



The Effect of Acupressure on Emesis Gravidarum

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Emesis gravidarum is a common condition among pregnant women, with an infection rate of 12.5% worldwide. Hormonal and immune changes have a role in emesis gravidarum. There are drug-based and non-pharmacological emesis gravidarum treatments by diet. Non-virology treatment is through diet, emotional support, and alternative therapies using herbs and acupressure. Acupressure treatment has been widely used in the health sector as a support for medical care, commonly in obstetric clinics. This study aims to determine the effect of acupressure on emesis gravidarum. This type of research is quantitative (analytic) with a quasi-experimental design with Pre-Test and Post-Test Control Group Design. The intervention group was given acupressure. In contrast, the control group was given a placebo. The measured indicator is the frequency of nausea vomiting in pregnant women before and after treatment, and treatment is done once a day for seven days. The results of the study concluded that the distribution of emesis gravidarum before in the intervention group was in the moderate category – 15 people, (39.5%). In contrast, the control group was in the medium category; 13 people, (34.2%). The distribution of emesis gravidarum after acupressure was done in the intervention group was the mild category, 32 people (84.2%), while the control group was the sweet category, 24 people (63.2%). There was a difference in the effect of acupressure on emesis gravidarum before and after treatment with the results of the intervention analysis of the P-value of 0.000 which means <0.05 .

Keyword: *Acupressure, Emesis Gravidarum.*

Introduction

The incidence of vomiting nausea is experienced by 50-90% of pregnant women at the beginning of pregnancy around the term 0-12 weeks, and will improve at a period of 13-20 weeks (Winknjastro, 2009). According to the World Health Organisation (WHO), the incidence rate of



emetic gravidarum amounted to 12.5% of all pregnancies in the world (Hariadi, 2007). Based on the health profile of Lampung Province in 2016, the incidence rate of emetic gravidarum amounted to 50-60% of 182,815 pregnant women. From this data, hyperemesis gravidarum continues in 10-15%. Meanwhile, in Bandar Lampung, hyperemesis gravidarum is as much as 25% from 22,791 people (Dinas Kesehatan Provinsi Lampung, 2014).

The treatment of emetic gravidarum can be pharmacological and non-pharmacological. Pharmacological therapy takes the form of the administration of antihistamines, antiemetics, and corticosteroids. Non-pharmacological treatments are through diet, emotional support, and alternatively treatment through herbs and acupressure (Runiari, 2010). The technique in this therapy uses the fingers needle repellent but is performed at the same points as acupressure. Acupressure to assist with vomiting nausea is done at the end of Pericardium 6. This is the meridian point associated with the heart and stomach, thus stimulating the release of beta-46 endorphin in Hypophyses and ACTH, inhibiting the centre of vomiting (Umar, 2013). The results of Nur's research et al., 2014 showed in a group of interventions that pericardium acupressure resulted in a meaningful decline in the frequency of vomiting nausea.

Similarly, the study of Artika (2006) showed there was a meaningful influence of the technique of acupressure PC 6 against the decline in nausea in vomiting pregnant women. Massage at the point of ST 36 and PC 6 may decrease vomiting nausea due to chemotherapy in school-age children who are experiencing cancer. Research on Unions in Banyumas combines pericardium acupressure and citrus aromatherapy that proved effective in reducing vomiting nausea in pregnant women. The acupressure point of ST 36, SP 4, PC 6, and CV 13 are also known as points for reducing nausea, but no one has researched use of all these points in pregnant women.

Tanjung Bintang Subdistrict is an agro-industrial region. Residents in this area on average are working in factories and rubber plantations located in the Tanjung Bintang area. The majority of the population is in a fertile age range, which means that most undergo the pregnancy process. Early pregnancy is the time of vomiting nausea. Women who work in factories with a diverse environment find the smell of production materials will further worsen nausea, even causing vomiting (Hosseinabadi, Biranvand, Pournia, & Anbari, 2015; Kang, 2018; W. Shin, 2013). A preliminary study conducted by researchers in October – December 2018 in one of the Puskesmas, namely Tanjung Bintang, shows from 30 pregnant mothers there are 48.9% experiencing emetic gravidarum. The results of the interviews were conducted on five expectant mothers' ways that have been employed to cope with emetic gravidarum, such as vitamin B6, eating acidic fruits such as citrus and mangoes, but no mothers have used acupressure techniques. Based on the results of previous studies, there has been acupressure implemented in ST36 and P6, so this researcher

became interested in performing acupressure on points ST 36, SP 4, PC 6 and CV 13 to overcome emetic gravidarum on expectant mothers in the District of Tanjung Bintang in 2019.

Methods

Quantitative (analytical) research type with experimental, quasi design with Pre-test and Post Test Control Group Design. Samples are all expectant mothers in the Tanjung Bintang Sub-district, 2019, amounting to 76 people divided into two groups – 38 people were given treatment (intervention group) and 38 people as a control. Research time is June-October 2019, Data collection is the PUQE index questionnaire and the checklist. Data analysis is univariate, sufficient using the Wilcoxon test (Lemeshow et al., 1997; Ioannis, 2016; Mucha, Ambroży, & Mucha, 2017).

Results and Discussion

From the below Table 1, it can be seen that the respondents who were treated with acupressure with an average emesis gravidarum before doing acupressure were 8.55 with a standard deviation of 3.554 and a minimum value of 4 and a maximum of 15. While the average emesis gravidarum after doing acupressure was 4.58, with a standard deviation of 1.200 and a minimum of 2 and a maximum of 7.

Table 1. Descriptions of Emesis Gravidarum statistics on the intervention Group (Acupressure)

Description	Minimum value	maximum value	Mean	Standard Deviation
Pre-Test	4	15	8.55	3.554
Post- Test	2	7	4.58	1.200

Table 2. Description of Changes in Emesis Gravidarum in the Intervention (Acupressure) group

Post Emesis – Pre Emesis	N	Mean Rank	Sum Of Rank
Negative Rank	38	19.50	741.00
Positive Rank	0	0	0
Sum	38		

From Table 2, it can be seen that a negative rank value of 38 means that there is a decrease in emesis gravidarum in all respondents after acupressure. The mean rank of 19.5 means that the average emesis gravidarum decrease is 19.5.

Table 3. Statistical Descriptions of Emesis Gravidarum in the control group

Description	Minimum value	maximum value	Mean	Standard Deviation
Pre-Test	4	14	6.42	2.297
Post-Test	1	13	6.39	2.331

Table 4. Description of Changes in Emesis Gravidarum in the control group (Acupressure)

Post Emesis	N	Mean	Sum Of Rank
Pre Emesis		Rank	
Negative Rank	8	9.56	76.5
Positive Rank	9	8.5	76.5
Sum	38		

From Table 3, it can be seen that for respondents who were not treated with acupressure but only using a placebo, the average emesis gravidarum before was 6.42 with a standard deviation of 2.297 and a minimum value of 4 and a maximum of 14. While the average emesis gravidarum after was 6.39 with a standard deviation of 2.333 and a minimum of 1 and a maximum of 13. From Table 4, it can be seen that a negative rank value of 8 means a decrease in emesis gravidarum in 8 respondents after taking a placebo, and a positive rank value of 9 means an increase in emesis gravidarum in 9 respondents. The average decrease is 9.56, and the average increase is 8.5.

Table 5. Results of Bivariate Acupressure Analysis and emesis gravidarum

Group	Z Value	P-Value
Intervention	-5.392	0.000
Control	0	1.000

Based on Table 5 obtained in the intervention group P-value group of interventions is 0.000, meaning that the < 0.05 can be concluded there is a difference in the emetic gravidarum before and after acupressure. While in the control group P-value 1.000, which means > 0.05 , then it can be concluded that there is no difference in emetic gravidarum before and after taking a placebo. The conclusion stated is that there was an acupressure influence on the emetic gravidarum.



In the intervention group from the results of the bivariate analysis using the Wilcoxon test, it can be seen that in respondents who were given acupressure treatment, the average emesis gravidarum before performing Acupressure was 8.55, with a standard deviation of 3.554 and a minimum value of 4 and a maximum of 15. While the average emesis gravidarum after doing Acupressure is 4.58, with a standard deviation of 1.200 and a minimum amount of 2 and a maximum of 7. From these results, it can also be seen that there is a decrease in emesis gravidarum in all respondents after acupressure with an average reduction of 19.5.

The acupressure technique used in this study uses 4 points. The division of points is 2 points as sedation or weakening of the feeling of nausea that is at point PC 6 and CV 13, 2 points as to notification or strengthening as an increase in digestive function, namely scores ST 36 and SP 4. The results of this study are in line with previous studies that have applied several acupressure points in pregnant women to reduce nausea and vomiting. According to the research of Nur et al., (2014), with a total sample of 33 consisting of 17 intervention and control groups, the results shown from this study are that after the treatment there was a significant decrease in the intervention group.

The average nausea of vomiting in the first trimester pregnant women before being given acupressure points ST36, SP4, and PC6 were five people with moderate nausea, and some mild nausea and vomiting were ten people. The average nausea of vomiting in first trimester pregnant women after being given acupressure was; 12 people admitted no nausea and vomiting, three people experienced mild nausea and vomiting (Parwati, 2017; H. S. Shin & Song, 2005).

While the control group obtained results, bivariate analysis using the Wilcoxon test is known that in respondents who are given vitamin B6, the average emetic gravidarum before is 6.42 with standard deviation 2.297 and Strongswan minimum four and maximum 14. Meanwhile, the average emetic gravidarum is 6.39, with a standard deviation of 2.331 and a minimum value of 1 and a maximum of 13. Also, the negative rank value is eight, meaning there is a decrease in the emetic gravidarum on eight respondents after taking vitamin B6 and a positive rank value of 9, indicating an increase in the emetic gravidarum on nine respondents. The average decline is 9.56, and the average increase is 8.5.

Pyridoxine (Vitamin B6): the mechanism of action in helping to cope with nausea and vomiting when pregnant has not been explained clearly. However, pyridoxine itself works to convert proteins from foods to forms of amino acids that are absorbed and needed by the body. Also, pyridoxine converts carbohydrates into energy. This role allows pyridoxine to help cope with nausea and vomiting if the gastric transit extends when pregnant (Alimoradi, Kazemi, Valiani, & Gorji, 2019; Honda, Tsuda, & Horiuchi, 2012; Niebyl, 2010).



Another factor that may be the cause of no reduced vomiting nausea complaint is the environmental condition in which the mother works because most of the respondents are factory workers where the work is exposed to the malaise of cigarette smoke, Apbrik smoke, processed materials and so on. Also, parity is a consideration where primigravidas have less knowledge and experience in terms of pregnancy than multigravida.

Wilcoxon test results to find out the correlation between variables indicating in the intervention group the P-value group of interventions is 0.000, which means that the < 0.05 it can be inferred there is a difference in the emetic gravidarum before and after acupressure. In the control group P-value 1.000, which means > 0.05 , it can be concluded that there is no difference in emetic gravidarum before and after taking a placebo (Vitamin B6).

This is in line with the study of Hikma Anisa Putri, with a sample number of 25 respondents for the intervention group and 25 respondents of the control group. The statistics tests used are Wilcoxon and Mann-Whitney tests. The results of this study showed that the acupressure point of ST 36 and PC 6 effectively lowered morning sickness ($p = 0.001$) on the intervention group. The difference in morning sickness score in both groups before and after acupressure therapy with $p < 0.05$. Conclusion: there is a significant decline in the morning sickness of first-trimester pregnant mothers in the North Magelang district.

The application of acupressure on emetic gravidarum, the result of the nausea score calculation, obtained asymp. Sig. (2-tailed) obtained a value of $0.005 < 0.05$. This means there is a meaningful difference between the results of the post-test with the results of a pre-test. The calculation of the gag score is obtained Asymp. Sig. (2-tailed) obtained $0.004 < 0.05$; this means there is a meaningful difference between the results of the post-test with pre-test results.

Acupressure is a term used to provide stimuli (stimulation) of acupuncture points with the technique of suppression or mechanical engineering. Emphasis is made as a substitute for needle stabilising done in acupuncture to launch vital energy flow (QI) in the whole body (Indonesia, 2014). Acupressure will drain energy to remove the obstruction and improve energy flow.

There are several points related to gastric meridians and digestive systems that are point PC 6, CV 13, ST 36, and SP 4. The point that serves to weaken the muster is the point PC 6 and CV 13, while the position to increase the body's energy, thus improving the digestive system, is ST 36 and SP 4.

PC6 point is a point located along the lining of the heart lining meridian. The lining of the heart membrane has two branches. A branch enters into the centre then continues down through the diaphragm of the middle and lower abdominal spaces. These meridians also cross the stomach and



large intestine (Farhad, et.al, 2016). PC6 point, according to Chinese medicine, PC 6 point is connected to internal pathways that flow energy through the body, so that stimulation at this point can improve one's health by facilitating energy flow. Nurfalah (2017) in Prawirohardjo (2009) states that stimulation at the PC 6 point can activate the modulation system in the opioid order, non-opioid system, and inhibition of the sympathetic nerve which is expected to reduce the frequency of nausea. The occurrence of local inflammatory reactions can stimulate nitric oxide in the body, which increases intestinal motility, thereby reducing nausea.

CV 13 is part of the Meridian Special Ren/Conception Vessel (CV). Ren May leads and functions as an ocean that holds the Qi from all Yin meridians. Other than that. Meridian Ren also performs to care for the foetus in pregnancy. The pathological state of Ren May (Meridian Ren) arises when there is a blockage or disturbance in its Qi flow because the Ren meridian has no direct responsibility for internal organs. If the Ren meridian is disturbed, symptoms of disturbances will occur along with the meridian flow, such as genital disturbances, lower abdominal disorders, digestive disorders, respiratory problems, and others. Indications of acupressure at this point are indigestion, gastric and intestinal diseases, vomiting, seizures, nephritis (inflammation of the kidneys), diseases of the uterus, palpitations, and coughing.

Acupressure therapy for nausea and vomiting at this point is active. The stimulatory effect at these points can increase the release of beta-endorphins in the pituitary and ACTH along the chemoreceptor trigger zone (CTZ), which inhibits the vomiting centre to reduce nausea or vomiting. (Nugroho and Nurrezki, 2014).

After the nausea is reduced, the next point that increases body energy is the point ST 36 and SP4. Point ST 36 –the purpose of ST is the stomach, which includes the end of the Stomach Meridian/Stomach. ST 36 is useful for relieving cold wind pressure or severe conditions in the intestine which can cause flatulence, frequent belching, lack of appetite, nausea, lack of chi flow from the stomach, intestinal wrapping, rumbling, abdominal pain, diarrhea in food, watery stool and flatulence. Another benefit of the acupressure technique at point ST 36 is improving the function of the stomach, spleen, and intestines in the realm of vomiting, stomach disorders, and diarrhea. It repels diseases that are windy and moist, promoting smooth digestion, strengthening body stamina, eliminates dizziness, and strengthens immunity.

SP 4 –this acupressure point is a one-point Luo prayer from the spleen meridian. The purpose of this point is to eliminate or help overcome stomach problems. Doing massage and emphasis on this part can reduce stomach nausea and stimulate circulation and release gas that causes flatulence (Arai, 2009; Vybornov, 2012).



Modern medicine believes that stimulation at the acupressure/acupressure point will change the pathway of nerve cells to one another so that it affects the central nervous system and triggers the central nervous system to release a specific chemical to the body (Rustam, 2002). The performance function of acupressure/acupressure points is that the nerve is stimulated at the location (this produces a qi reaction as a sensory aspect, but can also involve non-sensory signals), and the signal transferred along the nerve pathway produces the main therapeutic effect. The nervous system transfers signals directly from the acupoints in the organ being treated. The nervous system sends information to the brain, which then produces responses that affect the target area. Both of these mechanisms can be involved in a summing effect, along with the release of a nervous system substance into the bloodstream during signal transmission. Substances released can interact with the endocrine and immune system to produce systemic effects (Burks, 2018).

Based on the above, the researchers think that decreasing emesis gravidarum in respondents given the acupressure intervention is a practical action to help pregnant women rather than administering drugs. But they do not rule out there are other factors that also contribute to overcoming this emesis such as the psychological condition of the mother, the workload is not heavy, comfortable and healthy environmental conditions, and history of obstetrics from pregnant women themselves (age, gestational age, and parity).

We hope in the future, the use of acupressure in pregnancy will continue to be increased to help pregnant women in dealing with complaints during pregnancy and expedite the process of pregnancy itself. Health workers who deal directly with pregnant women can be more active in socialising acupressure to help pregnant women in overcoming emesis gravidarum.

Conclusion

The highest distribution of emesis gravidarum before acupressure in the intervention group was in the moderate category of 15 people (39.5%). In contrast, the most emesis gravidarum in the control group was the medium category of 13 people (34.2%). The distribution of emesis gravidarum after acupressure was greatest in the intervention group representing the mild type of 32 people (84.2%). In contrast, the highest emesis gravidarum in the control group was the soft category of 24 people (63.2%). There is an effect of acupressure on emesis gravidarum in the Tanjung Bintang sub-district in 2019 with the results of the P-Value analysis of the intervention group being 0.000, which means <0.05 .

As a result of this research it is expected for Health Practitioners to be able to socialise and apply acupressure to all pregnant women in their region, to assist in overcoming complaints of pregnant women – especially emesis gravidarum – so that the fulfillment of maternal and foetal nutrition at



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the beginning of pregnancy is fulfilled and so that foetal growth and development is optimal. For Educational Institutions. The results of this study can be used as a source of scientific renewal in the application of complementary medicine in the field of health, especially midwifery.



REFERENCES

- Alimoradi, Z., Kazemi, F., Valiani, M., & Gorji, M. (2019). Comparing the effect of auricular acupressure and body acupressure on pain and duration of the first stage of labor: study protocol for a randomised controlled trial. *Trials*, Vol. 20.
<https://doi.org/10.1186/s13063-019-3896-0>
- Arai, Y. C. (2009). 922 The Effect Of Acupressure At The Extra 1 Point On Subjective And Autonomic Responses To Needle Insertion. *European Journal of Pain*, Vol. 13.
[https://doi.org/10.1016/s1090-3801\(09\)60925-3](https://doi.org/10.1016/s1090-3801(09)60925-3)
- Artika, P. (2006). *Pengaruh Akupresur pada titik Perikardium 6 terhadap penurunan frekuensi muntah pada primigravida trimester pertama dengan emesis gravidarum*. Malang: ilmu Keperawatan Fak. Kedokteran Universitas Brawijaya.
- Burks, L. A. (2018). *The effects of English language proficiency on self-perceived academic needs of foreign students from developing nations attending Iowa State University*.
<https://doi.org/10.31274/rtd-180813-6959>
- Dinas Kesehatan Provinsi Lampung. (2014). *Profil Kesehatan propinsi Lampung Tahun 2014*. Lampung
- Farhad, K., et al. (2016). The effectiveness of dry-cupping in preventing post-operative nausea and vomiting by P6 acupoint stimulation A randomised controlled trial. *Clinical Trial/Experimental Study; Medicine*, 1-6.
<https://doi.org/10.1097/MD.0000000000004770>
- Fengge, A. (2012). *Terapi Akupresure manfaat dan teknik pengobatan*. Yogyakarta: Crop Circle Corp.
- Hariadi, (2017). *Pengenalan Ilmu pengobatan Timur*. LKP Kunci Jemari-Perpari-P3AI.
- Honda, Y., Tsuda, A., & Horiuchi, S. (2012). Effect of a Four-Week Self-Administered Acupressure Intervention on Perceived Stress over the Past Month. *Open Journal of Medical Psychology*, Vol. 1, pp. 20–24. <https://doi.org/10.4236/ojmp.2012.13004>
- Hosseinabadi, R., Biranvand, S., Pournia, Y., & Anbari, K. (2015). The Effect of Acupressure on Pain and Anxiety Caused by Venipuncture. *Journal of Infusion Nursing*, Vol. 38, pp. 397–405. <https://doi.org/10.1097/nan.0000000000000065>
- Indonesia. (2014). *Panduan Akupresur Mandiri Bagi Pekerja di Tempat Kerja*.
- Kementerian Kesehatan Republik Indonesia. Retrieved from http://tradkom.depkes.go.id/wp-content/uploads/2015/PANDUAN_AKUPRESUR_MANDIRI_BAGI_PEKERJA_DI_TEMPAT_KERJA.pdf



- Ioannis, S. (2016). The effect of auricular acupuncture and acupressure in smoking cessation. *Annals of Translational Medicine*, Vol. 4. <https://doi.org/10.21037/atm.2016.ab007>
- Kang, M.-A. (2018). Effect of Auricular Acupressure on Fatigue and Depression in Patients Undergoing Chemotherapy for Breast Cancer. *The Korean Journal of Health Service Management*, Vol. 12, pp. 229–239. <https://doi.org/10.12811/kshsm.2018.12.4.229>
- Lemeshow S, Hosmer, D.W., Klar, J, Lwanga, S. (1997). *Besar sampel dalam penelitian kesehatan*. Alih bahasa: Pramono D. Yogyakarta: Gadjah Mada University Press
- Mucha, D., Ambroży, T., & Mucha, D. (2017). The effect of acupressure stimulation of ST-36 – Zusanli, point on lower limbs explosive strength. *European Journal of Integrative Medicine*, Vol. 11, pp. 59–62. <https://doi.org/10.1016/j.eujim.2017.01.013>
- Niebyl, J.R. (2010). nausea And Vomiting in pregnancy. *New England Journal Of Medicine*, 363(16), 1544-50. <http://doi.org/10.1016/B978-0-12-408078-2.00005-6>.
- Nugroho, T dan Nurrezki. (2014). Buku ajar ASKEB 1 kehamilan. Yogyakarta: Nuha Medika.
- Nur, D., Suharyo, H & Triana, S.H. (2014). Pengaruh Akupresure Perikardium 6 Terhadap Mual Muntah Kehamilan Kurang 16 Minggu. *Jurnal Kesehatan Ibu dan Anak* 5.
- Nurfalah, S, Mae, S.H.W, dan Detty, S.N. (2017). Pemberian ajhe instan terhadap kejadian mual muntah dan asupan energi pada ibu hamil trimester pertama. *Jurnal Gizi klinik Indonesia Vol 10*
- Prawirohardjo. (2009). Ilmu Kebidanan. Jakarta. YBP-SP
- Parwati, D. M. W. (2017). The Effect of Breast Acupressure and Oxylosins Massage to Improve the Breast Milk Production in Postpartum Mother. *Journal of Medical Science And Clinical Research*, Vol. 5. <https://doi.org/10.18535/jmscr/v5i10.47>
- Restu, I dan Evi, V. (2017). *Pengaruh Hipnoterapi dan akupresur Terhadap mual Muntah Akut Akibat kemoterapi pada Anak dengan Acute Lymphoblastic Keukemia (ALL) di RSUD Kab. Tangerang Tahun 2017*. Tangerang.
- Runiari, N. (2010). *Asuhan Keperawatan Pada Klien Dengan Hiperemesis Gravidarum : Penerapan konsep dan teori Keperawatan*. Jakarta : Salemba Medik.
- Rustam. (2002). *Sinopsis Obstetri Jilid I*. Jakarta : EGC.
- Shin, H. S., & Song, Y. A. (2005). The Effect of P6 Acupressure for Symptom Control in Pregnant Women Having Hyperemesis Gravidarum. *Journal of Korean Academy of Nursing*, Vol. 35, p. 593. <https://doi.org/10.4040/jkan.2005.35.3.593>



- Shin, W. (2013). The effect of convalescent meridian acupressure after exercise on stress hormones and lactic acid concentration changes. *Journal of Exercise Rehabilitation*, Vol. 9, pp. 331–335. <https://doi.org/10.12965/jer.130019>
- Vybornov, V. (2012). Changes in the functional state of the athlete under influence of temperature effect on the acupressure points. *Uchenye Zapiski Universiteta Imeni P.F. Lesgafta*, pp. 10–14. <https://doi.org/10.5930/issn.1994-4683.2012.08.90.p10-14>
- Umar, W. (2013). *Sembuh dengan Satu Titik*. Solo: Al-Qawam
- Uning S, Melyana, N.W, dan Dyah L.R. (2018). *Studi Literatur : Accupresure Pericardium dan Aromatherapy Citrus Untuk Mengurangi Mual Muntah Ibu Hamil*.
- Vybornov, V. (2012). Changes in the functional state of the athlete under influence of temperature effect on the acupressure points. *Uchenye Zapiski Universiteta Imeni P.F. Lesgafta*, pp. 10–14. <https://doi.org/10.5930/issn.1994-4683.2012.08.90.p10-14>
- Winknjosastro. (2009). *Ilmu Kebidanan*. Jakarta: bina Pustaka Sarwono Prawiroharjo.