Check-Up. Ojima T, ed. *PLOS ONE*. 2016;11(10):e0165313. doi:10.1371/journal.pone.0165313
7. Van Zon SKR, Amick Iii BC, De Jong T, Brouwer S, Bültmann U. Occupational distribution of metabolic syndrome prevalence and incidence differs by sex and is not explained by age and health behavior: results from 75 000 Dutch workers from 40 occupational groups. *BMJ Open Diabetes Res Care*. 2020;8(1):e001436. doi:10.1136/bmjdrc-2020-001436
8. Wiegers C, Larsen OFA. Short communication: Nutrient intake and total caloric intake are not entirely proportionate to metabolic disease prevalence. *PharmaNutrition*. 2024;27:100373. doi:10.1016/j.phanu.2023.100373
9. Fang Y, Mei W, Wang C, et al. Dyslipidemia and hyperuricemia: a cross-sectional study of residents in Wuhu, China. *BMC Endocrine Disorders*. 2024;24(1):2. doi:10.1186/s12902-023-01528-7
10. Fang Y., Mei W., Wang C., Ren X., Hu J., Su F., Cao L., Tavengana G., Jiang M., Wu H., Wen Y. Dyslipidemia and hyperuricemia: a cross-sectional study of residents in Wuhu, China. *BMC Endocr Disord*. 2024. 24(2): 1-8
11. Xiong Q, Liu J, Xu Y. Effects of Uric Acid on Diabetes Mellitus and Its Chronic Complications. *Int J Endocrino*l. 2019;2019:1-8. doi:10.1155/2019/9691345
12. Badan Pusat Statistik. Kecamatan Krangkeng Dalam Angka. Badan Pusat Statistik; 2021.
13. Luciana L, Hamzah A, Mardin. SUMBER PENGHASILAN MASYARAKAT

NELAYAN (Studi Kasus Di Desa Bungin Permai Kecamatan Tinanggea Kabupaten Konawe Selatan). *Jurnal Ilmu Membangun Desa Dan Pertanian*. 2017;2(1):20-24. doi:doi: http://dx.doi.org/ 10.33772/jimdp.v2i1.6653

14. Tseng TS, Lin WT, Gonzalez GV, Kao YH, Chen LS, Lin HY. Sugar intake from sweetened beverages and diabetes: A narrative review. *World J Diabetes*. 2021;12(9):1530-1538. doi:10.4239/wjd.v12.i9.1530
15. Yu J, Balaji B, Tinajero M, et al. White rice, brown rice and the risk of type 2 diabetes: a systematic review and meta-analysis. *BMJ Open*. 2022;12(9):e065426. doi:10.1136/bmjopen-2022-065426
16. Aihemaitijiang S, Zhang Y, Zhang L, et al. The Association between Purine-Rich Food Intake and Hyperuricemia: A Cross-Sectional Study in Chinese Adult Residents. *Nutrients*. 2020;12(12):3835. doi:10.3390/nu12123835
17. Ko KJ, Kim EH, Baek UH, Gang Z, Kang SJ. The relationship between physical activity levels and metabolic syndrome in male white-collar workers. *J Phys Ther Sci*. 2016;28(11):3041-3046. doi:10.1589/jpts.28.3041
18. Łuczyńska J, Paszczyk B, Łuczyński MJ. Fatty acid profiles in marine and freshwater fish from fish markets in northeastern Poland. *Arch Pol Fish.* 2014;22(3):181-188. doi:10.2478/aopf-2014-0018
19. Asmah R, Sumaiyah SSA, Nurul SR. Comparison of protein, total fat, and omega-3 fatty acids content in yellowtail catfish (Pangasius pangasius) and long tail shad (Hilsa (clupea) macrura) in raw and pressurized fish. *International Food Research Journal*. 2014;21(6):2147-2153.
20. Saini RK, Song MH, Rengasamy KRR, Ko EY, Keum YS. Red Shrimp Are a Rich Source of Nutritionally Vital Lipophilic Compounds: A Comparative Study among Edible Flesh and Processing Waste. *Foods*. 2020;9(9):1179. doi:10.3390/foods9091179
21. Makiel K, Suder A, Targosz A, Maciejczyk M, Haim A. Effect of Exercise Interventions on Irisin and Interleukin-6 Concentrations and Indicators of Carbohydrate Metabolism in Males with Metabolic Syndrome. *Journal of Clinical Medicine*. 2023;12(1):369. doi:10.3390/jcm12010369
22. Wang Y, Dai Y, Tian T, et al. The Effects of Dietary Pattern on Metabolic Syndrome in Jiangsu Province of China: Based on a Nutrition and Diet Investigation Project in Jiangsu Province. *Nutrients*. 2021;13(12):4451. doi:10.3390/nu13124451
23. Farmaki P, Damaskos C, Garmpis N, Garmpi A, Savvanis S, Diamantis E. Complications of the Type 2 Diabetes Mellitus. *Current Cardiology Reviews* 2021;16(4):249-251. doi:10.2174/1573403X1604201229115531
24. Kumagai G, Wada K, Tanaka T, et al. Associations between neck symptoms and LDL cholesterol in a cross-sectional population-based study. *Journal of Orthopaedic Science*. 2018;23(2):277-281. doi:10.1016/j.jos.2017.11.002
25. Ragab G, Elshahaly M, Bardin T. Gout: An old disease in new perspective – A review. *Journal of Advanced Research*. 2017;8(5):495-511. doi:10.1016/j.jare.2017.04.008
26. Rus M, Crisan S, Andronie-Cioara FL, et al. Prevalence and Risk Factors of Metabolic Syndrome: A Prospective Study on Cardiovascular Health. *Medicina* (Mex). 2023;59(10):1711. doi:10.3390/medicina59101711
27. Chayati C, Prayudi DA. PENGOLAHAN AIR HUJAN UNTUK KEBUTUHAN AIR BERSIH DENGAN METODE RAINWATER HARVESTING

DI KAMPUNG KRANGKENG KABUPATEN SUMENEP. NAROTAMA *Jurnal Teknik Sipil*. 2019;3(2):34-42. doi:10.31090/njts.v3i2.940
28. Prüss-Ustün A, Wolf J, Bartram J, et al. Burden of disease from inadequate water, sanitation and hygiene for selected adverse health outcomes: An updated analysis with a focus on low- and middle-income countries. *International Journal of Hygiene and Environmental Health.* 2019;222(5):765-777. doi:10.1016/j.ijheh.2019.05.004
29. Wijaya RM, Akbarsyah N, Thirafi L, Fauzan F, Nuraliza M. IDENTIFIKASI AWAL INTRUSI AIR LAUT DI DUSUN BOJONG SALAWE, DESA KARANGJALADRI, KABUPATEN PANGANDARAN. LEMURU *Jurnal Ilmu Perikanan Dan Kelautan Indonesia.* 2024;6(1):39-47. doi:https://doi.org/10.36526/jl.v6i1.3516

Table 1. Characteristics subjects from Krangkeng and Karangjaladri villages.

Criteria	Krangkeng (n=103)	Karangjaladri (n=59)	p	95% Confidence Interval	
				Lower	Upper
Age[1] (year), mean ± SD	52.9 ± 10.4	45 ± 12	0.000*	4.02	11.33
Gender					
Man, n (%)	22 (21.36)	26 (44.07)	-	-	-
Woman, n(%)	81 (78.64)	38 (55.93)	-	-	-

SD: standard deviation. [1]Result of independent t-test. *Denotes statistically significant differences ($p < 0.05$) with the confidence interval 95%

Table 2. Random blood glucose, uric acid in women and men, and total cholesterol of subjects from Krangkeng and Karangjaladri villages.

Criteria	Krangkeng (n=103)	Karangjaladri (n=59)	p	95% Confidence Interval	
				Lower	Upper
RBG[2] (mg/dL), mean ± SD	184.59 ± 123.35	130.94 ± 62.66	0.031*	-	-
< 120 mg/dL, n (%)	51 (49.02)	35 (59.33)	-	-	-
≥ 120 mg/dL, n (%)	52 (50.98)	24 (40.67)	-	-	-
Uric acid in women[2] (mg/dL), mean ± SD	5.45 ± 1.54	5.6 ± 1.62	0.544	-	-
< 6 mg/dL, n (%)	58 (71.61)	22 (66.67)	-	-	-
≥ 6 mg/dL, n (%)	23 (28.39)	11 (33.33)	-	-	-
Uric acid in man[2] (mg/dL), mean ± SD	5.99 ± 1.39	6.94 ± 1.58	0.035*	-1.82	-0.07
< 7 mg/dL, n (%)	16 (72.73)	13 (50)	-	-	-
≥ 7 mg/dL, n (%)	6 (27.27)	13 (50)	-	-	-
Total Cholesterol[1] (mg/dL), mean ± SD	226.78 ± 50.28	197.66 ± 40.94	0.000*	14.74	43.51
< 200 mg/dL, n (%)	35 (33.98)	32 (54.24)	-	-	-
≥ 200 mg/dL, n (%)	68 (66.02)	27 (45.76)	-	-	-

SD: standard deviation, RBG: random blood glucose. [1]Result of independent t-test. [2]Result of Mann-Whitney test. *Denotes statistically significant differences ($p < 0.05$) with the confidence interval 95% for independent t-test