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# Table of Contents

| Article Title                                                                 | Authors                                                                 | Pages |
|-------------------------------------------------------------------------------|-------------------------------------------------------------------------|-------|
| DIFFERENCES OF MATERNAL SOCIODEMOGRAPHIC CHARACTERISTICS WITH SPONTANEOUS PRETERM BIRTH AMONG HOSPITALS IN INDONESIA: A COMPARATIVE STUDY | Sriyana Herman, Budi Santoso, Hermanto Tri Djoewono                      | 146-153 |
| PERSONAL HYGIENE, SANITATION AND FOOD SAFETY KNOWLEDGE OF FOOD WORKERS AT THE UNIVERSITY CANTEEN IN INDONESIA | Abdul Rahman, Ramadhan Tosepu, Siti Rabbani Karimuna, Sartiah Yusran, Asnia Zainuddin, Junaid Junaid | 154-161 |
| A COMPARISON OF THE EFFECTIVENESS OF HEALTH EDUCATION METHODS ON ANXIETY LEVELS AMONG PRE-CATARACT SURGERY PATIENTS IN CENTRAL JAVA, INDONESIA | Shinta Restu Wibawa, Suharjo, Ibrahim Rahmat                             | 162-167 |
| INTERNET HEALTH INFORMATION AND HOAX                                          | Joko Gunawan                                                            | 168-169 |
| ONTOLOGY AND EPISTEMOLOGY OF MALARIA                                         | Ramadhan Tosepu                                                         | 170-172 |
DIFFERENCES OF MATERNAL SOCIODEMOGRAPHIC CHARACTERISTICS WITH SPONTANEOUS PRETERM BIRTH AMONG HOSPITALS IN INDONESIA: A COMPARATIVE STUDY

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ABSTRACT
Background: Maternal sociodemographic characteristics can be used to prevent preterm birth.
Objective: To identify differences in maternal sociodemographic characteristics with spontaneous preterm birth among hospitals in East Java, Indonesia.
Methods: This was a descriptive study with comparative design in 134 mothers who experienced preterm birth at eight hospitals. Data were analyzed using Independent samples t-test.
Result: Sixteen variables were significantly different in maternal sociodemographic characteristics with spontaneous preterm birth among eight hospitals, namely: gestational age (CI 95%:10.97-0.02, p <0.049), maternal age (CI 95%:0.46-11.03, p <0.035), smoking (CI 95%:9.98-19.01 p <0.001), Edinburgh Postnatal Distress Scale (EPDS) (CI 95%:6.90-17.09, p <0.001), the fetus mobile (CI 95%:2.41-11.58, p <0.006), the number of visits during pregnancy (CI 95%:5.63-14.36, p <0.001), history of premature (CI 95%:7.76-15.73, p <0.001), history of disease (CI 95%:9.02-18.97, p <0.001), history of abortion (CI 95%:9.34-18.65, p <0.000), height (CI 95%:9.66-18.83, p <0.001), BMI (CI 95%:0.75-11.74, p <0.029), Mid Upper Arm Circumference (MUAC) (CI 95%:2.53-12.96, p <0.007), periodontal infection by (CI 95%:6.04-15.45, p <0.001), bleeding in young and old pregnancy (CI 95%:7.71-17.28, p <0.001), anemia status (CI 95%:2.30-10.19, p <0.004) and BV status (CI95%:9.05-20.45, p <0.001).
Conclusion: There were significant disparities in maternal sociodemographic characteristics with preterm birth among hospitals. Our findings can be used as the basic data for future research in an effort to prevent premature birth disorders based on maternal sociodemographic characteristic.

Keywords: sociodemographic characteristics, hospitals, preterm birth, Indonesia

BACKGROUND

Preterm birth is influenced by many of risk factors. Robinson and Nortwitz (2017) collected several sociodemographic risk factors from several theories, including absence of partner, low socioeconomic, anxiety and stress, depression (life problems such as divorce, separation, death), ever surgery during pregnancy, workplace problems, multiple pregnancy, polyhydramnios, uterine abnormalities, Ketosis-Prone Diabetes, history of second-trimester abortion, history of cervical surgery,
short length of the cervix, STI, infectious disease, bacteriuria, periodontal disease, placenta previa, placental abruption, vaginal bleeding, previous history of preterm birth, drug abuse, smoking, maternal age, African-American race, low BMI nutrition, inadequate prenatal care, anemia, excessive uterine contractions, low education level, fetal anomalies, impaired fetal growth, environmental factors (e.g. heat and air pollution), fetal death, and positive fibronectin. According to Cunningham et al., (2014), the highest risk of preterm birth is a history of previous birth itself.

Preterm classification according to gestational age were between 20-37 weeks, earlier preterm birth between 20-23 weeks, early preterm birth between 24-33 weeks, and late preterm birth between 34-36 weeks (Berghella, 2017). While according to WHO (2015) birth that occurs between 28 weeks gestation to less than 37 weeks (259 days) calculated from the first day of the last menstrual period in the 28-day cycle. Preterm birth is still a problem in the world including Indonesia. Related to the prevalence, perinatal morbidity and mortality are the main causes of infant mortality and the second cause of death after pneumonia in children under five years old (Erez, 2013). The incidence of preterm birth is different in each country, in Europe the figure was 5-11%, while in the USA was 11.5%. In developing countries the number of occurrences is still much higher, for example in Sudan around 31%, India 30%, and South Africa 15% (Osterman et al., 2015), while Indonesia ranks 5th largest from 184 countries in 2010 (WHO, 2010 in Purisch and Cynthia, 2017). More than one million babies die of preterm birth every year in the world or 1 baby every 30 seconds (Berghella, 2017).

METHODS

Study design
This was a descriptive study with comparative design. This study was conducted from November 2017 to July 2018 in 8 hospitals in East Java, Indonesia.

Sample
The samples were all mothers after preterm birth recorded in medical records at 8 hospitals, i.e. Soewandhi hospital, Universitas Airlangga hospital, Islam Jemur Sari hospital, Sidoarjo hospital, Madiun Sogaten hospital, Jombang hospital, Ibnu Sina Gresik hospital, and Ngawi hospital. The inclusion criteria were spontaneously preterm birth mothers 6 hours-3 days, spontaneous single pregnancy without complications, could communicate well, and have a health record book. The exclusion criteria were all deliveries with complications or abnormalities such as hypertension in pregnancy, pregnancy with diabetes mellitus, multiple pregnancies, hydramnios, antepartum bleeding, uterine anatomic abnormalities, pregnancy with tumors, and congenital abnormalities of the fetus.

Instrument
The sociodemographic instrument was developed by the researchers for data collection, including gestational age, mother’s age, education, occupation, number of children, parity, distance of pregnancy, weightlifting work, smoking, EPDS, fetus mobile, sleeping time, number of visits during pregnancy, history of preterm birth, history of disease, second-trimester abortion history, social economy, previous child’s sex, body weight (BW), body mass index (BMI), upper arm circumference, periodontal infection, bleeding in young and old pregnancy, anemia status, status of bacterial vaginosis (BV).

Statistical analysis
Data were analyzed using independent T-test to compare the differences in maternal sociodemographic characteristics (Sastroasmoros and Ismail, 2014).

Ethical consideration
This study has been approved by the Medical Faculty of Medicine of Airlangga University. The researchers assured that all participants have obtained appropriate informed consents.
RESULTS

Participants’ characteristics
The number of respondents was 134 mothers with spontaneous preterm birth in 8 hospitals i.e. Jemur Sari Hospital with 25 respondents (18.7%), Soewandhi Hospital with 14 respondents (10.4%), Airlangga Hospital with 25 respondents (18.7%), Gresik, Jombang and Ngawi Hospital with 12 respondents respectively (9.0%), Sidoarjo Hospital with 24 respondents (17.9%), and Madiun Hospital with 10 respondents (7.5%) (See Table 1).

Table 1 Percentage of maternal sociodemographic characteristics with preterm birth among hospitals

| Sociodemographic characteristics | Hospital 1 | Hospital 2 | Hospital 3 | Hospital 14 | Hospital 5 | Hospital 6 | Hospital 7 | Hospital 8 |
|---------------------------------|------------|------------|------------|-------------|------------|------------|------------|------------|
|                                 | n (%)      | n (%)      | n (%)      | n (%)       | n (%)      | n (%)      | n (%)      | n (%)      |
| Gestational age                 |            |            |            |             |            |            |            |            |
| 24-33 weeks                     | 5 (3.7)    | 6 (4.5)    | 3 (2.2)    | 5 (3.7)     | 14 (10.4)  | 6 (4.5)    | 3 (2.2)    | 3 (2.2)    |
| 34-36 weeks                     | 20 (14.9)  | 8 (6.0)    | 22 (16.4)  | 7 (5.2)     | 10 (7.5)   | 6 (4.5)    | 7 (5.2)    | 9 (6.7)    |
| Mother’s age                    |            |            |            |             |            |            |            |            |
| <20/≥35 weeks                   | 22 (16.4)  | 7 (5.2)    | 16 (11.9)  | 5 (3.7)     | 17 (12.7)  | 11 (8.2)   | 7 (5.2)    | 5 (3.7)    |
| Parity                          |            |            |            |             |            |            |            |            |
| Primipara                       | 15 (11.2)  | 7 (5.2)    | 14 (10.4)  | 8 (6.0)     | 10 (7.5)   | 8 (6.0)    | 6 (4.5)    | 9 (6.7)    |
| <2 years                        | 19 (14.2)  | 7 (9.7)    | 13 (9.7)   | 6 (4.5)     | 16 (11.9)  | 5 (3.7)    | 6 (4.5)    | 5 (3.7)    |
| ≥2 years                        | 6 (4.5)    | 7 (9.0)    | 12 (9.0)   | 6 (4.5)     | 8 (6.0)    | 7 (5.2)    | 4 (3.0)    | 7 (5.2)    |
| Smoking                         |            |            |            |             |            |            |            |            |
| No                              | 21 (15.7)  | 14 (10.4)  | 23 (17.2)  | 8 (6.0)     | 24 (17.9)  | 12 (9.0)   | 9 (6.7)    | 12 (9.0)   |
| EPDS                            | 4 (3.0)    | -          | 2 (1.5)    | 4 (3.0)     | -          | 1 (0.7)    | -          | -          |
| Mild/Medium (score 0-12)        | 22 (16.4)  | 8 (6.0)    | 23 (17.2)  | 9 (6.7)     | 21 (15.7)  | 11 (8.2)   | 9 (6.7)    | 12 (9.0)   |
| Heavy: score >12                | 3 (2.2)    | 6 (4.5)    | 2 (1.5)    | 3 (2.2)     | 3 (2.2)    | 1 (0.7)    | 1 (0.7)    | -          |
| Fetus mobile                    |            |            |            |             |            |            |            |            |
| Mobile>4x/half an hour          | 17 (12.7)  | 10 (7.5)   | 20 (14.9)  | 5 (3.7)     | 13 (9.7)   | 10 (7.5)   | 8 (6.0)    | 12 (9.0)   |
| Less mobile ≤4x/half an hour    | 8 (6.0)    | 4 (3.0)    | 5 (3.7)    | 7 (5.2)     | 11 (8.2)   | 2 (1.5)    | 2 (1.5)    | -          |
| Sleep time                      |            |            |            |             |            |            |            |            |
| 7-8 hour/day                    | 11 (8.2)   | 10 (7.5)   | 8 (6.0)    | 5 (3.7)     | 10 (7.5)   | 3 (2.2)    | 8 (6.0)    | 1 (0.7)    |
| <7/>9 hour/day                  | 14 (10.4)  | 4 (3.0)    | 17 (12.7)  | 7 (5.2)     | 14 (10.4)  | 9 (6.7)    | 2 (1.5)    | 11 (8.2)   |
| Number of visits during pregnancy | 19 (14.2)  | 11 (8.2)   | 22 (16.4)  | 11 (8.2)    | 18 (13.4)  | 10 (7.5)   | 8 (7.5)    | 8 (6.0)    |
| History of preterm birth        |            |            |            |             |            |            |            |            |
| Never                           | 20 (14.9)  | 12 (9.0)   | 21 (15.7)  | 10 (7.5)    | 19 (14.2)  | 12 (9.0)   | 9 (6.7)    | 11 (8.2)   |
| 1-2/2 times                     | 5 (3.7)    | 2 (1.5)    | 4 (3.0)    | 2 (1.5)     | 5 (3.7)    | -          | 1 (0.7)    | 1 (0.7)    |
| History of disease              |            |            |            |             |            |            |            |            |
| None                            | 23 (17.2)  | 12 (9.0)   | 25 (18.7)  | 12 (9.0)    | 21 (15.7)  | 10 (7.5)   | 9 (6.7)    | 11 (8.2)   |
| Yes                             | 2 (1.5)    | 2 (1.5)    | -          | -           | 3 (2.2)    | 2 (1.5)    | 1 (0.7)    | 1 (0.7)    |
### Differences in maternal sociodemographic characteristics with preterm birth among hospitals

Our analysis showed that, out of 25 variables, only 16 significant variables had significant difference among hospitals, namely: gestational age (p <0.049), maternal age (p <0.035), smoking (p <0.001), EPDS (p <0.001), fetal immovable (p <0.006), number of visits during pregnancy (p <0.001), history of preterm (p <0.001), history of disease (p <0.001), history of abortion (p <0.001), height (p <0.001), BMI (p <0.029), upper arms circumference (p <0.007), periodontal infection (p <0.001), bleeding young/old pregnancy (p <0.001), anemia status (p <0.004), and BV status (p <0.001) (see Table 2).

### Table 2 Analysis of differences in maternal sociodemographic characteristics with preterm birth among hospitals

| Sociodemographic characteristics | Mean difference | 95% CI of the difference | T  | P value* |
|----------------------------------|----------------|--------------------------|----|----------|
|                                  | Group 1        | Group 2                  | Lower | Upper |       |
| Gestational age                  | 5.63           | 11.13                    | -10.97 | -0.02 | 2.155 | 0.049  |
| Mother’s age                     | 11.25          | 5.50                     | 0.46  | 11.03  | 2.335 | 0.035  |
| Education                        | 10.38          | 6.38                     | 5.92  | 5.42   | -0.995 | 0.326  |
| Occupation                       | 10.38          | 6.38                     | -0.58 | 8.58   | 1.872 | 0.082  |
| Number of Child                  | 9.50           | 7.25                     | -1.81 | 6.31   | 1.186 | 0.255  |
| Parity                           | 9.63           | 7.13                     | -1.45 | 6.45   | 1.355 | 0.197  |
| Pregnancy period                 | 9.63           | 7.13                     | -2.05 | 7.05   | 1.177 | 0.259  |
| Weightlifting work               | 10.75          | 6.00                     | -0.37 | 9.87   | 1.989 | 0.067  |

Remarks: 1: Jemur Sari Hospital, 2: Soewandhi Hospital, 3: Airlangga Hospital, 4: Gresik Hospital, 5: Sidoarjo Hospital, 6: Jombang Hospital, 7: Midium Hospital, 8: Ngawi Hospital
DISCUSSIONS

Findings showed that only 16 variables had significant differences in sociodemographic characteristics. Our discussion is described in each variable. **Gestational age**, indicated that the average gestational age of preterm birth was significantly different among hospitals, as the age of early preterm birth (24-33 weeks) has an average of 5 mothers in every hospital. The highest number in Sidoarjo Hospital by 10 mothers (10.4%) and late preterm birth (34-36 weeks) has an average of 11 mothers per hospital with the highest number in Airlangga Hospital by 22 mothers (16.4%).

**Maternal age**, indicated that the average age of preterm birth was significantly different between hospitals. Maternal age at 20-35 years has an average of 11 mothers per hospital, with the largest number at the Jemur Sari Hospital by 22 mothers (16.4%) and maternal age <20 35 years had an average of 5 mothers per hospital, with the highest number in Airlangga Hospital by 9 mothers (6.7%). According to Fuchs et al., (2018) that maternal age (40 years and over) was associated with preterm birth and a maternal age of 30±34 years was associated with the lowest risk of prematurity.

**Smoking**, indicated that the average smoking habit of preterm birth was significantly different between hospitals, namely mothers who did not have a smoking habit have an average of 15 mothers per hospital, with the highest number in Sidoarjo Hospital by 24 mothers (17.9%) and mothers who had smoking habits had an average of 1 mother per hospital, with the highest number in Jemur Sari Hospital and Gresik Hospital by 4 mothers respectively (3.0%). According to Baron et al., (2016) that mothers who consumed cigarettes ≥10 cigarettes per day were associated with preterm birth (OR 2.44; CI 95% 1.11-5.37) compared to mothers who consumed cigarettes ≤10 cigarettes per day (OR 1.07; 95% CI 0.57-2.00). Whereas according to Sentilhes et al., (2017) that among preventable risk factors of spontaneous prematurity, only cessation of smoking is associated with decreased prematurity.

**EPDS**, indicated that the average preterm birth of EPDS was significantly different between hospitals, i.e., mothers who have mild and moderate EPDS (score 0-12) have an average of 14 mothers per hospital, with the highest number at Jemur Sari Hospital by 22 mothers (16.4%) and mothers who had severe EPDS (score> 13) had an average of 2 mothers per hospital, with the highest number found in Soewandhi Hospital by 6 mothers (4, 5%). Rallis et al., (2014) said that higher depression scores in early pregnancy were proven to predict anxiety and higher stress values in late pregnancy. According to Baron et al., (2016) mothers who consumed cigarettes ≥10

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| Smoking     | 15.37 | 1.37 | 8.98 | 19.01 | 5.992 | 0.001 |
| EPDS        | 14.38 | 2.38 | 6.90 | 17.09 | 5.054 | 0.001 |
| Fetal movements | 11.88 | 4.88 | 2.41 | 11.58 | 3.276 | 0.006 |
| The amount of sleep | 7.00  | 9.75 | 7.57 | 2.07  | -1.222 | 0.242 |
| Number of visits during pregnancy | 13.38 | 3.38 | 5.63 | 14.36 | 4.916 | 0.001 |
| History of premature birth | 14.25 | 2.50 | 7.76 | 15.73 | 6.321 | 0.001 |
| History of Mother's Sickness | 15.38 | 1.38 | 9.02 | 18.97 | 6.031 | 0.001 |
| History of Abortion | 15.38 | 1.38 | 9.34 | 18.65 | 6.451 | 0.001 |
| Social economy | 9.00  | 7.75 | 4.34 | 6.84  | 0.479  | 0.639 |
| Child’s sex | 6.88  | 9.88 | 7.30 | 1.30  | -1.494 | 0.157 |
| Height | 15.50 | 1.25 | 9.66 | 18.83 | 6.671 | 0.001 |
| BMI | 11.50 | 5.25 | 0.75 | 11.74 | 2.440 | 0.029 |
| Upper arms circumference (MUAC) | 12.25 | 4.50 | 2.53 | 12.96 | 3.185 | 0.007 |
| Periodontal infection | 13.75 | 3.00 | 6.04 | 15.45 | 4.900 | 0.001 |
| Bleeding | 14.63 | 2.13 | 7.71 | 17.28 | 5.603 | 0.001 |
| Anemia | 11.50 | 5.25 | 2.30 | 10.19 | 3.398 | 0.004 |
| BV Status | 15.75 | 1.00 | 9.05 | 20.45 | 5.550 | 0.001 |

*Analysis used by independent sample T test*
cigarettes per day were associated with preterm birth (OR 2.44; CI 95% 1.11-5.37) compared to mothers who consumed cigarettes ≤10 cigarettes per day (OR 1.07; 95% CI 0.57-2.00).

Fetal movement, indicated that the average movement of the fetus preterm birth was significantly different between hospitals, i.e., mothers who have fetal movements >4x/half hour had an average of 14 mothers per hospital, with the highest number in Airlangga Hospital by 20 mothers (14.9%) and mothers who have fetal movements <4x/half hour have an average of 2 mothers per hospital, with the largest number being in Sidoarjo Hospital by 11 mothers (8.2%).

The number of ANC visits during pregnancy, indicated that the average number of ANC visits during pregnancy preterm labor was significantly different between hospitals, namely mothers who visited ANC >4 times during pregnancy had an average of 13 mothers per hospital. With the highest number in Airlangga Hospital by 22 mothers (16.4%) and mothers who visited ANC <4 times during pregnancy had an average of 3 mothers per hospital, with the highest number being in Jemur Sari and Sidoarjo hospital which was 6 mothers each (4.5%). According to the Ministry of Health (2013) at least 4 visits during pregnancy, namely first trimester one visit (before 14 weeks gestation), second trimester one visit (before 14-28 weeks gestation), third trimester two visits (gestational age between 28-36 weeks and after gestational age> 36 weeks).

The history of preterm birth in previous pregnancies, indicated that the average history of preterm birth was significantly different between hospitals, i.e., mothers who did not have a history of preterm birth had an average of 14 mothers per hospital, with the highest number in Jemur Sari Hospital has 20 mothers (14.9%) and mothers who have a history of preterm birth have an average of 2 mothers per hospital, with the highest number in Jemur Sari Hospital and Sidoarjo Hospital, each with 5 mothers (3.7%).

History of disease, indicated that the average history of preterm birth was significantly different between hospitals, i.e., mothers who did not have a history of disease had an average of 15 mothers per hospital, with the highest number in Jemur Sari Hospital by 23 mothers (17.2 %) and mothers who have a history of disease have an average of 1 mother per hospital, with the highest number in Sidoarjo Hospital by 3 mothers (2.72%).

History of abortion in the second trimester, indicated that the average history of preterm birth abortion was significantly different between hospitals, i.e., mothers who did not have a history of abortion had an average of 15 mothers per hospital, with the highest number at the Jemur sari was 24 mothers (17.9%) and mothers who have a history of abortion have an average of 1 mother per hospital, with the highest number in Sidoarjo Hospital by 4 mothers (3.0%).

Height, indicated that the average of preterm birth was significantly different between hospitals, i.e., mothers who have height >145 cm have an average of 15 mothers per hospital, with the highest number in Jemur Sari and Airlangga Hospital by 23 mothers each (17.2%) and mothers who have height <145 cm have an average of 1 mother per hospital and were found in all hospitals, except Madiun and Ngawi Hospital, there were no mothers have height <145 cm.

BMI, indicated that the average preterm birth BMI was significantly different between hospitals, namely mothers who had a BMI of 18.5-25 Kg/m2 had an average of 11 mothers per hospital, with the highest number in Jemur Sari and Sidoarjo Hospital which were 20 mothers each (14.9%) and mothers who have a BMI <18.5/> 35 Kg/m² have an average of 5 mothers per hospital, with the highest number being in Jombang Hospital, there were 10 mothers (7.5%). According to Oyston & Groom (2016) that the risk of preterm birth occurs in mothers with BMI <18.5 Kg/m² when compared to normal maternal BMI (RR 1.22), as well as mothers with a BMI> 35 Kg/m² also increases the risk of preterm birth.
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**CONCLUSION**

There were significant disparities in maternal sociodemographic characteristics with preterm birth among hospitals. Sixteen variables of sociodemographic characteristics were identified: gestational age, maternal age, smoking, EPDS, fetus less moving, number of visits during pregnancy, premature history, history of disease, a history of abortion, height, BMI, MUAC, periodontal infection, bleeding in young/old pregnancy, anemia and BV status. Our findings can be used as the basic data for future research in an effort to prevent premature birth disorders based on maternal sociodemographic characteristic.

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AUTHOR CONTRIBUTIONS
SH contributed to data analysis, drafted the manuscript; SH, BS, HTD contributed to conception, design, and data analysis, critically revised the manuscript. All authors gave final approval and agreed to be accountable for all aspects of the project.

CONFLICT OF INTERESTS
The authors had no conflict of interests regarding with respect to the authorship and/or publication of this paper.

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PERSONAL HYGIENE, SANITATION AND FOOD SAFETY KNOWLEDGE OF FOOD WORKERS AT THE UNIVERSITY CANTEEN IN INDONESIA

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ABSTRACT

Background: Food and beverage sanitation hygiene is a prevention effort that focuses on activities or actions that are necessary to free food and drinks from hazards that can interfere with or damage health.

Objective: This study aimed to identify personal hygiene, sanitation and food safety knowledge of food workers at the canteen university.

Methods: This was a descriptive study with observational approach. Thirty-four canteens were recruited using total sampling. Data were analyzed using descriptive statistics with percentage.

Results: Findings showed that 11 canteens (32.3%) did not meet the standard for canteen sanitation, 24 canteens (70.6%) did not meet lighting standard, 29 (85.3%) did not meet ventilation standard, 18 (52.9%) did not meet the standard of clean water, 31 (91.2%) did not meet wastewater disposal standard, 23 (67.6%) did not meet the hand washing facility standard, 25 (73.5%) did not meet standard of waste disposal conditions, 28 respondents (85.3%) had good personal hygiene, 6 respondents (14.6%) had poor personal hygiene and all food workers had good knowledge on food safety (100%).

Conclusion: Personal hygiene, sanitation and food safety at the university canteen must be carried out continuously. Our findings can be used as a basis for creating healthy university canteen.

Keywords: personal hygiene, sanitation, knowledge, food workers

BACKGROUND

Food is all substances needed by the body excluding water, drugs, and other substances used in medicine (Chandra, 2007). Food is a basic need for human life, but it is also very likely to be the cause of disturbances in the body. Also, it also plays a role in the body’s defense mechanism against various diseases (Allwood, Jenkins, Paulus, Johnson, & Hedberg, 2004; Nel, Lues, Buys, & Venter, 2004).

Food and beverage hygiene sanitation is a prevention effort that focuses on activities / actions that need to free food and drinks from hazards that can interfere with or damage health starting from before food is produced, during the process of processing, preparation, transportation, until food is ready for consumption (Sari, Sulistyani, & Dewanti, 2016).
In 2017, the number of food poisoning incidents increased with the occurrence of foodborne diseases which reached 33 (44.17%) million cases in which 60% of these cases occurred in children aged 5-7 years (Chaib & Lawe-Davies, 2017). In 2017 there were food poisoning cases, namely 213 (43.2%) cases from all public health center and hospitals in Kendari City (BPOM, 2017). In 2017 there were 35,864 cases of diarrhea treated, which were 46.77% of the estimated cases (Dinkes, 2017).

Based on a preliminary survey, there were 8 canteens showed that the application of food sanitation hygiene did not meet the health standards. This also can be seen from personal hygiene of food workers while processing food, which were not wearing full work clothes. The purpose of this study was to identify personal hygiene, sanitation and food safety knowledge of food workers at the canteen university.

METHODS

Study design
This was a descriptive study with observational approach at one of the universities in Southeast Sulawesi Indonesia. There were 34 canteens and 34 food workers recruited using total sampling. This study was conducted between October and December 2018.

Instrument
Canteen sanitation observation checklist, developed by the authors based on the regulation of the Ministry of Health of the Republic of Indonesia, Number 1096 / Menkes / PER / VI / 2011 (Indonesia, 2011). Canteen sanitation is one of the prevention efforts that focuses on activities and actions that are necessary to free food and drink from all hazards that can interfere with or damage health (Fauziah & Kalsum, 2016). In this study, canteen sanitation includes food sanitation, lighting, electricity, clean water, sewage disposal, hand washing facilities and garbage bin. The observation checklist used “standardized” and “unstandardized” option. The total score >700 means standardized; and the total score < 700 means unstandardized.

Personal hygiene observation checklist, developed by the authors based on Gordon’s personal hygiene model (Gordon). Personal hygiene is a way of caring for humans to maintain their health. Maintenance of individual hygiene is needed for individual comfort, security, and health. Hygiene practices are the same as improving health (Gordon). Personal hygiene was measured using Guttman scale with 0 (incorrect) and 1 (correct) option (Widhiarso, 2011). The number of items was 10 items. “Good” if the respondent answers questions from the questionnaire with a question score ≥ 50% and “poor” if the respondent answers the question from the questionnaire with a score of <50%

Food safety knowledge of food workers observation checklist, adopted from previous study (Aswita, 2015). Knowledge is the result of knowing, and this happens after people have sensed a certain object (Notoatmodjo, 2003). Personal hygiene was measured using Guttman scale with 0 (incorrect) and 1 (correct) option (Widhiarso, 2011). The number of items was 10 items. “Good” if the respondent answers questions from the questionnaire with a question score ≥ 50% and “poor” if the respondent answers the question from the questionnaire with a score of <50%

Data collection
Data were collected by the researchers using observation checklists. For canteen sanitation and personal hygiene, we observed checked objectively based on the standard the Ministry of Health of the Republic of Indonesia. For food safety knowledge, we directly asked the food workers using observation checklist. The observation was done once. Prior to data collection, this study has been approved by Faculty of Public Health, University of Halu Oleo, Number 2334/UN29.15/PP/2018.

Data analysis
Data were analyzed and described using percentage.
RESULTS

Canteen Sanitation
Table 1 shows that, out of 34 canteens (100%), there were 11 canteens (32.3%) that did not meet the criteria for canteen sanitation, 24 canteens (70.6%) did not match the requirements for lighting, 29 canteens (85.3%) did not meet the requirements for ventilation, 18 canteens (52.9%) did not fulfill conditions for clean water, 31 canteens (91.2%) did not meet the standard of waste water disposal, 23 canteens (67.6%) did not meet the requirements of the hand washing facility, and 25 canteens (73.5%) did not meet the standard of garbage bin. In other words, all variables of canteen sanitation were below the standard of 50% among university canteens, except food sanitation variable with 67.7% following the standard.

Table 2 shows that, of the 34 respondents (100%), as many as 28 respondents (85.3%) had good personal hygiene while six respondents (14.6%) had poor personal hygiene. And all food workers had good knowledge.

Table 1 Distribution of food sanitation, lighting, electricity, clean water, sewage disposal, hand washing facilities and garbage bin at the university canteen

| Characteristic                  | N  | %  |
|--------------------------------|----|----|
| **Food sanitation**            |    |    |
| Standardized                   | 23 | 67.7|
| Unstandardized                 | 11 | 32.3|
| **Lighting**                   |    |    |
| Standardized                   | 10 | 29.4|
| Unstandardized                 | 24 | 70.6|
| **Ventilation**                |    |    |
| Standardized                   | 5  | 14.7|
| Unstandardized                 | 29 | 85.3|
| **Clean water**                |    |    |
| Standardized                   | 16 | 47.1|
| Unstandardized                 | 18 | 52.9|
| **Wastewater disposal**        |    |    |
| Standardized                   | 3  | 8.8 |
| Unstandardized                 | 31 | 91.2|
| **Hand washing facilities**    |    |    |
| Standardized                   | 11 | 32.4|
| Unstandardized                 | 23 | 67.6|
| **Garbage bin**                |    |    |
| Standardized                   | 9  | 26.5|
| Unstandardized                 | 25 | 73.5|

Table 2 Distribution of Personal Hygiene and food safety knowledge of food workers at the university canteen

| Characteristics                  | N  | %  |
|----------------------------------|----|----|
| **Personal hygiene**             |    |    |
| Good                             | 28 | 82.4|
| Poor                             | 6  | 14.6|
| **Food safety knowledge**        |    |    |
| Good                             | 34 | 100|
| Poor                             | 0  | 0  |

DISCUSSIONS

Knowledge is the result of knowing, and this happens after people have sensed a particular object. Sensing occurs through the five human senses, namely the senses of vision, hearing, smell, taste, and touch. Most human knowledge is obtained through the eyes and...
ears (Noar & Zimmerman, 2005). Sanitation is a health effort by maintaining and protecting the cleanliness of the environment of its subjects. For example providing clean water for washing hands, providing trash bins to accommodate garbage so that it is not thrown away carelessly (Melosi, 2004). Canteen sanitation is an effort aimed at food hygiene and safety so as not to cause harm to poison and disease in humans (Pragle, Harding, & Mack, 2007).

The procedure that is important for food processing workers is hand washing, hygiene and personal health (Baş, Ersun, & Kivanc, 2006). The results showed that out of 34 canteens (100%), there were about 11 canteens did not meet the criteria for good canteen criteria. Based on the results of field observations carried out the canteen page was not clean, not neat and was less than 500 meters from the nest of flies / garbage bins, and there were some canteens that smell of foul or odor coming from sources of pollution and not in accordance with the Minister of Health Regulation Republic of Indonesia Number 1096 / Menkes / Per / VI of 2011 concerning Hygiene Hygiene Requirements for Catering Services (Indonesia, 2011).

Based on the results of the observation, the sanitation facilities in the canteen did not meet the requirements because there was a canteen that did not have a sewerage channel, some canteens did not have a place to wash equipment and ingredients that met the criteria, canteen washing facilities were not provided in one container washing and used repeatedly, foodstuffs to be processed were not stored in individual containers, there was a kitchen that had an inadequate size and there was a canteen that had a condition of buildings that were not dense by vectors such as rats and insects, and facilities vector controller did not equip all canteen locations.

Location and buildings are essential for every place of business and sanitation conditions that do not meet the criteria (Ramadani & Mersatika, 2017). Personal hygiene is a mirror of the success of each, which leads to personal habits and cleanliness. To maintain personal hygiene in everyday life must always try to prevent the arrival of diseases that can interfere with health (Murray, Lopez, & Organization, 1996; Prüss-Ustün, Bos, Gore, & Bartram, 2008).

Personal hygiene is a procedure to maintain cleanliness in the management of safe and healthy food. Cleaning procedures are clean behaviors to prevent contamination of the food being handled. The process that is important for food processing workers is hand washing, hygiene and personal health (Green & Selman, 2005; Marriott, Schilling, & Gravani, 2018).

The incidence of diseases transmitted through food in Indonesia is quite significant as seen from the still high rates of infectious diseases such as typhus, cholera, and dysentery. Therefore food handling workers must follow adequate sanitation procedures to prevent contamination of the food processed (Powell, Jacob, & Chapman, 2011; Soares, Almeida, Cerqueira, Carvalho, & Nunes, 2012).

The results showed that from 34 respondents (100%) there were eight respondents (82.4%) who had good personal hygiene in processing food and six other respondents (14.6%) where this happened because there were still respondents who suffered from a natural disease contagious like flu and cough. Personal hygiene of food handlers who do not meet the requirements of (93.8%), this is because every time they want to work do not wash their hands and do not cover their mouth if they are coughing (Asokawati, Chahaya, & Dharma).

Based on observations made in the canteen, there were still respondents who did not cover the wounds when processing food, namely injuries caused by the use of knives, there were some respondents who did not maintain hand hygiene, hair, and had long nails, most respondents had dirty clothes because after
they cook, they wipe their hands on the costumes used.

The results showed, there were respondents who were frying, then we were picking up the telephone in front of the dishes they were cooking and occasionally they scratched their limbs right above their dishes such as scratching their arms and scratching the head, and some respondents did not wear masks when processing food so that it was not in line with the Regulation of the Minister of Health Number 1089 about Sanitation Catering services (Indonesia, 2011).

Unhygienic merchant behavior can also be a source of food-borne diseases such as the transfer of bacteria to cause illness and when serving food traders need to behave healthily to produce clean, healthy, safe food and to maintain the quality of food provided. Pay attention well because the correct storage of food will create good quality products (Echols, 2001; Hillstrom, 2012).

Personal hygiene determines the health quality of food processed such as hand washing to protect hand hygiene, washing dishes to preserve the cleanliness of dishes and removing damaged parts of the food to protect the overall integrity of the food. Food workers are one source of contaminants for disease because the handler's hygiene is needed to prevent the occurrence of these contaminants and to produce snacks that are healthy and safe to consume (Clayton, Griffith, Price, & Peters, 2002; Jacob & Organization, 1989; Medeiros, Hillers, Kendall, & Mason, 2001).

Knowledge is the result of knowing, and this happens after people have sensed a specific object. Sensing occurs through the five human senses, namely the senses of vision, hearing, smell, taste, and touch. Most human knowledge is obtained through the eyes and ears (González, Moll, & Amanti, 2006; Pfeffer & Sutton, 2000). To ensure food quality and every officer involved in food sanitation should know their duties and responsibilities, including diseases transmitted through food, personal hygiene, habits related to food processing and healthy food processing methods (Powell et al., 2011; Reilly, 2008). Knowledge of food workers regarding hygiene is included in the excellent category (73.3%) this is influenced by the level of education, where the higher the level of education of food workers the better the knowledge (Fatmawati, Rosidi, & Handarsari, 2013).

Education is a factor behind the knowledge and then knowledge influences behavior. Training for food workers and consumers regarding hygienic ways of handling food is a very decisive element in preventing foodborne diseases (Griffith, Livesey, & Clayton, 2010; Jouve, Aagaard-Hansen, & Aidara-Kane, 2010; Kouabenan & Ngueutsa, 2016). Any contamination, both in the beginning and due to handling during its preparation, if not controlled at this stage will have a direct negative impact on the health of its consumers (Miranti & Adi, 2018). Knowledge can be obtained through information delivered by health professionals, parents, teachers, books, mass media and other sources. Knowledge can also be obtained through experience. A high level of education about food sanitation hygiene will affect workers to implement food sanitation hygiene when carrying out the production process (Jevšnik, Hlebec, & Raspor, 2008; Walker, Pritchard, & Forsythe, 2003; Wilcock, Pun, Khanona, & Aung, 2004).

Knowledge is also a component in the formation of a person's behavior, culture is influenced by education, experience, and the environment, then experience is a source of knowledge or experience one of the ways to obtain the truth of knowledge (Alavi & Leidner, 2001; Von Krogh, Ichijo, & Nonaka, 2000). Knowledge of food workers does not directly affect the practices of food workers' hygiene sanitation, and besides knowledge, other factors can affect the practice of sanitation hygiene such as work experience. Knowledge of good food workers will also produce a right attitude, so it is expected that the practice of sanitation hygiene that is owned is also good (Faour-Klingbeil, Kuri, & Todd,
The results showed that good knowledge did not directly affect the food workers hygiene practices because of the 34 respondents (100%) there were six respondents (14.6%) who had poor personal hygiene, but the level of knowledge was in a suitable category. The high education of a person, the more knowledge or information obtained is broader, but that does not mean that someone with low training has in-depth knowledge because the increase in knowledge is not obtained from formal education (Eraut, 2002).

Another study explained that the higher the knowledge of food workers does not have a significant effect with the behavior of food handlers hygiene where formal education generally becomes a means for at least people to be able to read and will help facilitate communication and influence the giving and receiving of various information (Rakhmawati, 2015).

Limitation of the study
This study may have limitations in regards to our observation that may limit the results as we just observed for one time only.

CONCLUSIONS
Food safety is needed in preventing foodborne diseases. Different health effects can occur if the food served in the canteen does not meet health requirements. Supervision of food in the canteen is the main focus in creating a healthy canteen. Personal hygiene as an integral part of food security needs to be a severe concern for the university. To prevent negative impacts, it is necessary to make a food supervision guideline in the canteen.

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A COMPARISON OF THE EFFECTIVENESS OF HEALTH EDUCATION METHODS ON ANXIETY LEVELS AMONG PRE-CATARACT SURGERY PATIENTS IN CENTRAL JAVA, INDONESIA

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ABSTRACT
Background: Not much is known about the impact of health education in reducing anxiety levels in pre-cataract surgery patients in Indonesia.

Objective: The aim of this study was to compare the effectiveness of counseling and lecture methods using leaflet in reducing anxiety levels among pre-cataract surgery patients in Central Java, Indonesia.

Methods: This was quasi experiment with pretest-posttest design with two comparative groups at two hospitals in November 2014. It was 70 preoperative cataract patients selected using total sampling, which 35 randomly assigned to intervention group 1 and intervention group 2. The Analog Anxiety Scale (AAS) was used to measure anxiety levels. Data were analyzed using paired t-test and independent t-test.

Results: There was a significant effect of health education using counseling and lecture method with leaflet media in reducing anxiety levels among preoperative cataract patients (p=.001). A counseling method was more effective than lecture method in dealing with anxiety levels (p=.001).

Conclusion: Findings of this study can be used as a basis for development of nursing intervention in the hospital setting to reduce the anxiety levels among pre-cataract surgery patients.

Keywords: anxiety, health education, cataract surgery, nursing

BACKGROUND

A cataract is a cloudy condition in the normally clear lens, which occurs due to changes in the protein and lens fibers (Maloring, Kaawoan, & Onibala, 2014). In Indonesia, the results of the blindness survey using the new Rapid Assessment of Avoidable Blindness (RAAB) method in 3 provinces (NTB, West Java and South Sulawesi) in 2013-2014 found that the prevalence of blindness in people aged >50 years in the 3 provinces was 3.2% of cases caused by cataract (71%) (Riskesdas, 2013). In Central Java, there was 1.1% of population suffered from low vision. There are two main reasons for patients with cataract who have not undergone surgery, namely ignorance and psychosocial problem such as anxiety or afraid of being operated (Riskesdas, 2013).

Unfortunately, until today there is no single study to treat cataract, except surgery. Thus, patients should be well informed to deal with
their anxiety. Anxiety is a condition characterized by feelings of fear accompanied by cognitive, motoric, affective, and somatic signs that cause autonomic nervous system hyperactivity (Suardana & Simarmata, 2013). Another study also mention that the symptoms of anxiety can include anxiety, fear, increased heart rate, insomnia, nausea and autonomic symptoms (Chandrati & Purnawati, 2014). Although anxiety is very common among cataract patients, however, without the treatment it will lead to anxiety disorder (Springer, Levy, & Tolin, 2018). Dealing with anxiety itself depends on the level of emotional, how to adapt, and from the patient's anxiety level (Strelau & Zawadzki, 2011).

Our preliminary study with 107 cataract patients in 7 hospitals showed that most of them experienced anxiety and majority of them were unable to sleep. The health education given by health workers, both doctors and nurses, before surgery was also limited. This condition leads to our interest to know whether pre-operative health education is still effective or not. Our present study aimed to identify the effectiveness of health education on anxiety among pre-operative cataract patients and to compare two methods of health education between counseling with leaflet (individual approach) and lecture with leaflet (group approach).

METHODS

Study design
This was quasi experiment with pretest-posttest design with two comparative groups. The study was conducted at Tidar Public Hospital Magelang and Banjarnegara Public Hospital on November 2014.

Sample
Seventy preoperative cataract patients were selected using total sampling, which 35 randomly assigned to group 1 (those who received health education using counseling and leaflet) and group 2 (those who received health education using lecture and leaflet). The inclusion criteria of the sample were: 1) preoperative cataract patients, 2) able to read and write, 3) no hearing loss, and 4) never performed cataract surgery before. The exclusion criteria were those who had other eye disorders. During data collection, there was one participant excluded from group 1 due to the occurrence of another eye disorder.

Instrument
The Analog Anxiety Scale (AAS) was used to measure anxiety levels. The instrument was adopted from previous study in Indonesian language with good validity and reliability (Yunitasari, 2013). Anxiety levels consisted of no anxiety (if score <150), mild anxiety (if score between 150 – 199), moderate anxiety (if score between 200 – 299), severe anxiety (if score between 300 – 399) and panic (if score > 400).

Intervention
Group 1 (health education using counseling and leaflet)
The intervention in this group was basically based on individual approach, which one by one of the participants was given counseling using the leaflet as the media. The researchers with the team (eye nurses and medical residents) given the information regarding definitions, signs and symptoms of cataracts, the importance of cataract surgery, things to consider and carry out by patients before, during and after cataract surgery. The counseling was taken for 15 minutes in a special quite room in the hospital. After the counseling, the leaflet was given to the participants for them to learn at home. This intervention was done in Banjarnegara Hospital.

Group 2 (health education using lecture and leaflet)
The intervention in group 2 was given by the researchers using a lecture method and leaflet. All participants were gathered in the meeting room. The lecture was carried out for 15 minutes and continued with question and answer section. Similar with group 1, the topics to explain were related to definitions,
signs and symptoms of cataracts, the importance of cataract surgery, things to consider and carry out by patients before, during and after cataract surgery. This intervention was done in Tidar General Hospital.

Data collection
Data were collected using AAS questionnaire by the researchers and the research assistants before and after given intervention in both group 1 and 2. The researchers ensured that all research assistants understood the objectives and the procedures of the study and its data collection.

Data analysis
As our data showed normal distribution indicated by the results of Kolmogorov Smirnov (p>.05), then we used independent t-test to compare the effect of health education between both groups, and paired t-test to analyze the effect of health education on anxiety levels in each group.

Ethical consideration
This research was approved by The Medical and Health Research Ethics Committee (MHREC) with approval number: KE / FK / 1215 / EC. Before retrieving data and intervening, the researcher explains the purpose of the research and the procedure to be carried out, where the results of the answers will be kept confidential and only for research purposes. Informed consent was given to respondents to be signed.

RESULTS

Demographic characteristics of the participants
The demographic characteristics of participants as shown in the Table 1 shows that the majority of participants were man (52.5%), >50 years old (84.1%), had elementary school background (53.6%), and working as a farmer (55.1%). The homogeneity test showed p-value >.05 in each variable, which indicated that the participants in the group 1 and 2 were homogeneous or no significant differences between them.

| Characteristics       | Group 1 | Group 2 | Percentage | p-value |
|-----------------------|---------|---------|------------|---------|
| Gender                |         |         |            |         |
| Man                   | 19      | 17      | 52.5       | .55     |
| Woman                 | 15      | 18      | 47.8       |         |
| Total                 | 34      | 35      | 100        |         |
| Age                   |         |         |            |         |
| < 20 years old        | -       | 1       | 1.4        |         |
| 20-50 years old       | 4       | 10      | 14.5       | .12     |
| >50 years old         | 30      | 24      | 84.1       |         |
| Total                 | 34      | 35      | 100        |         |
| Education             |         |         |            |         |
| None                  | 11      | 20      | 29.0       |         |
| Elementary school     | 20      | 7       | 53.6       | .49     |
| Junior high school    | 2       | 5       | 7.2        |         |
| Senior high school    | 1       | 2       | 7.2        |         |
| Diploma               | -       | 1       | 2.9        |         |
| Total                 | 34      | 35      | 100        |         |
| Working status        |         |         |            |         |
| Civil servant         | -       | 3       | 4.3        | .55     |
| Private employees     | 1       | 2       | 2.9        |         |
| Entrepreneurship      | 4       | 12      | 17.4       |         |
| Farmer                | 24      | 10      | 55.1       |         |
| Housewife             | 4       | 6       | 17.4       |         |
| Others                | 1       | 2       | 2.9        |         |
| Total                 | 34      | 35      | 100        |         |
Table 2 Effect of health education on anxiety levels in group 1 and 2 using Paired t-test

|               | Group 1 |                  | Group 2 |                  | t     | df  | P-value |
|---------------|---------|-----------------|---------|-----------------|-------|-----|---------|
|               | N       | Anxiety level   |         |                 |       |     |         |
|               |         | Mean±SD         |         |                 |       |     |         |
| Pretest       | 34      | 234.11 ± 59.54  |         | 230.00 ± 62.87  | 9.71  | 67  | .001*   |
| Posttest      | 34      | 71.17 ± 17.01   |         | 119.71 ± 23.83  |       |     |         |

*significant (<.05)

The results of paired t-test in the Table 2 show that p-value was .001 (< .05) in group I and group 2, which indicated that there was a significant effect of given health education using counseling and leaflet as well as given using lecture and leaflet on anxiety levels among preoperative cataract patients. There was a significant decrease of the average level of anxiety in the group 1 from 234.11 (moderate anxiety) to 71.17 (no anxiety), and also the average level of anxiety in the group 2 from 230 (moderate anxiety) to 119.7 (no anxiety).

Table 3 Difference in the anxiety levels in group 1 and 2 after given intervention using Independent t-test

| Anxiety level | Group 1 (N=34) Mean±SD | Group 2 (N=35) Mean±SD | t     | p-value |
|---------------|-------------------------|-------------------------|-------|---------|
| Pretest       | 234.11 ± 59.54          | 230.00 ± 62.87          | 9.71  | .001*   |
| Posttest      | 71.17 ± 17.01           | 119.71 ± 23.83          |       |         |
| Mean difference | 162.94 ± 42.53         | 110.29 ± 39.05          | 67    | .001*   |

*significant (<.05)

The results of Independent t-test (see Table 3) showed p-value .001 (<.05), which indicated that there was a significant difference in the effect of two comparative groups on the anxiety levels. The health education using counseling and leaflet was much better in reducing anxiety than health education using lecture and leaflet. There was also a significant mean difference in anxiety levels between the group 1 (162.94) and group 2 (110.29).

DISCUSSIONS

Findings of this study revealed that both health education techniques, counseling and lecture with leaflet media, had significant effect in reducing the anxiety levels among preoperative cataract patients. This finding provides the knowledge that these patients need health education to deal with their anxiety. This is in line with previous study that preoperative information reduce patient anxiety in the perioperative period of cataract surgery (Kekecs, Jakubovits, Varga, & Gombos, 2014). Certainly, the patients in this study had lack of knowledge about their disease and its surgery, which was also seen from their educational level that were mostly elementary school. They did not know what would happen before, during and after surgery. Similar with previous study said that patients who have not received education might not know what they experienced after the surgery. The patients will think differently and lead to anxiety and tension. According to previous study (Na'im, 2010), anxiety will narrow the field of individual perceptions, such as vision, hearing, and reduced gripping movements. Severe anxiety levels may occur during the informed consent process, in which the patient and surgeon discuss serious risks of the surgery. Thus, it is important for them to understand the risk of operation, complication, as well as the benefit of operation (Ramirez, Brodie, Rose-Nussbaumer, & Ramanathan, 2017). Nurses need to play a key role at this point to deal with anxiety and responsible for the public health of individual and community (Gunawan, 2016).

Although both health education techniques were likely to be effective in reducing anxiety,
however, our study showed that individual approach with counseling using leaflet had much better effect than group approach with lecture method. It may be due to lack of the time for questions and answers during the session, or the patients may feel shy to ask the questions and pretend that they understood.

Our study provides several implications for hospitals, namely: 1) findings of this study provides the evidence that health education using counseling and lecture with leaflet was still effective in reducing anxiety levels, 2) our study provides the insight of knowledge that counseling has a better impact than lecture method to reduce the anxiety levels among preoperative cataract patients, thus nurse counseling center may be needed to establish in the hospitals to provide health information to patients, 3) our study tells that the use of leaflet was still effective as a media for consultation in the today’s era which mobile and smartphone are used by the majority of community.

The use of self-report data using questionnaire may be the limitation of this study, which enhances social desirability bias in the results, especially when measuring anxiety. In the waiting room patients showed high levels of anxiety, however when filling out the questionnaire majority of patients tend to underestimate their own level of anxiety. Thus, further study to understand anxiety comprehensively is needed.

CONCLUSIONS

There was a significant effect of health education using counseling and lecture method with leaflet media in reducing anxiety levels among preoperative cataract patients. A counseling method was more effective than lecture method in dealing with anxiety levels. Findings of this study serve as a basis for development of nursing intervention in the hospital setting and foundation for further research.

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A comparison of the effectiveness of health education methods on anxiety levels among pre-cataract surgery patients in Central Java, Indonesia. Public Health of Indonesia, 4(4): 162-167.
Dear Editor,

Today we are living in the era of the fourth Industrial revolution with the raise of Internet of Things, technology, and cloud computing. In this era, more and more health information can be easily accessible on the Internet, which provides health information for clients in regards to health problems, prevention and self-care, as well as the information for health professionals for evidence-based practice. The Internet has become one of the main sources of health information (Bujnowska-Fedak, 2015). However, all the information on the Internet cannot be treated as an absolute truth.

At present, the magnitude of one health intervention is not possibly explored because studies on the subject are inconsistent with one another. Thus, we need to clearly identify the strengths and the weakness of each study in regards to its quality, methodology and results (Milio, 2001). Failure in this phase, we may lead to misinformation and create hoax. Hoax is something accepted or established by fraud or fabrication (Merriam-Webster, 2018).

In addition, most of people provide the data from journals to support their statements. However, we may need to pay attention that majority of the journals only publish the articles with positive results and they do not publish the negatives ones. Thus, we need to be able to conduct a scoping review to holistically understand the phenomenon before giving any statements.

We cannot just easily believe in the news provided by any institutions. Until now, health information provided in the Internet websites is subject to change and based on the good will of web designers, and most of us are unaware of them. As scholars we need to check the credibility of the sources, accuracy, scope, reliability and even the authors. The use of 5W1H method by Kipling (Serrat, 2009) is highly recommended for beginner to gather basic information, which consist of 6 interrogative questions: 1) what was the content and what was actually happened?, 2) where did it take place?, 3) when did it take place?, 4) why did it happen and why did they write it?, 5) who did it, who was the authors
and who was involved?, and 6) how did it happen? as indicated.

Lastly, Internet health information is a complex social system. Although there is no accepted standard for scientific, journalistic, or other types of entries in the Internet, we as public health scholars need to question the quality, reliability, and security of information in the Internet able to make a difference and support the policy.

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ONTOUOLOGY AND EPISTEMOLOGY OF MALARIA

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In the philosophy of science, a scientific discipline can be expressed as knowledge, if it fulfills the ontology criteria that include what the nature of science, epistemology includes methods and paradigms and axiology includes goals, imperative values, attitudes (Suriasumantri, 1988). Plato says philosophy is the knowledge that is to achieve genuine truth (Bostock, 1986). Whereas Aristotle defines philosophy as science which includes the fact contained in it the sciences of metaphysics, logic, rhetoric, ethics, economics, politics, and aesthetics (Charles, 1984).

Ontology in public health can function as a formalized repository of knowledge to improve public health surveillance systems (Toletono et al., 2005). Ontology is defined as the study of the concepts of reality explained by a scientific discipline (Dharmawan, 2007). Ontology of malaria is a field that moves to understand, explore and develop knowledge about the disease. Epistemology or history of scientific development in examining the origin and scope of a realm of knowledge that seeks to answer questions ‘how is science acquired?’ (Bodenreider, Smith, & Burgun, 2004).

Malaria is an infectious disease caused by the Plasmodium parasite which is transmitted by the bite of a female Anopheles mosquito (Cox, 2010; Organization, 1995). Known for five species, namely Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale, Plasmodium malariae and Plasmodium knowlesi (Spangenberg et al., 2013). Malaria morbidity in an area is determined by Annual Parasite Incidence (API) per year. API is the number of malaria positive cases per 1,000 residents in one year. Indonesia has a malaria prevalence of 1.4% with an API figure in 2015 of 0.85%, and Bengkulu Province is ranked sixth which has a prevalence rate of 1.5% and an API rate of 2.03% (Kementrian Kesehatan, 2016). Transmission of malaria is highly related to climate (Arab, Jackson, & Kongoli, 2014; Paaijmans et al., 2010). Seasonal changes affect both directly and indirectly against vector carrying disease (Grover-Kopee et al., 2006). Environmental conditions have a direct impact on vector reproduction, development, the relative age of the population and the development of parasites in the vector body, as well as vegetation changes and agricultural cropping patterns also affect vector population density (Razakandrainibe et al., 2009).
ONTOLOGY AND EPISTEMOLOGY OF MALARIA

According to Nijhuis and Van der Maesen, philosophy of public health is explained separately, namely "Public" and "Health". These two terms have their own categories. "Public" category number 1 emphasizes the individual. In this view, the public is primarily comprised of the actions and motives of discrete individuals. "Public" category number 2, on the other hand, emphasizes the collective over the individual. In this view, the public is primarily conceived as populations within social, economic, and political systems. "Health" category number 3 is a mechanistic view that emphasizes the traditional medical distinction between disease and non-disease in the individual, while "Health" category number 4 views health as the degree to which an individual reaches an equilibrium state with physical, psychological, and social influences. Much more could be said about these four categories (Islam, 2017; Weed, 1999). Malaria is a public health problem in the tropics (Uneke, 2008).

Based on the Nijhuis and Van der Maesen’s explanation, therefore, "Public" and "Health" of malaria can be described as the following:

“Public” category of the number 1. Individual actions, in this case, are actions carried out by individuals to overcome something, in this case, namely how he acts related to malaria and the reasons for individuals doing it as a motive. So if individuals have a view of ontology related to malaria, then ethically it will have a positive impact on individuals, namely avoiding malaria.

“Public” category of the number 2 and 4. In general, malaria-endemic locations are remote villages with bad environmental conditions, difficult means of transportation and communication, lack of access to health services, low levels of education and socio-economic conditions, and poor healthy living behavior (Chiyaka, Garira, & Dube, 2007; Maguire et al., 2005; Steketee, Nahlen, Parise, & Menendez, 2001). The use of insecticide-treated bed nets is one of the effective ways to prevent malaria (Korenromp et al., 2003). The community uses insecticide-treated bed nets to feel comfortable effects when using mosquito nets, and the community also gives a positive attitude towards the use of mosquito nets (Wael, Thaha, & Riskiyani).

“Health” category of the number 3. There is a belief in the community that malaria is a common problem that they can handle themselves using the knowledge they have acquired before (Zaluchu & Arma, 2008). In Jambi province, there were 34.5% of malaria treatment users, with the most widely used traditional medicines being using Sambiloto (27.1%) (Dharmawan, 2007). In modern terms, there are drugs used in the treatment of malaria. New mefloquine and halofantrine drugs will be widely available for clinical use of malaria (Hyde, 2005).

“Health” category of the number 4. The social influence in the community towards malaria still has an active role. Public trust in the causes of malaria, ways of treatment and ways to prevent malaria are still powerful in holding customs regarding healing and perceiving an illness (Ningsi, Anastasia, & Nurjana, 2010).

CONCLUSIONS

Understanding science should be based on philosophy. Science has developed very quickly. Therefore philosophy as the foundation of science must be a reference in developing science. Malaria is one of the studies of public health and needs to be studied by its basic foundation by using philosophical studies.
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