

Original Research

The Relationship between Demographic Characteristics and Nutritional Status on Anemia among Balinese Traditional Porter after the COVID-19 Pandemic



Putu Ratna Suprima Dewi^{1*}, Ni Putu Ayu Wulan Noviyanti¹, I Kadek Agus Dwija Putra², & Yupin Aunguroch³

¹Department of Health Administration, Stikes KESDAM IX/Udayana, Denpasar, Indonesia

²Department of Nursing, Stikes KESDAM IX/Udayana, Denpasar, Indonesia

³Faculty of Nursing, Chulalongkorn University, Bangkok, Thailand

| Article Info | Abstract |
|---|---|
| Article history: Received: 22 September 2022 Accepted: 23 December 2022 | <p>Introduction: The impact of the pandemic on people's lives, one of which is a decrease in income. <i>Tukang suun</i> (Balinese traditional lady porter) who earned income depends on the needs of customers in the market in using their services. Limited income makes it difficult for them to provide nutritious food, this makes them vulnerable to experienced anemia. This study aims to determine the relationship between daily income, age, marital status and nutritional status with anemia in tukang suun in the Badung Market Heritage Area after the COVID-19 pandemic.</p> <p>Methods: This study used observational with a cross-sectional approach. The sample in this study was selected by total sampling so as to obtain 107 <i>tukang suun</i> who work in the Badung Market Heritage Area as respondents. Research data were collected using several validated and calibrated instruments.</p> <p>Results: The results of the bivariate analysis showed that the variables of daily income (p value = 0,357), age (p value = 0,459) and marital status (p value = 0.619), where p value >0.05 and the nutritional status variable (p value = 0.021), where the p value <0.05.</p> <p>Conclusion: This study showed that there is no significant relationship between demographic characteristics variable with the incidence of anemia among <i>tukang suun</i>. Different results were obtained on the nutritional status variable has significant relationship between nutritional status and anemia among <i>tukang suun</i>.</p> |
| Keywords: daily income, age, marital status, nutritional status, anemia | |

*Corresponding Author:

e-mail: ratnasuprimadewi@gmail.com



This work is licensed under a Creative Commons Attribution 4.0 International License.

INTRODUCTION

Economic recovery after the Covid-19 pandemic has not been maximized. Some economic activities have not been able to run well. Community businesses and public places have started to open, but people's income has not been able to be obtained optimally. The impact of the pandemic on people's lives, one of which is a decrease in income. The decline in people's income affects the adequacy of nutritious food to support health. People's income is directly proportional to consumption patterns. The higher the income of the community, the easier it is for the community to reach nutritious food [1].

Tukang suun is Balinese traditional porters are mostly occupied by female worker who offer goods transportation services. The income earned depends on the needs of customers in the market in using their services. After the pandemic, the market conditions are not yet full of customers. Customers are used to shopping online, so that the demand for transportation services has decreased and the income of *tukang suun* has decreased. The decline in income will be more severe for *tukang suun* who are married and are the breadwinners of the family. Limited income makes it difficult for them to provide nutritious food, this makes them vulnerable to health problems. One of the health problems experienced is anemia.

Anemia is a condition in which the level of hemoglobin (Hb) in red blood cells is below the normal value. Factors that cause anemia are generally due to abnormal nutritional status conditions, either excess or less and the presence of infectious diseases [2]. Symptoms

of anemia that generally appear are weakness, fatigue, lethargy, headache, dizziness and dizzy eyes. Another common sign of anemia is pale eyelids. Anemia can be measured by measuring the level of hemoglobin in the blood [3]. Low income and marital status are suspected of having an effect on anemia. The low income of married workers makes it increasingly difficult to meet the nutritional needs of their families [4]. Nutritional status affects the condition of anemia. Nutritional status is positively correlated with Hb levels, the worse the nutritional status, the lower the Hb levels [5]. The age of some women who are still in their reproductive age also affects the increase in anemia status. This is because women of reproductive age are still experiencing the menstrual cycle which can affect Hb levels in the blood. In addition, women of reproductive age are also still experiencing the phase of breastfeeding and giving birth so that it can aggravate the anemia condition that may have been experienced [6]. This study aims to determine the relationship between daily income, age, marital status and nutritional status with anemia in *tukang suun* in the Badung Market Heritage Area after the Covid-19 pandemic.

METHODS

This study used observational design with a cross-sectional approach. The sample in this study was selected by total sampling so as to obtain 107 *tukang suun* who work in the Badung Market Heritage Area as respondents. The inclusion criteria in this study were female *tukang suun* who were over 18 years old and used a basket as transportation tools.

Research data were collected using several validated and calibrated instruments such as questionnaire, digital weight scales, height measuring instrument and easy touch GCHb. Data on daily income, age and marital status were collected using the respondent's identity questionnaire. Nutritional status data was obtained from the calculation of body mass index from height data measured by height measuring instruments and weight data measured by weight scales. Data on anemia status was obtained from measuring the level of hemoglobin (Hb) in the blood using an easy touch GCHb measuring instrument which produced by Bioptik Technology, Inc on 2020 with accuracy 98,40%. The data in this study were then tabulated, then analyzed by univariate and bivariate. This study was declared ethically worthy by the Research Ethics Commission of the Medical Faculty of Udayana University/ Prof Dr. I. G. N.G Ngoerah Central General Hospital with number 1995/UN14.2.2.VII.14/LT/2022. The data collected is handled with care and confidentiality is guaranteed by only allowing research staff to access the raw data.

RESULTS

The results of the univariate analysis of the data collected in this study are presented in table 1. Based on table 1 above, it can be seen that there are mostly *tukang suun* who make a daily income of more than IDR 50,000 with a total of 75 respondents (70.1%) compared to those who earn a daily income of less than IDR 500,000 with a total of 32 respondents (29.9%). Based on the age group, there are mostly *tukang suun* aged over 45 years with a

total of 86 respondents (80.4%) compared to those aged less than 45 years with a total of 21 respondents (19.6%). With regard to marital status, there are mostly *tukang suun* who are married with a total of 96 respondents (89.7%) compared to those who are not married with a total of 11 respondents (10.3%). There are mostly *tukang suun* who have a normal nutritional status with a total of 56 respondents (52.3%) compared to those who have an abnormal nutritional status with a total of 51 respondents (47.7%). Furthermore, judging from the status of anemia, mostly *tukang suun* experienced mild anemia with a total of 92 respondents (86.0%) compared to those who experienced severe anemia with a total of 15 respondents (14.0%).

The data were then analyzed bivariately to see the relationship between each variable of daily income, age, marital status and nutritional status with anemia status among *tukang suun*.

From table 2 above, it can be seen that the number of *tukang suun* who earn less than IDR 50,000 has mild anemia with a total of 26 respondents (81.3%), as well as women who earn more than IDR 50,000 more who experienced mild anemia with a total of 66 respondents (88.0%). Based on the age group, both those *tukang suun* who are less than 45 years with a total of 17 respondents (81.0%) and more than 45 years with a total of 75 respondents (87.2%) experiencing mild anemia. *Tukang suun* who are unmarried have more mild anemia with a total of 10 respondents (90.9%) and those who are married also have more mild anemia with a total of 82 respondents (85.4%). Based on

nutritional status, *tukang suun* who have normal nutritional status have more mild anemia, the same thing is also obtained for women who have an abnormal nutritional status more have mild anemia with a total of 48 respondents (94.1%).

Based on the p-value, it can be seen the relationship of each variable of daily income, age, marital status and nutritional status with anemia among *tukang suun*. The results of the bivariate analysis showed that the variables of

daily income (p value = 0.357), age (p value = 0.459) and marital status (value 0.619), where p value >0.05, which can be concluded means that there is no significant relationship with the incidence of anemia among *tukang suun*. Different results were obtained on the nutritional status variable (p value = 0.021), where the p value <0.05, which means that there is a significant relationship between nutritional status and anemia among *tukang suun*.

Table 1
Univariate Analysis Result

| | Variable | Frequency | Percentage (%) |
|---|--------------------|-----------|----------------|
| 1 | Daily Income | | |
| | < IDR 50.000 | 32 | 29,9 |
| | >IDR 50.000 | 75 | 70,1 |
| 2 | Age | | |
| | <45 years | 21 | 19,6 |
| | >45 years | 86 | 80,4 |
| 3 | Marital Status | | |
| | Unmarried | 11 | 10,3 |
| | Married | 96 | 89,7 |
| 4 | Nutritional Status | | |
| | Normal | 56 | 52,3 |
| | Abnormal | 51 | 47,7 |
| 5 | Anemia | | |
| | Mild | 92 | 86,0 |
| | Severe | 15 | 14,0 |

Source: Primary Data (2022)

Table 2

Bivariate Analysis Result

| Variable | Anemia | | | | | | Nilai P |
|--------------------|--------|------|-----------------|------|-------|-----|---------|
| | Mild | | Moderate-Severe | | Total | | |
| | N | % | N | % | N | % | |
| Daily Income | | | | | | | |
| < IDR 50.000 | 26 | 81,3 | 6 | 18,8 | 32 | 100 | 0,357 |
| > IDR 50.000 | 66 | 88,0 | 9 | 12,0 | 75 | 100 | |
| Age | | | | | | | |
| <45 years | 17 | 81,0 | 4 | 19,0 | 21 | 100 | 0,459 |
| >45 years | 75 | 87,2 | 11 | 12,8 | 86 | 100 | |
| Marital Status | | | | | | | |
| Unmarried | 10 | 90,9 | 1 | 9,1 | 11 | 100 | 0,619 |
| Married | 82 | 85,4 | 14 | 14,6 | 96 | 100 | |
| Nutritional Status | | | | | | | |
| Normal | 44 | 78,6 | 12 | 21,4 | 56 | 100 | 0,021 |
| Abnormal | 48 | 94,1 | 3 | 5,9 | 51 | 100 | |

Source: Primary Data (2022)

DISCUSSION

The results of this study indicate that there is no significant relationship between daily income and anemia among *tukang suun* ($0.357 > 0.05$). Similar results were obtained in a study on adolescents who obtained the results that there was no significant relationship between parental income and the incidence of anemia in adolescents [7]. Different research results were obtained in research on female workers in Sukoharjo which found that there was a relationship between income and the incidence of anemia [8]. In theory, workers who earn less income will pay less attention to nutritional intake, so that they can increase the risk of experiencing health problems, one of which is anemia [9]. Most of *tukang suun* who involved in this study earn more than IDR 50,000. This income is certainly less than their income before the Covid-19 pandemic. According to

the results of interviews, both before and after the pandemic, their daily menu intake did not change much. The daily dietary intake of *tukang suun*, both before and after Covid-19, did not really pay much attention to balanced nutritional values. This is due to the lack of knowledge of *tukang suun* about a balanced nutritional intake for their daily diet. Individuals who have a good level of knowledge will have a good attitude to determine the efforts that must be made to prevent health problems [10].

The age variable in this study did not have a significant relationship with anemia among *tukang suun* based on the results of the analysis with a p value ($0.459 > 0.05$). Similar studies were also obtained in studies on workers, where there was no significant relationship between age and the incidence of anemia [11]. Different research results obtained in research on workers in industrial areas that there is a relationship between age

and the incidence of anemia [12]. Most of the *tukang suun* who involved in this study were over 45 years old and most of them were no longer of reproductive age, so that the anemia experienced was not severe. Where in theory, women of reproductive age are more prone to experience more severe anemia because they are still experiencing the menstrual cycle and allow them to breastfeed and give birth [13]. Besides that, young *tukang suun* also do not have habits that can exacerbate anemia, such as consuming excess tea. The habit of drinking tea excessively, especially at the same time as eating can interfere with the absorption of iron in the body, causing anemia [14].

Marital status did not have a significant relationship with anemia among *tukang suun*, indicated by the p-value (0.619). Similar studies were also obtained in research on food industry workers, where there was no significant relationship between marital status and anemia in workers [15]. Different research results were obtained in a study on farmers in Bojonegoro which found that there was a significant relationship between marital status and the incidence of anemia in farmers [16]. In theory, married women workers will have a higher chance of experiencing anemia. Women workers who are married after work still have to take care of their household needs, so if they are not supported by adequate nutrition and rest time, they are more at risk of developing anemia. Most of *tukang suun* who involved in this study were married, but most of them lived separately from their families. Most of *tukang suun* together with other *tukang suun* in Denpasar, while their families live in the village. *Tukang suun* does not have to take care of her family

after work and has sufficient rest time, so that the anemia condition experienced is still mild. This is in accordance with the results of research on young women who obtained the results that there was a relationship between resting patterns and the incidence of anemia [17].

In this study, it was found that nutritional status had a significant relationship with anemia as indicated by the p value ($0.021 < 0.05$). Results similar study was obtained in a study on female workers who obtained the results that there was a relationship between nutritional status and hemoglobin levels in the blood [18]. Different research results were obtained in research on female farmers, who obtained the results that there was no significant relationship between nutritional status and the incidence of anemia [19]. *Tukang suun* who were involved in this study were nearly half to have abnormal nutritional status (47%). This is because their daily nutritional intake is not sufficient to support their health, so that *tukang suun* are vulnerable to health problems, one of which is anemia. This is in line with the theory that nutritional problems affect the incidence of anemia which is generally caused by the intake of nutrients needed by the body, one of which is iron intake [20]. Inadequate nutritional intake among *tukang suun* is also influenced by a lack of knowledge about the nutrition they must fulfill. Lack of knowledge has an impact on a person's attitude in determining nutritional status [21].

STUDY LIMITATION

This study has some limitation. This study

was conducted in short period, which may not represent other conditions that may have relationship with anemia among Balinese. Anemia status on this study only tested using digital measuring instruments which may still have a higher bias value than lab tests, even though the measuring instrument to determine anemia status has been calibrated before.

CONCLUSION AND RECOMMENDATION

This study aims to determine the relationship of each variable daily income, age, marital status and nutritional status with anemia among *tukang suun*. The results of the research analysis showed that the variables of daily income (p value = 0.357), age (p value = 0.459) and marital status (value 0.619), where p value >0.05, which can be concluded means that there is no significant relationship with the incidence of anemia among *tukang suun*. Different results were obtained on the nutritional status variable (p value = 0.021), where the p value <0.05, which means that there is a significant relationship between nutritional status and anemia among *tukang suun*. Future research is expected to analyze other factors that have not been studied in this study that may be associated with the incidence of anemia.

ACKNOWLEDGEMENT

This study was support Indonesia Ministry of Education, Culture, Research and Technology on funding this research. Author would like to thank all enumerators and participants who involved to this study. Author also would like

to thank PERUMDA Pasar Sewakadarma Kota Denpasar and PD. Pasar Unit Pasar Badung Kota Denpasar for permission to conduct this study in their area.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest on this study.

CONFLICT OF INTEREST

No authors have declared any conflicts of interest.

REFERENCES

- [1] Fitriani, "Gambaran Pola Makan dan Pendapatan Keluarga pada Anak Balita dengan Status Gizi Selama Masa Pandemi Covid-19 di Kelurahan Anrong Appakka Kecamatan Pangkajene Kabupaten Pangkep Tahun 2021 ," Doctoral Thesis, Universitas Islam Negeri Alauddin Makassar, Makassar, 2021.
- [2] Masthalina, H., "Pola Konsumsi (Faktor Inhibitor dan Enhancer Fe) Terhadap Status Anemia Remaja Putri,," KEMAS: Jurnal Kesehatan Masyarakat, vol. 11, no. 1, pp. 80–86, 2015.
- [3] Kusnadi, F.N., "Hubungan Tingkat Pengetahuan Tentang Anemia dengan Kejadian Anemia pada Remaja Putri,," Jurnal Medika Utama, vol. 3, no. 1, pp. 1293–1298, 2021.
- [4] Aziza, N. and Mil, S., "Pengaruh Pendapatan Orang Tua terhadap Status Gizi Anak Usia 4-5 Tahun pada Masa Pandemi COVID-19,," Golden Age: Jurnal

- Ilmiah Tumbuh Kembang Anak Usia Dini, vol. 6, no. 3, pp. 109–120, 2021.
- [5] Syabani, I. R. N. and Sumarmi, S., "Hubungan status gizi dengan kejadian anemia pada santriwati di Pondok Pesantren Darul Ulum Peterongan Jombang," *Jurnal Keperawatan Muhammadiyah*, vol. 1, no. 1, pp. 7–15, 2016.
- [6] Astriana, W., "Kejadian Anemia Pada Ibu Hamil Ditinjau Dari Paritas Dan Usia," *Aisyah: Jurnal Ilmu Kesehatan*, vol. 2, no. 2, pp. 123–130, 2017.
- [7] Dwihestie, L.K., "Tingkat Pendidikan Ibu dan Tingkat Pendapatan Orang Tua Tidak Berhubungan Dengan Kejadian Anemia Pada Remaja Putri," *Intan Husada: Jurnal Ilmiah Keperawatan*, vol. 6, no. 2, pp. 28–38, 2018.
- [8] Raharjo, B., "Beberapa Faktor Risiko Yang Berhubungan Dengan Kejadian Anemia Pada Pekerja Perempuan di Kelurahan Jetis Kecamatan Sukoharjo," *Doctoral Dissertation, Universitas Diponegoro, Semarang*, 2003.
- [9] Fitri, L., "Hubungan Pola Makan dengan Anemia pada Pekerja Wanita di PT. Indah Kiat Pulp and Paper (IKPP) Tbk. Perawang," *Jurnal Endurance: Kajian Ilmiah Problema Kesehatan*, vol. 1, no. 3, pp. 152–157, 2016.
- [10] Bukit, D.S., Keloko, A.B. and Ashar, T., "Deskripsi Pengetahuan dan Pekerjaan Ibu Terkait Penanggulangan Stunting di Desa Tuntungan 2 Kabupaten Deli Serdang," *Public Health Journal*, vol. 7, no. 2, pp. 1–14, Apr. 2021.
- [11] Zulfiqor, and Widanarko, B., "Faktor Risiko Terkait Anemia Pada Pekerja Industri Makanan Prepotif," *PREPOTIF: Jurnal Kesehatan Masyarakat*, vol. 6, no. 2, pp. 1240–1248, 2022.
- [12] Sihombing, M., "Faktor-faktor yang Berhubungan dengan Anemia pada Pekerja di Kawasan Industri Pulo Gadung Jakarta," *Media Penelitian dan Pengembangan Kesehatan*, vol. 19, no. 3, pp. 116–124, 2009.
- [13] Simbolon, J.L. and Sitompul, E.S. "Tamarillo Juice (*Solanum betaceum Cav*) as An Alternative to Increase Hemoglobin Levels for Pregnant Women with Anemia," *Babali Nursing Research*, vol. 2, no. 3, pp. 106–119, 2021.
- [14] Listiana, A., "Analisis Faktor-Faktor yang Berhubungan Dengan Kejadian Anemia Gizi Besi Pada Remaja Putri di SMKN 1 Terbanggi Besar Lampung Tengah," *Jurnal Kesehatan*, vol. III, no. 3, pp. 455–469, 2016.
- [15] Supriyono, "Faktor-Faktor Yang Mempengaruhi Anemia Gizi Besi Pada Tenaga Kerja Wanita di PT. HM. Sampoerna," 2010.
- [16] Kusumawati, I., "Beberapa Faktor Yang Berhubungan Dengan Kejadian Anemia Pada Petani: Studi Kasus di Desa Semanding, Kecamatan Bojonegoro, Kabupaten Bojonegoro," *Doctoral Dissertation, Universitas Airlangga, Surabaya*, 2007.
- [17] Tarigan, M. B., "Hubungan Gaya Hidup Remaja Terhadap Kejadian Anemia Pada Remaja Putri Kelas X Di Sma Negeri 2 Binjai Tahun 2018," *Jurnal Mutiara Pendidikan Indonesia*, vol. 3, no. 1, pp. 20–28, 2018.

- [18] Setyandari, R. and Margawati, A., "Hubungan Asupan Zat Gizi Dan Aktivitas Fisik Dengan Status Gizi dan Kadar Hemoglobin Pada Pekerja Perempuan," *Journal of Nutrition College*, vol. 6, no. 1, pp. 61–68, 2017.
- [19] Muftiadi, M., "Beberapa Faktor Yang Berhubungan Dengan Kejadian Anemia Pada Wanita Petani Bawang Merah Di Desa Gegerkunci Kecamatan Songgom," *Doctoral Dissertation*, Universitas Muhammadiyah Semarang, Semarang, 2018.
- [20] Indartanti, D. and Kartini, A., "Hubungan Status Gizi Dengan Kejadian Anemia Pada Remaja Putri," *Journal of Nutrition College*, vol. 3, no. 2, pp. 310–316, 2014.
- [21] Indriani, F., Romdiyah, and Setiani, F. T., "Relationship of Knowledge and Attitude about Stunting with Stunting Evidence," *Babali Nursing Research*, vol. 3, no. 2, pp. 110–116, 2022.