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Characteristic of Pregnancy in Woman with Rheumatic Mitral Stenosis in Dr. Soetomo Hospital Surabaya from 2015 – 2017

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ABSTRACT

Background: Cardiac disease is 1 of the major causes of maternal mortality. Mitral Stenosis (MS) is a particularly high-risk condition for a pregnant woman in emerging countries, the main cause of MS is a complication from rheumatic heart disease. Objective: To study the maternal and perinatal outcome of pregnancies complicated by mitral stenosis from rheumatic heart disease. Methods: We conduct a cross-sectional retrospective study using electronic medical data records in dr. Soetomo General Hospital over the period of 3 years from 2015 – 2017 involving 36 cases of pregnant women complicated by rheumatic mitral stenosis. The maternal and perinatal outcome was reviewed. Result*:* Most of the pregnant women with rheumatic mitral stenosis were at 29 - 34 weeks of gestational age. Majority of the patient (61,1 %) was in NYHA II classification for heart failure degree. The Degree of MS was moderate (75 %) and severe (25 %), with a maternal mortality rate was 4/36 patients (11,1 %), and all of the patients were with severe MS had class III/IV heart failure. The main reason for hospital admission was heart failure (50 %). 38 % of women with NYHA Class III/IV had severe MS. Most accompanying valve diseases occur at the patient with severe MS, with *Tricuspid Regurgitation* as the most accompanying valve disease (66,67 %) followed by *Mitral Regurgitation* (36,11 %) and *Aortic Regurgitation* (25 %). Percutaneous Transmitral Valve Commissurotomy (PTMC) was the chosen surgical intervention for valve correction. For a patient with Moderate MS, 6/8 (75 %) of the pregnancy terminated at ≥ 34 weeks of gestational age, compared with 18/28 (64,28 %) patient with Severe MS the pregnancy terminated at < 34 weeks of gestational age. Cesarean section was the most chosen method of delivery for most of the cases. Fetal weight (4/7 cases) at delivery for Moderate MS was > 2500 g, compared with (7/18 cases) was < 2000 g for Severe MS. APGAR Score for Moderate MS cases was 8-10 for 5/7 cases, compared with Severe MS, 16/24 cases were < 8. Conclusions*:* Cardiac and obstetric complications from rheumatic mitral disease remain a major challenge in this disease. Early diagnosis and management with good adherent to pre-conceptional and prenatal care remain a key factor for preventing maternal and fetal morbidity and mortality.

Introduction

Rheumatic heart disease is a major problem, with ≤ 1.4 million people dying each year, and is a leading disease in the young, especially in emerging countries. In more developed economies, the diagnosis of rheumatic heart disease is rare and typically found in recent immigrants[1,2]. Rheumatic heart disease is a sequela of acute rheumatic fever, which is usually a disease of poverty associated with overcrowding, poor sanitation, and other social determinants of poor health[2,3]. The burden of rheumatic heart disease is found mostly in low-income and middle-income countries and among immigrants and older adults in high-income countries and high prevalence of and mortality due to rheumatic heart disease continue to be reported in many regions, including Africa, South Asia, and the Pacific Islands[3,4]. It poses a particular problem in pregnant women, in whom the diagnosis is often delayed or missed. The stenotic mitral valve compromises the ability of the heart to increase cardiac output, increasing left atrial and pulmonary pressures and resulting in cardiac failure. Also, an increase in cardiac output is required to provide sufficient uteroplacental blood flow; when this flow is compromised, fetal growth may be reduced[1]. The prevalence of clinically silent rheumatic heart disease (21,1 per 1000 people, 95% CI 14,1–31,4) was about seven to eight times higher than that of clinically manifest disease (2,7 per 1000 people, 1,6–4,4)[2]. In emerging countries, rheumatic valve disease is the most common cardiac disease in pregnant women and the most important cause of maternal death[2]. Mitral valve stenosis in particular is a high-risk condition and the most common cause of mitral stenosis is rheumatic valvular disease, which is often first diagnosed during pregnancy[4]. Data from studies in Indonesia in pregnant women with heart disease in general and specifically in women with rheumatic heart disease are lacking. Such studies are needed to provide evidence for guidelines on the management of pregnancy in women with heart disease and to counsel women with rheumatic heart disease who are contemplating pregnancy. This study aims to assess the maternal and fetal outcomes of pregnancy in women with rheumatic mitral valve disease.

Methods

This study was a cross-sectional retrospective study using electronic medical data records in dr. Soetomo General Hospital from January 2015 until December 2017. The inclusion criteria for this study were a pregnant woman with rheumatic mitral stenosis, while the exclusion criteria were a pregnant woman with non-rheumatic mitral stenosis. This research was approved by the hospital medical committee.

Result

During 3 years period in our study from 2015-2017, we found a total of 36 cases of rheumatic mitral stenosis.

For heart failure associated with the disease, we based on the functional classification criteria of the New York Heart Association (NYHA). Using the above classification, we found the degree of MS was moderate in 75 % and severe in 25 % of the cases as seen in Figure 1. The majority of the cases were associated with class II NYHA heart failure (61,11 %) or worse (19,44 % for class III NYHA and 16,67 % for class IV NYHA).

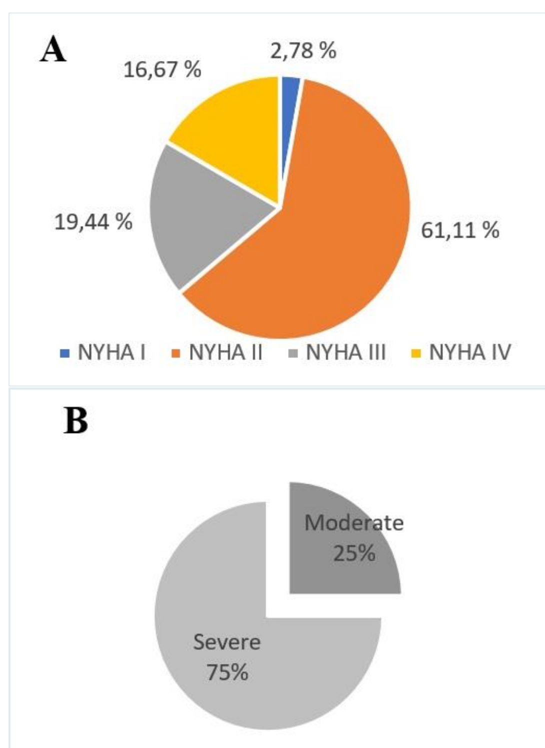

Figure 1. **A.** Percentage of Heart Failure in total cases with rheumatic heart disease associated with mitral stenosis. **B.** Percentage for disease severity based on the EAE/ASE.

The majority of the patient referred to other health facilities (21 cases). Most of the cases (61,1 % of the patient) were in NYHA II classification for heart failure degree. The main indication for admission to hospital or referral was heart failure (50 %). Demographical data from the cases can be seen in table 1.

Table 1. A demographical characteristic from the cases.

Demographical Data		N
Maternal Age	21-25	2
	26 – 30	10
	31 - 35	13
	36 – 40	7
	41 - 45	4
Gestational Age	< 14 weeks	3
	15 – 24 weeks	6
	25 – 28 weeks	4
	29 – 34 weeks	13
	35 – 41 weeks	10
Parity	0	8
	1	15
	2	11
	3	2

Various heart abnormality was seen in most of the cases. Another associated valve disease was found in a majority of the cases. *Tricuspid Regurgitation* was the most accompanying valve disease (66,67 %) followed by *Mitral Regurgitation* (36,11 %) and *Aortic Regurgitation* (25 %), and the frequency was increased correlated with the severity of the disease. Another serious heart complication from the disease was pulmonary hypertension. As can be seen in Table 2, the degree of pulmonary hypertension was associated with the degree of mitral stenosis. Another non-obstetric complication was anemia (19,4 %) and renal failure (2,7 %). Preeclampsia as the obstetric complication was found in 4 cases (11,1 %). Other obstetric complications can be seen in table 2.

Percutaneous Trans Mitral Valve Commissurotomy (PTMC) was the chosen surgical intervention for valve correction. The surgical intervention was mostly done for severe cases (83,33 %) and was undertaken mostly on 28-34 weeks of gestational age (66,7 %). For a patient with Moderate MS, 6/8 (75 %) of the pregnancy terminated at ≥ 34 weeks of gestational age, compared with 18/34 (52,94 %) patients with Severe MS the pregnancy terminated at < 34 weeks of gestational age. Caesarean Section was the most chosen method for delivery for most of the cases (63,89 %), followed by vaginal delivery (8,33 %) and first-trimester pregnancy induction (13,89 %). Fetal weight (4/7 cases) at delivery for Moderate MS was > 2500 g, compared with (7/18 cases) was < 2000 g for Severe MS. APGAR Score for Moderate MS cases was 8-10 for 5/7 cases, compared with Severe MS, 16/24 cases were < 8.

Table 2. Non-obstetric and obstetric complications from rheumatic heart disease associated with mitral stenosis.

Maternal Outcome		Degree of Severity	
		Moderate	Severe
Heart Failure (NYHA)	I	0	1
	II	8	14
	III	0	7
	IV	1	5
Arrhythmia (solitary)		4	5
Arrhythmia with thrombus formation		0	3
Pulmonary Hypertension	Mild	4	0
	Moderate	0	4
	Severe	0	8
Accompanying heart disease	Tricuspid Regurgitation	5	19
	Mitral Regurgitation	6	7
	Pulmonary Regurgitation	2	4
	Aortic Stenosis	0	2
Pulmonary edema		0	4
Mitral commissurotomy		1	5
Obstetric complication	Preeclampsia	0	4
	Membrane rupture	0	2
	Preterm labor	0	3
	Obstetrical Haemorrhage	1	1
	Oligohydramnios	1	3
	Gestational Diabetes	1	0
	Fetal Growth Restriction	0	1
Other complication	Anemia	2	5
	Renal Failure	0	1
Maternal death		1	5

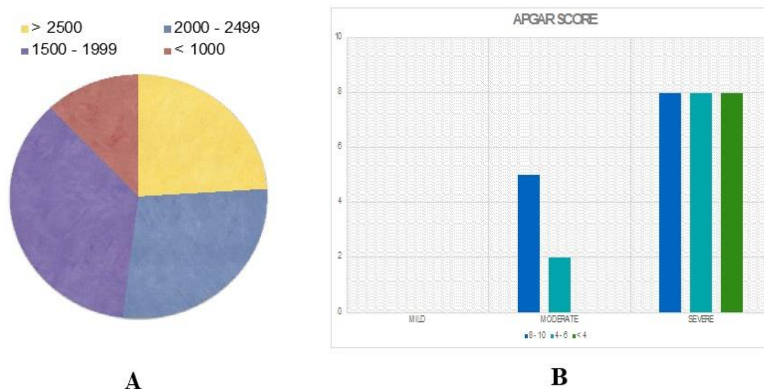

Figure 2. **A.** Neonatal birthweight on termination. **B.** Neonatal APGAR Score.

Discussion

This study provides the outcomes of pregnancy in women with rheumatic mitral stenosis. It shows contemporaneous data showing that women with moderate and severe rheumatic mitral stenosis have poor tolerance for the disease during pregnancy, but that morbidity is high especially in women with severe mitral stenosis. We used The European Association of Echocardiography (EAE) and American Society of Echocardiography (ASE)

recommendations for the echocardio-graphic assessment of valve stenosis to classified the severity of mitral stenosis (MS) and was defined as follows[5]:

- Mild MS = valve area >1.5 cm^2 or if area not available: mean gradient < 6 mmHg
- Moderate MS = valve area 1.0 to 1.5 cm^2 or if area not available: mean gradient 6 to 12 mmHg
- Severe MS = valve area <1.0 cm^2 or if area not available: mean gradient >12 mmHg

Moderate to severe heart failure occurred in 97,22 % of women. This finding is not surprising because pregnancy induces an expansion of the plasma volume, which is poorly tolerated in the presence of severe left-sided stenosis. In pregnant women with mitral stenosis, the increase in cardiac output combined with a decrease in filling time due to increased heart rate can result in increased left atrial pressures and pulmonary edema. Even in previously asymptomatic women, further shortening of the diastolic filling period owing to atrial fibrillation or comorbid conditions that further increase heart rates, such as anemia or fever, often causes hemodynamic decompensation[5]. The stenotic mitral valve compromises the ability of the heart to increase cardiac output, increasing left atrial and pulmonary pressures and resulting in cardiac failure. Also, an increase in cardiac output is required to provide sufficient uteroplacental blood flow; when this flow is compromised, fetal growth may be reduced. Mild mitral stenosis usually tolerates well before pregnancy, but if pregnancy occurs before adequate valve correction the disease may progress to a more severe condition. This support by data from the international prospective registry studies the outcomes of pregnancy in women with rheumatic mitral valve disease[1]. Their study shows that 15,8 % of mild mitral stenosis progress to heart failure and 24 % to pulmonary edema. According to data from the Global Burden of Disease, the prevalence of rheumatic heart disease in Indonesia has decreased by 24 % from 1990-2010. Watkins and colleagues in 2015 estimated that Indonesia has 1,18 million cases, and ranked 4th as the top country with the largest estimated number of the disease[2]. As described earlier, this condition usually missed before or during the first pregnancy. Our data shows that majority of the patient has had a successful and uneventful first pregnancy. This indicates that the cardiac condition is unrecognized before and during the first pregnancy in our healthcare facilities. This may be important because the delayed time required to diagnosed and treat the underlying valve disease may allow leading to another accompanying valve complication. Our data support this because we found more cases with accompanying valve disease and arrhythmia in moderate and severe mitral stenosis.

We found that NYHA class ≥ II was an independent predictor of maternal cardiac events during pregnancy and this support by an earlier study from the international prospective registry studies the outcomes of pregnancy in women with rheumatic mitral valve disease[1]. Echocardiographic follow-up during pregnancy is important to detect early hemodynamic changes that may precede and possibly predict clinical deterioration. It is noteworthy that 75% of women were known to have mitral valve disease before pregnancy. A third of all women with MS were symptomatic before

pregnancy, and half of the women with severe MS went on to need hospital admission for heart failure during their pregnancy, representing significant morbidity and cost. One could speculate that if those patients with isolated severe mitral stenosis had undergone percutaneous balloon mitral commissurotomy preconception, they would have had a lower risk pregnancy with less chance of morbidity and hospital admission[6].

Percutaneous balloon mitral commissurotomy is effective and safe during pregnancy and is preferred to a surgical procedure because the latter still carries a risk of fetal demise of ≈ 20 % [7]. Although ideally, any percutaneous or surgical intervention should be undertaken before conception, the threshold for intervention during pregnancy, particularly for percutaneous balloon mitral commissurotomy in isolated severe mitral stenosis, should below. Two studies from Indonesia mentioned that percutaneous balloon mitral commissurotomy has a high success rate with a low complication rate and the best timing for intervention has been suggested to be after the fourth month[8,13,14]. Most of the cases in which mitral commissurotomy was undertaken were between 28-34 weeks. This delay in correction is caused by many factors e.g, operating schedule queue, individual patient's refusal. The majority of the pregnancy terminated at < 34 weeks of gestational age due to worsening cardiac and obstetric conditions. Cesarean section was the most chosen method for termination due to the presence of obstetrical and neonatal compromised. Adverse neonatal outcomes in our study were low birth weight, particularly from preterm pregnancy termination.

Mortality and cardiac deterioration in this study could have been reduced by appropriate pre-pregnancy assessment and intervention as suggested by the guidelines[9]. A delay in patients seeking help is often the main contributing factor to maternal cardiovascular death in emerging countries[10] which may contribute to the previously described high maternal and fetal mortality in sub-Saharan countries[11]. Hence, adequate counseling of adolescents and young women with rheumatic heart disease about the risks of pregnancy is of utmost importance to convince them to see a cardiologist before getting pregnant. The limitation of this descriptive study is a majority of the cases came from an emergency room with advancing gestational age, hence the optimal cardiac intervention management was limited for selective cases. Another study with optimal obstetric management and timing for cardiac intervention is needed to evaluate better obstetric and fetal outcomes for this disease.

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Women's Operative Method of Contraception in Dr. Soetomo General Hospital Surabaya

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ABSTRACT

Background: Indonesia is expected to face a Demographic surge in 2025 so that the maternal mortality rate is at risk to follow. Steady contraception is needed to control the population growth rate. Women's Operative Method Contraception (MOW) is the most effective contraceptive tool in controlling the population growth rate. The use of MOW contraception in Dr, Soetomo General Hospital Surabaya still cannot be explained. **Purpose**: To know the spatial distribution of Women's Operative Method of Contraception in Dr. Soetomo General Hospital Surabaya 2016 - 2019. **Method**: Retrospective study using medical record data, in Dr. Soetomo General Hospital Surabaya 2016 – 2019. **Results**: Post-deliveries MOW contraception acceptor were 23.3% in 2016 (307 of 1320 deliveries), 29.9% in 2017 (405 of 1355 deliveries), 29.2% in 2018 (432 of 1479 deliveries) and 26, 7% in 2019 (413 of 1389 deliveries). The majority of patients aged over 35 years (72.2%), multiparous (98.6%). came from Surabaya (62.9%), non-booked case-patients (82.0%), and have an overweight BMI (45.2%). There are 55.7% of postpartum MOW acceptors with concomitant diseases. Hypertension and obesity are the highest ranks of comorbidities in the MOW contraception acceptor. **Conclusion**: Postpartum MOW contraception acceptor in RSUD dr. Soetomo has increased every year. But further evaluation and follow up regarding increasing the percentage of postpartum MOW contraception acceptor in Dr. Soetomo General Hospital Surabaya is still very much needed.

Introduction

In 2025 Indonesia is expected to face a demographic surge. Bappenas together with BPS and UNFPA has projected the total population of Indonesia in 2035 to reach 305,652 million people, whereas a developing country, Indonesia ranks the fourth most populous country in the world after China, India, and the United States (BPS, 2013). According to the SKDI survey, Indonesia's population growth rate in 2017 was 1.34%, which has increase from 2016 by 1.27% (BKKBN, 2018). This is still far from the target planned by the BKKBN, which is 1.19% per year in the 2015-2020

period (BKKBN, 2018). Total Fertility Rate (TFR) in 2018 was 2.38 children has decreased compared to 2017, namely 2.4 children, but this is still below the target of 2.1 in 2025 to achieve a balanced population growth and quality families (BKKBN, 2018). Maternal mortality is also still a major problem in Indonesia. Maternal Mortality Rate (MMR) is an important indicator that describes the level of community welfare and the utilization of quality maternal and newborn health services. According to the 2012 data, MMR in Indonesia was 359 per 100,000 live births, still far from the Millennium Development Goals (MDGs) target of 102 per 100,000 live births (Kemenkes RI, 2015). The use of steady contraception in the form of IUDs, implants, and MOW after deliveries and after a miscarriage can provide solutions to reduce the risk of death in mothers during childbirth and after a miscarriage (Ekoriano, 2010) and one of the variables that affect birth rates.

As a referral center hospital for eastern Indonesia, it is hoped that postpartum women at Dr. Soetomo General Hospital Surabaya will receive postpartum contraception directly. Based on the description above, the authors are interested in researching the spatial distribution of steady contraception in form of Women's Operative Method of contraception (MOW) in postpartum women at Dr. Soetomo General Hospital Surabaya for a period of 4 years (2016 - 2019).

Method

This study used a retrospective descriptive research method using medical record data at Dr. Soetomo General Hospital Surabaya during 2016-2019. The population of this study was all mothers who gave birth at Dr. Soetomo General Hospital Surabaya who used postpartum contraception. The sample of this study was all mothers who choose postpartum MOW contraception.

Result and Discussion

The World Health Organization (WHO) recommends postpartum long-term methods of contraception (such as MOW and IUD) as a safe and effective method, especially for mothers who have limited access to health services. (Grimes et al., 2010). As a referral center hospital for Eastern Indonesia, Dr. Soetomo General Hospital has implemented long-term use of postpartum contraception after vaginal or cesarean delivery (post-placental IUD, trans cesarean IUD, and MOW) according to WHO and BKKBN recommendations.

In Indonesia, in 2011 the number of fertile age couples (PUS) was 45,905,815 people. The contraceptive participants in 2011 was 34,872,054 people (75.96%) of which 3.49% were MOW contraception acceptors (1,216,355 people) and 11.28% were IUD acceptors (3,933,631 people) (Dinkes, 2011). At the Dr. Soetomo General Hospital Surabaya, it was found that the percentage of acceptors of both MOW and IUD postpartum was higher during the last four years (2016-2018). As many as 58.64% of mothers used postpartum contraception (MOW and IUD) in 2016, increasing to 64.5% in 2017 and to 67.61% in 2018 then in 2019 it increased to 68.3%. The cumulative average postpartum contraceptive acceptor rate was steady during the four years, namely 64.75% (3598 mothers out of a total of 5543 deliveries).

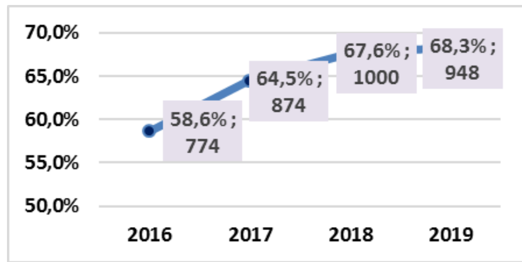

Figure 1. Postpartum steady contraceptive use in Dr. Soetomo General Hospital 2016 to 2019

Postpartum contraceptive use trends in Dr. Soetomo General Hospital Surabaya tends to increase every year. The results of this study support the program of the BKKBN in 2018 which states that every mother should start using long-term contraceptive methods such as IUDs, implants, or MOW after deliveries. This indicates that Dr. Soetomo General Hospital Surabaya is committed to increasing postpartum contraception rates as an effort to reduce MMR in Indonesia.

The total percentage of postpartum contraceptive use during 2016 to 2019 in the form of MOW contraception was 28.1% (1557 patients), IUD was 36.8% (2039 patients) and other contraceptive methods were 35.1% (1947 patients). In 2016, with a total of 1320 deliveries, 23.3% of postpartum patients underwent MOW contraception (307 patients). The use of contraceptive IUDs (both post-placental and trans cesarean IUDs) in 2016 was 35.4% (467 patients). In 2017, postpartum MOW contraceptive acceptors have increased from 2016 to 29.9% (405 patients), while postpartum IUD acceptors experienced a decrease compared to 2016 to 34.6% (469 patients). In 2018, with a total of 1479 births, the number of postpartum MOW contraception acceptors decreased slightly to 29.2% (432 patients), while postpartum IUD acceptors in that year have a significant increase compared to the previous two years to 38.4% (568 patients). In 2019, postpartum MOW contraception acceptors increased slightly to 26.7% (413 patients).

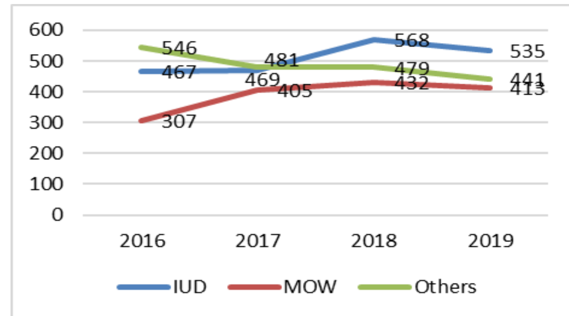

Figure 2. Postpartum Contraceptive Use in Dr. Soetomo General Hospital 2016 to 2019

During the four-year period (2016-2019), it was found that most of the acceptors of MOW contraception at Dr. Soetomo General Hospital Surabaya aged over 35 years old was 72.2% (1124 patients) and the remaining 27.8% (433 patients) aged 16- 34 years.

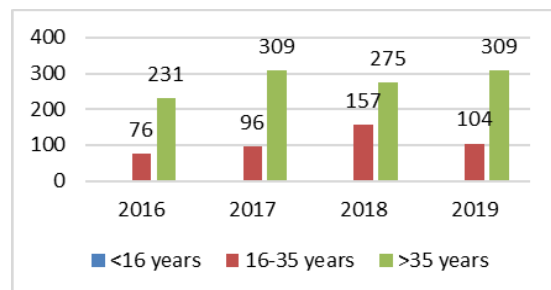

Figure 3. Age distribution

This age distribution was in accordance with the results of research by Grestanti and Fitriyah (2018) which states that 72% of MOW contraception acceptors at the PKBI East Java clinic are in the age category over 34 years with an average age of 37 years (Grestanti and Fitriyah, 2018).

The age variable shows a significant influence on the choice of MOW

contraception. Age has a relationship with the use of a contraceptive method and acts as an intrinsic factor. The increasing age of a person and the achievement of the ideal number of children will encourage couples to limit births. The older a person is, the choice of contraception is considering higher effectiveness, that's the long-term contraceptive method (BKKBN, 2018).

The period of maternal age, especially over 35 years, should end fertility after having 2 children. For this reason, mothers over 35 years of age have been advised not to become pregnant or have no more children for various medical reasons and other reasons. The main contraceptive option in this age period is steady contraception in form of MOW. Meanwhile, IUDs and implants are less recommended because the mother is relatively old and has a higher risk of side effects and complications (Manuaba, 2010).

Based on the parity of the patient, as many as 98.6% (1535 patients) of the postpartum MOW contraception acceptor o were multigravida patients, while the remaining 1.4% (22 patients) were primigravida patients.

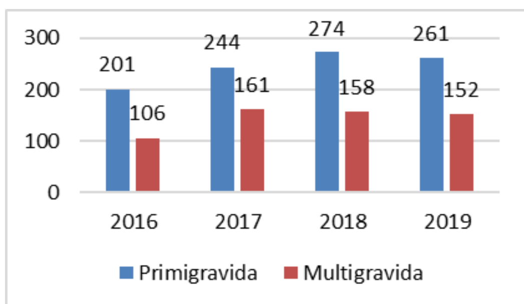

Figure 4. Parity distribution.

This parity distribution was in accordance with the research results of Iswati et al. (2011) which showed that there was a relationship between the number of children and the choice of steady contraception. Multigravida mothers have a higher interest underwent MOW contraception acceptor because they have had a sufficient number of children in one family and the high level of effectiveness in MOW contraception to minimize the risk of pregnancy again (Iswati et al., 2011).

There were only 1.4% of the total postpartum MOW contraception acceptors at Dr. Soetomo hospital during the last 4 periods who was a primigravida mother. Further investigated, all primigravida patients who underwent postpartum MOW contraception were mothers with other comorbidities such as heart disease which would endanger their lives if the mother became pregnant again. MOW contraception is considered the best low-risk contraceptive option to minimize pregnancy in this group of mothers.

Based on antenatal history (ANC), as many as 1276 patients (82.0%) of the total postpartum MOW contraception acceptors were non-bookcase (NBC) and the remaining 18.0% were bookcase patients referred from Maternity Clinic at Dr. Soetomo General Hospital Surabaya. The prevalence of MOW contraception acceptors in non-bookcase patients shows that the performance of Dr. Soetomo Hospital as a tertiary referral place can provide consultation, information, and education.

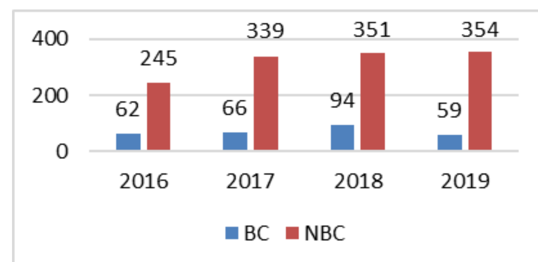

Figure 5. Antenatal care distribution

When viewed based on the patient's area of origin, as many as 980 patients (62.9%) were the resident of the city of Surabaya, while those from outside Surabaya were 57 patients (37.1%). This prevalence shows that Dr. Soetomo Regional Hospital has become a tertiary referral place that serves postpartum MOW patients both in the city and outside the city.

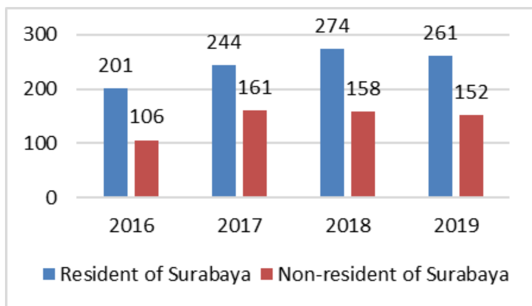

Figure 6. Patient's origin distribution

Pregnant women with certain medical diseases have a higher risk of complications in pregnancy and childbirth. Some of the basic diseases that are often encountered in daily cases in dr. Soetomo is obesity, chronic hypertension, diabetes in pregnancy, and heart disease.

Pregnancy with obesity is one of the high-risk pregnancies with the threat of complications of pregnancy and childbirth. In this study, 76.9% (1197 patients) of postpartum MOW acceptors had BMI in the normal or overweight category. However, 21.7% (338 patients) were in the obese BMI category, both obese class I, class II and class III.

Research conducted by Sriwahyuni and Wahyuni (2012) concluded that the length of time using hormonal contraceptives in the form of pills, injections or implants has a significant effect on weight gain. The risk of respondents using hormonal contraceptives for more than one year is 4.25 times greater than those who use contraceptives for less than one year (Sriwahyuni and Wahyuni, 2012). Other studies have shown that about two-thirds of women who use depoprovera contraception will gain weight, 20% experience weight loss, and 10% have no change in body weight (Kellow, 2008). Obesity is one of the most common nutritional problems and requires serious handling. Monitoring of body weight is needed to determine changes in nutritional status and health problems that occur (Waspadji et al, 2003).

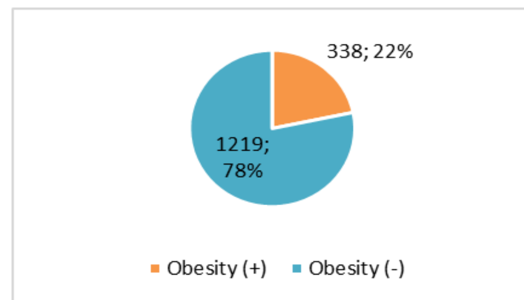

Figure 7. Obesity prevalence

A study stated that obesity has the effect of inhibiting the performance of hormonal contraceptives. Several steroid contraceptive methods, including the oral contraceptive pill, progestin-only pill, transdermal contraceptive patch, and vaginal ring, have been shown to be less effective in obese women (Skouby, 2010). Variations in steroid distribution and metabolism may explain why hormonal contraceptives are less effective in steroid contraceptives in obese people. Increased storage of steroid hormones in adipose tissue lowers blood levels of steroid contraceptives, thereby reducing their ability to prevent pregnancy (Skouby, 2010). So patients who have previously had obesity are not advised to use hormonal contraceptives in addition to the risk of aggravating obesity and

triggering other metabolic diseases. Patients with obesity are advised to use long-term non-hormonal contraceptives such as the IUD or MOW.

Hypertension in pregnancy and its complications is one of the causes of maternal death. From this study, 23.9% (372 patients) had chronic hypertension as the underlying disease. This is different from research from Grestanti and Fitriyah (2018) which found that the prevalence of hypertension was higher, reaching 30.4% of KB MOW acceptors at PKBI East Java clinics (Grestanti and Fitriyah, 2018).

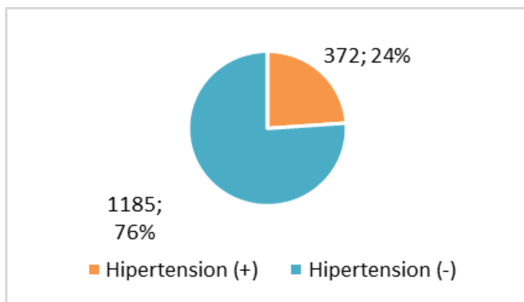

Figure 8. Hipertension prevalence

Blood pressure status or the presence or absence of hypertension is one of the health factors that need to be considered in contraceptive acceptors. Research by Sujono et al. (2013) stated that the use of hormonal contraceptives can affect the increase in blood pressure. Injectable hormonal contraceptive acceptors have a risk of increasing blood pressure 2.93 times higher with an average increase of 14.1 mmHg (Sujono et al., 2013).

Health workers need attention so that mothers who experience an increase in blood pressure due to the use of hormonal contraceptives are advised to use non-hormonal contraceptives or become MOW acceptors. On the other hand, pregnant women with hypertension will increase the risk of death and morbidity for both mother and baby. Pregnancy with hypertension can cause stunted fetal growth, premature labor, placental abruption, and fetal death. Meanwhile, complications for mothers can result in postpartum hemorrhage, seizures, and even death (Kemenkes RI, 2013). Therefore, mothers with hypertension are advised to use long-term non-hormonal contraceptives such as the IUD or MOW so as not to trigger an increase in blood pressure and other complications.

This study also found that there were 5.0% cases of diabetes in mothers undergoing postpartum MOW contraception or as many as 78 cases. Mothers with diabetes have a higher risk of pregnancy complications and the baby who is born also has a risk of congenital abnormalities. Therefore, preconception care and pregnancy planning are of the utmost importance (Skouby, 2010).

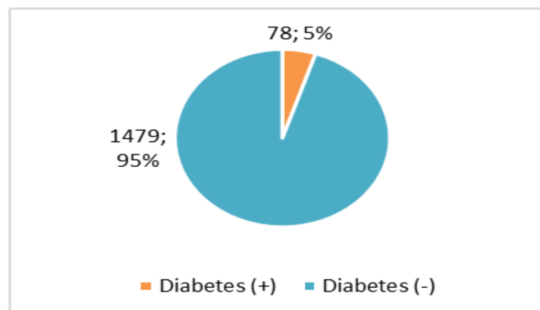

Figure 9. Diabetes prevalence

Mothers with diabetes have the same contraceptive options as the general population, but the potential metabolic effects of hormonal contraceptive methods need to be considered in relation to maternal diabetes. Studies in young women with diabetes without any vascular complications using low-dose combined oral contraceptives have shown convincing results, but larger long-term studies are needed. Another study has shown that low-dose oral contraceptives

can cause changes in lipid profiles. Other studies have shown that the use of progestins increases the risk of venous thrombosis and cerebral thrombosis by 2.9 and 2.2 times (Lidegaard et al., 2002). Mothers with diabetes who have macrovascular and microvascular complications are recommended to use nonhormonal contraceptive methods (Skouby, 2010).

Heart disease in pregnancy is also an important cause of maternal death. In the UK, heart disease in pregnancy is the leading cause of maternal death (Lewis, 2004). Approximately 0.2-4% of pregnancies in developed countries are accompanied by complications of heart disease (Simahendra, 2013). In this study, 5.1% (80 patients) acceptors of postpartum MOW contraceptive acceptor were mothers with heart disease.

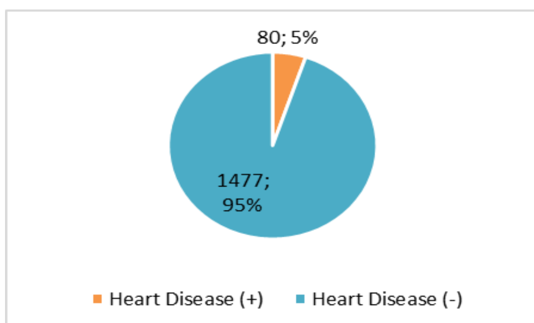

Figure 10. Heart Disease prevalence

The risk of pregnancy in mothers with heart defects depends specifically on the severity of the disease in each patient. For example, the risk of maternal death increases by up to 50% in mothers with heart defects with pulmonary arterial hypertension, but no increased risk should be anticipated for mothers with mild pulmonary stenosis compared with mothers without heart disease (Guillebaud, 2019). In addition to increasing maternal mortality, heart disease in pregnant women also increases the risk of mothers giving birth to premature babies, and fetal death (Paramitha, 2016). In patients with cyanotic heart disease with pre-pregnancy resting arterial oxygen saturation <85% associated with only a 12% chance of pregnancy with live births, this fetal risk should also be considered when assessing maternal risk (Thorne et al., 2017). In this case, the use of contraception is essential.

In women with heart disease, nonhormonal contraceptive methods are recommended (Skouby, 2010). Sterilization is considered to be the obvious choice for many women who should not be pregnant (WHO grade 2 and above), and is considered the best option because of its low risk, low failure rate, availability, and a safe alternative for patients (Thorne et al., 2017). The role of sterilization has been reduced by several reversible contraceptive techniques such as the IUD (Mirena®) and subdermal implants (Implanon®), both of which are as effective as sterilization. In some women who cannot accept the decision because they have never been able to have children, alternatives to sterilization are allowed (Thorne et al., 2017). Combined oral contraceptive pill (COC) use is a safe, effective, and popular method of contraception but the estrogen component has been associated with an increased risk of arterial and venous thromboembolism. It is this association that limits the use of COCs in some women with cardiovascular disease. In addition, both estrogen and progestogen can interfere with warfarin metabolism, so the INR ratio should be monitored more frequently when starting COC (Thorne et al., 2017).

Conclusion

During a four-year period (2016-2019) in Dr. Soetomo General Hospital Surabaya, the percentage of postpartum postpartum contraceptive acceptors in the form of MOW and IUD has increased every year. Further evaluation and follow up regarding increasing the percentage of postpartum MOW contraception acceptor in Dr. Soetomo General Hospital Surabaya is still very much needed.

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The Relationship Between Surgeons Communication and Patients Understanding in Jemursari Islamic Hospital Surabaya

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ABSTRACT

Communication is a human activity to be able to understand a message between communicators and communicants. Ordinary communication ends with a result called the communication effect. Communication usually occurs with the same meaning in a conversation. Understanding can be defined as the ability to be able to correctly explain the object to be known, and be able to interpret the material correctly. This study aims to determine the relationship between surgeon communication and patient understanding in the hospitalized surgery room at Jemursari Islamic Hospital Surabaya. This research uses a consecutive sampling technique based on sample criteria. The population was all surgical patients who were going to perform surgery and samples were obtained according to the inclusion and exclusion criteria. The sample size is 65 samples and the research instrument was a questionnaire. The results of this study were obtained (36%) respondents communicated ineffectively and (64%) communicated effectively. Besides that, (45%) respondents did not understand what the doctor explained, and (55%) understood what was explained. Analysis using test *Chi- Square* obtained a very significant relationship between surgeon communication with patient understanding with p-value = 0.000.

Introduction

Doctor-patient communication is one of the most important things in the treatment process in the hospital. Effective communication between doctors and patients is very good at reducing the number of complaints from patients. But not all doctors can communicate well with their patients. Lots of patients complain about their doctors not because of their abilities but because of their lack of attention to patients (Sikumbang, 2017).

Patients feel they do not understand what the doctor means. Also, some doctors do not have much time to explain the disease because there are too many patients. Finally, some patients flocked to take medication abroad. Based on the results of the Indonesian medical council, it shows that doctors in Indonesia have very little to communicate with. Then in modern times, doctors are also very preoccupied with entering data into a computer where doctors are not completely

focused on their patients but are busy entering data into the computer. (Fourianalistyawati, 2015).

The misunderstanding of doctor-patient communication is often because the patient has surrendered all his fate to the doctor or hospital. The most common cause of misunderstanding by doctors and patients is that doctors have not communicated well with their patients. Because in the eyes of patients, doctors have been considered by patients as "gods of savior" so that they have the highest position. This position causes obstacles that create misunderstanding of communication (Alfitri, 2006).

Doctors inform a patient's illness by using informed consent. The most common complaint felt by patients lies in the lack of communication between doctors and patients. The patient desperately needs information about the diagnosis, medical procedures, the course of the disease. Patient rights to know everything the doctor will do for the treatment. In this way, doctors and patients can create good communication (Alfitri, 2006).

A good relationship between a patient and a doctor will establish good communication to increase trust. The doctor will respond if the patient responds very well to the information that has been conveyed. There are also doctors who have conveyed it well, but the patient does not understand what the doctor means because the patient's knowledge is low / or because the doctor also uses the medical language. So between doctors and patients must have good communication (Fouriana listyawati, 2015).

Method

The type of research used in this research is observational analytic. The analytic is the researcher wants to know what certain situations or conditions occur or what influences the occurrence of something. The design of this study is a cross-sectional approach, namely research to find the relationship between the independent variable and the dependent variable by taking momentary measurements. This study used a cross-sectional study because it connected two variables between the communication between doctors and surgical patients using data collection. The research instruments were obtained from patients who were about to perform surgery in the Jemursari Hospital Surabaya inpatient room.

The sample used in this study is primary data. In the form of giving a questionnaire to surgical patients.

Results

All data in this study are primary data obtained from the azzahra room 2 of the Jemursari Hospital. This study used 65 samples of patients.

A. Identification of Surgeon Communication in Jemursari Islamic Hospital

1. The Frequency of Surgeons Communication

Frequency and the percentage of respondent characteristics based on surgeons communication in Jemursari Islamic Hospital.

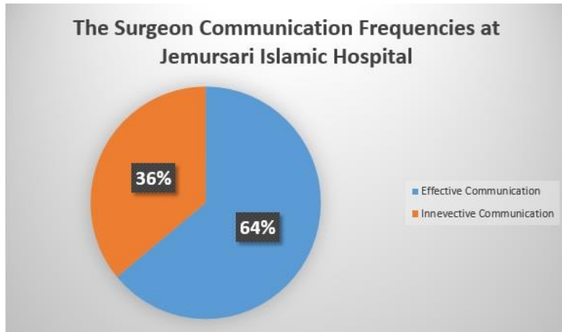

Figure 1. The frequency of surgeons communication.

Based on figure 1 shows that the respondents (64%) communicate effectively.

2. The Frequency of Patients Understanding.

Frequency and percentage of respondent characteristics based on patients understanding in hospitalized surgery room.

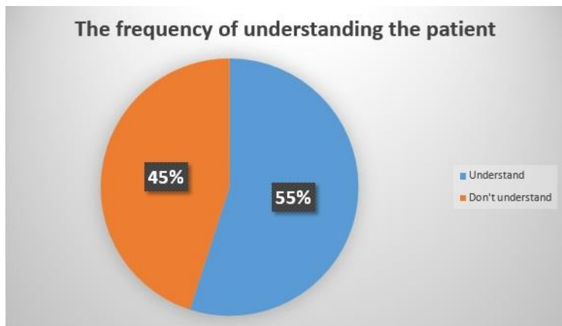

Figure 2. The frequency of understanding the patient

The figure 2 shows that respondents (55%) understand the doctor's explanation.

3. Respondents Frequency Based on Age

Data on the results of filling out the questionnaire Frequency and percentage of respondent characteristics based on age were obtained during the table study.

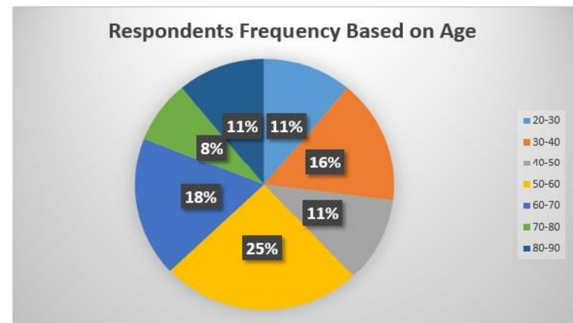

Figure 3. The frequency based on age

The figure 3 shows that most respondents (25%) have an age of 50 - 60 years.

4. Respondent Frequency Based on Gender

The frequency and percentage of respondent characteristics based on gender were obtained during the table study.

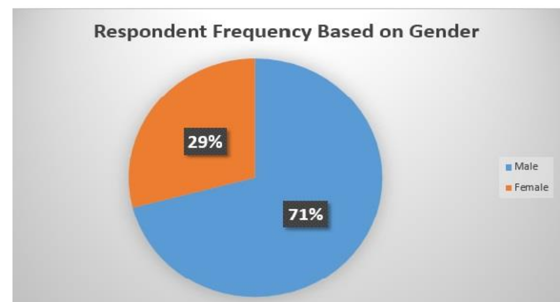

Figure 4. The frequency based on gender

Based on figure 4 shows that most of the respondents (71%) are male.

5. Response Frequency Based on Education

The frequency and percentage of respondents based on education obtained during the research table

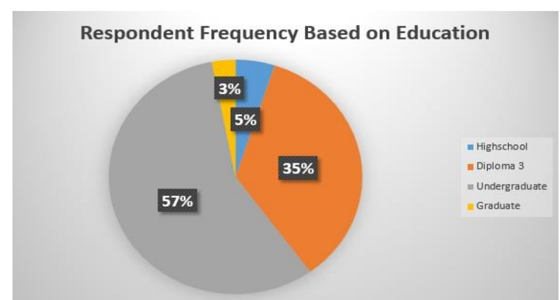

Figure 5. The frequency based on education

Based on the figure 5 shows that most of the respondents (57%) have undergraduate education.

6. Analysis of The Relationship Between Surgeons Communication and Patients Understanding

The analysis of the relationship between the surgeon communication and the incidence of understanding the patient observed by the researcher is as shown in the table.

Table 1. Correlation surgeons communication and level of patients understanding

Doctor's Communication Level	Frequency of understanding patient						*P Value*
	Effective		Ineffective				
	n	%	n	%	N	%	
Effective	32	88.9	9	31	41	63.1	0,000
Ineffective	4	11.1	20	69	24	36,9	
Total	36	100	29	100	65	100	

Table 1 shows that the percentage of respondents with effective communication is higher than ineffective communication. The results of this data analysis used the test chi-square obtained p-value = 0.000, it can be concluded that there is a relationship between doctor communication with patient understanding.

Discussion

This study aims to determine the relationship between surgeon communication with patient understandability in the surgical inpatient room of Jemursari Islamic Hospital Surabaya. The discussion of the results of the data analysis of the research variables is explained as follows.

1. Doctors Communication

A doctor's communication is one of the most important moments in a patient's treatment. Doctors have a legitimate power because it is very easy to influence patients because what doctors say is more effective and can be well received by their patients. Communication here is divided into two, namely verbal and nonverbal. Where verbal communication is communication that we always say, while nonverbal is everything that has been conveyed by someone to another. In communicating with patients, doctors must apply communication techniques, namely giving greetings, asking questions, giving assistance, giving explanations, returning control. (Sukardi et al., 2008)

Based on the research that has been done, it states that (36%) of respondents the communication is not effective. Some of the reasons for the ineffectiveness of the communication are because the doctors here have many patients which result in not being able to have enough time to explain to their patients. Then besides time, some doctors have not explained the procedure to be performed. Some doctors also have not used technology such as (audio-visual, pictures) in conveying to patients the patient's diagnosis, the questionnaire also explains the risk of action, many patients do not understand because the patient's condition is in pain. Almost all respondents (64%) have communicated effectively. This is supported by the results of research conducted about the relationship between effective doctor-patient communication with the level of anxiety in preoperative patients, it was found that (52%) doctors performed effective communication, which meant that there was a relationship between doctor-patient communication and anxiety levels. (Laksmi Pratita, Sis Indrawanto, and Handaja, 2017).

2. Patient Understanding

Understanding is the ability to correctly explain the object to be known and can interpret the material correctly. Then the first indicator about the doctor's explanation, to find out whether the patient understands or not, namely being able to explain, conclude, predict. In addition, there are also factors that can influence this understanding, namely age, experience, gender, education, occupation, socio-cultural and economic factors. (Notoatmodjo, 2010).

Based on the research that has been done, it states that (45%) respondents do not understand the doctor's explanation. Some of the causes of not understanding patients are that many doctors still use medical language that is difficult for patients to understand. In addition, patients who are in pain have difficulty understanding the doctor's explanation, then education is an important factor in understanding doctor-patient communi-cation were in this study (5%) high school education, (35%) D3, (57%) S1 and (57%) 3%) S2 were when the research took place showed that SMA and D3 education got a lot less from the doctor's explanation which resulted in a lack of understanding of the communication because the doctor did not understand a broad picture of the diagnosis, when using the media (tab, audiovisual) the patient may understand better. In addition, age is also an influence on patient understanding which in this study also (25%) patients aged 50-60 years. In my research, some patients have experienced hearing loss and are in pain due to the disease suffered by these patients. Therefore, the patient does not feel that he understands what the doctor explains. Almost all respondents (55%) understood what was explained. The results of research conducted by In my research, some patients have experienced hearing loss and are in pain due to the disease suffered by these patients. Therefore, the patient does not feel that he understands what the doctor explains. Almost all respondents (55%) understood what was the doctor explained. The results of research conducted by In my research, some patients have experienced hearing loss and are in pain due to the disease suffered by these patients. Therefore, the patient does not feel that he understands what the doctor explains. Almost all respondents (55%) understood what was explained. The results of research conducted by the relationship between doctor-patient communication with the level of medical understanding of the patient's eye polyclinic hospital prof. Mulyanto University of Mataram, West Nusa Tenggara, the results obtained (75%) of respondents understand the doctor's explanation, which means there is a positive and strong relationship between the patient's doctor's communication with the patient's level of understanding. (Dewi et al., 2017)

3. Relationship Between Surgeons Communication and Patients Understanding

Communication techniques relate to understanding the patient because of the key importance in medicine. With good communication, the doctor can listen to the patient. Communication that is often used by doctors is to use verbal communication which we always say. Where the patient can understand this, we can see from how the patient can conclude what the doctor has tried to do well. The factors that can influence understanding include age,

gender, and education. The doctor's steps when conveying to the patient must include greeting, asking the patient, providing information after conducting the examination, and explaining in detail in order to create comfort for the patient. (Susanto, 2017) (Dewi et al., 2017).

In this study, the Chi-Square Test statistical test using the SPSS statistical application showed a value (p-value = 0.000), which means that there is a very significant relationship between doctor's communication techniques and patient understanding. This is supported by the results of previous research conducted by (Dewi et al., 2017) concerning the relationship of doctor-patient communication with the level of medical understanding of the eye polyclinic hospital prof. Mulyanto Mataram University, West Nusa Tenggara obtained a p-value of 0,000. The correlation value r = 0.630, which means that there is a positive and strong relationship between the patient doctor's communication with the patient's level of understanding.

Conclusion

Based on the result of this research. It was concluded that there were 42 respondents (64%) who communicated effectively, 23 respondents (35%) did not communicate effectively. In addition, there were 36 respondents (55%) who understood the explanation, 29 respondents (45%) did not understand the explanation. Between the two, there is a very significant relationship between surgeon communication techniques and patient understanding in the surgical inpatient room of RSI Jemursari Surabaya.

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Identification of Leptospira Bacteria in Human Urine According to Islamic View

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ABSTRACT

Leptospirosis is a zoonotic infectious disease caused by pathogenic organisms belong to the genus Leptospira, which are transmitted directly or indirectly from animals to humans. Most countries in the Southeast Asia regions are endemic for leptospirosis. The incidence of leptospirosis is strongly influenced by various socio-cultural, occupational, behavioral, and environmental factors. The amount of risk depends on the prevalence of Leptospira in the local area and the frequency of exposure. One of the tests to confirm the diagnosis of leptospirosis is by isolating Leptospira bacteria with culture and molecular examination of a person's body fluid specimens such as blood, cerebrospinal fluid, or urine. To identify Leptospira bacteria in leptospirosis cases in humans, urine samples can be used. This examination is the development of methods used in medical science to diagnose leptospirosis. One of the verses in the Qur'an regarding science is "He is the One Who created everything in the earth for you. Then He turned towards the heaven, forming it into seven heavens. And He has ⌜perfect⌝ knowledge of all things." (Surah Al-Baqarah [2]: 29). From this verse, it can be concluded that Allah SWT created something on this earth, including urine in it, with the intent and purpose for all of His creation, so that his servants understand and worship Allah SWT and carry out their obligations as caliphs on this earth. According to the Islamic view, identification of Leptospira bacteria in the urine of workers is permissible because science and religion are related.

Introduction

Leptospirosis is a disease caused by the spirocheta bacteria of the genus Leptospira. There are 10 pathogenic species, and more than 250 pathogenic serovars (CDC, 2018). Transmission can occur through direct contact with animals infected with the bacteria leptospira or often through indirect contact with water or soil contaminated with urine from infected animals.

Leptospires enter the human body through penetration of the oral and conjunctival mucous membranes or injury to the skin and pass through the bloodstream. In humans, leptospirosis will begin with a septicemic phase followed by immune manifestations. The most serious condition of this disease can involve damage to many systems, including

vascular, liver, kidney, lung, and damage to the bone muscles, commonly known as Weil Syndrome (De Brito et al, 2018). Leptospirosis is a bacterial disease that causes morbidity and mortality worldwide. Although the disease is endemic in many slum communities in urban or rural areas and can cause sporadic epidemics, little is known about the true burden of the disease. This disease is often undiagnosed because the signs and symptoms are difficult to distinguish from other endemic diseases and there is a lack of diagnostic laboratories available (Amin L, 2016).

Most of the endemic areas for leptospirosis are in the Caribbean and Central and South America as well as in Southeast Asia and Oceania (Costa et al, 2015). In Indonesia, six provinces reported cases of leptospirosis in 2017, namely DKI Jakarta, West Java, Central Java, DI Yogyakarta, East Java, and Banten. Leptospirosis cases, which increased drastically in 2016 as many as 830 cases, decreased again in 2017, namely as many as 640 cases (Kemenkes RI, 2018). A person's risk factors for leptospirosis include: a). contact with water contaminated with Leptospira germs or rat urine during flooding; b). contact with rivers or lakes in bathing, washing, or working in these places; c). contact with rice fields or plantations (related to work) who do not use footwear (Kemenkes RI, 2015).

In one study, ten individuals without clinical symptoms (no episodes of fever in more than one year) and no serological evidence suggesting that a person with leptospirosis excreted the bacteria Leptospira for more than one year. This broadens the understanding of the conditions of leptospira carriers or carriers so that it can be said to be long-term asymptomatic leptospira (Ganoza et al, 2010).

Diagnosis can be confirmed through isolation of Leptospira bacteria from clinical specimens such as blood, urine, and cerebrospinal fluid, positive Polymerase Chain Reaction (PCR) results, and seroconversion of Microscopic Agglutination Test (MAT) from negative to positive (Kemenkes RI, 2015). The slow growth of Leptospira in culture media takes about 4 weeks before being stated as negative culture results. Positive results on culture are very low, especially in ordinary microbiology laboratory facilities, so that for diagnostic support waiting for culture results is often an obstacle in patient management (Setiati et al, 2014). The most commonly used diagnostic tests are the Microscopic Agglutination Test (MAT) and IgM ELISA. MAT has unmatched serovar specifications and is the gold standard in diagnosing leptospirosis (Ahmed et al, 2012).

Culture and PCR examination in leptospirosis cases using urine samples is one way that can be used to identify Leptospira bacteria (Ministry of Health, 2017). This examination is the development of methods used in medical science to diagnose leptospirosis. In this study, we wanted to know how the law of identification of leptospira bacteria using human urine according to Islamic views. Then, the method used in this article is to examine the verses of the Qur'an, Hadith, and various references relevant to the issues to be discussed.

Leptospira Bacteria According to Islamic View

Bacteria are prokaryotic microorganisms that are relatively small in size, about 1 μm in diameter, and in the absence of a nuclear membrane. Bacteria are living things that cannot be seen by the naked eye and can only be seen using a tool, namely a microscope. In Leptospira bacteria, observations were made using a dark field microscope (Carroll et al, 2017). Its size is very small, making it a living creature that is different from the others. Allah SWT said: "Surely Allah does not shy away from using the parable of a mosquito or what is even smaller." (Surah Al-Baqarah [2]: 26)

From the quotation of the verse, we can know that Allah SWT gave parables to very small living things on this earth. Without

realizing it, these living things are around our environment and live together with humans. One of them is the Leptospira bacteria, a bacteria that can cause leptospirosis in humans and animals. Leptospirosis is an acute zoonotic disease caused by a spiral-shaped bacterial infection of the pathogenic genus Leptospira, which is transmitted directly and indirectly from animals to humans with a wide spectrum of diseases and can cause death (Kemenkes RI, 2017).

One of the risk factors for leptospirosis is the lack of healthy living habits in the community. One example is in the province of DKI Jakarta, the number of households that practice clean living behavior shows a fairly good percentage of 69.3%. The results of the monitoring of environmental health workers in all areas of DKI Jakarta Province in 2017 which included in the healthy home category were only 62.10% (Dinkes DKI Jakarta, 2018). The majority of risk factors for leptospirosis are caused by the behavior of a person who does not maintain the cleanliness of his environment and is due to his fault.

One of the verse quotes in the Al-Qur'an regarding events or events that are caused by human deeds themselves: "Corruption has spread on land and sea as a result of what people's hands have done, so that Allah may cause them to taste ˹the consequences of˺ some of their deeds and perhaps they might return ˹to the Right Path˺." (Surah Ar-Rum [30]: 41)**.**

The above verse quotation tells that all the damage on this earth is caused by human actions themselves. Allah SWT gives a test or trial to His people so that they can reflect on what they do. Because human actions that do not behave clean and healthy can cause a disease that causes someone to be sick. The Word of Allah SWT regarding pain or trials for His people: "Every soul will taste death. And We test you ˹O humanity˺ with good and evil as a trial, then to Us you will ˹all˺ be returned." (Surah Al - Anbiya [21]: 35)**.**

In this verse, it is explained that Allah SWT gives trials to His servants with good or bad. These tests or trials can be in the form of goodness that Allah SWT provides, one of which is health so that someone can be grateful and know that Allah SWT has given blessings and gifts to His people. On the other hand, Allah SWT can test His servants with ugliness, such as sickness and poverty, because it is hoped that His servants can be patient and ask for healing and sustenance both physically and mentally to Allah SWT (Rahmawati & Muljohardjono, 2016).

In every disease that Allah SWT sent down, one of which is Leptospirosis, there must be a cure. If someone takes medication as recommended to someone who knows better or is an expert, and with the permission of Allah SWT, the disease will disappear and healing will be obtained (Muflih, 2013). One of the verse quotes about the decline of the disease and the cure: "Indeed, Allah sent down the disease and its cure. And Allah makes medicine for every disease. So seek treatment, but do not seek treatment with something that is haram." (HR. Abud Dawud).

From the quote above, Allah SWT will bring down the disease and also a cure to heal His people. People who are sick are encouraged to try or make efforts to get medicine for their recovery. Get medicine with all lawful things, and keep away from everything that is haram. We can find that during the time of the Prophet Muhammad, the management of disease was primarily based on the cause of the disease and efforts to find out how to deal with it. Muslims are encouraged to study the symptoms, causes, and further healing efforts (Nurhayati, 2016).

It can be concluded that the Leptospira bacteria are living things on this earth that are not visible to the naked eye. Despite its small size, the Leptospira bacteria can cause leptospirosis in an infected person. Pain is one of the tests or trials that Allah SWT has given to His servants. All the diseases that Allah SWT sent down, He also sent down medicine for the healing of His people.

Urine According to Islamic View

The definition of urine according to KBBI is waste liquid that accumulates in the bladder and is excreted from the body through the urinary tract. The scholars agree (ijma ') that urine (urine) is unclean, including the urine of a baby, whether it is a boy or a girl. However, sharia provides convenience and relief on how to clean it (Faiz, 2018). Rasulullah SAW said: "Clean yourself from peeing. Because most of the grave torture comes from the pee marks. " (Reported by Ad-Daruquthni).

The urine of newborn girls is categorized as najis mutawassithah, while the urine of boys is unclean mukhaffafah. Unclean mutawassithah is human or animal feces, urine, pus, blood, carcasses (other than fish, grasshoppers, human corpses), as well as other unclean things, apart from those mentioned in light or severe najis. Najis mutawassithah is classified into moderate najis, the way to clean it must be washed, so that the smell, color, and taste are lost. Unclean mukhaffafah is mildly unclean, where the way to purify it is to sprinkle clean water on the unclean object (Pertiwi, 2017 & Hasanah, 2011). One of the verses related to purifying from unclean is: “Indeed, Allah loves those who repent and loves those who purify themselves.” (QS. Al-Baqarah [2]:222).

As has been explained in the verse, Allah SWT advises his people to always purify themselves from impurity such as urine (urine), because urine is not a tayyibat (a good thing). However, Allah SWT will not create something useless. All creation of Allah SWT has a purpose and purpose in it. As quoted from the Qur'anic verse regarding all of His creations: "We did not create the heavens and the earth and what is between them but with the correct (purpose) and within the appointed time. And those who disbelieve turn away from what has warned them. "(Surah Al-Ahqaf [46]: 3). Allah SWT also said: "He is Allah, Who made everything on earth for you and He willed (created) the heavens, then He made the seven heavens. And He Knows all things." (Surah Al-Baqarah [2]: 29).

Identification of Leptospira Bacteria in Human Urine According to Islamic View

Leptospirosis is a public health problem that exists throughout the world, especially in countries with tropical and sub-tropical climates, including Indonesia which has high rainfall. This is coupled with unhealthy environmental conditions such as when there is a flood, which is a place for the survival and breeding of Leptospira bacteria (Prihantoro T & Siwiendayanti A, 2017). In making a diagnosis of leptospirosis, a molecular examination using medical science technology is needed on a person's blood or urine sample to determine whether the individual is infected with Leptospira bacteria or not.

In this connection, Islam regulates through the nature of maslahah mursalah. Where maslahah mursalah is the benefit of something good according to reason, with the consideration that it can manifest goodness (benefit) or avoid badness (fading) for humans. According to Zakî al-Dîn Sya'bân, he views that maslahah mursalah is one of the important and significant foundations of the Islamic law that makes it possible to produce virtuous values (Rusfi, 2014). One of the verses of the Al-Qur'an relating to benefit: “They believe in Allah and the Last Day, encourage good and forbid evil, and race with one another in doing good. They are ˹truly˺ among the righteous.” (Surah Ali-Imran [3]: 114)**.**

In the quotation of the verse, Allah SWT instructs His people to hasten to do good and prohibits doing badly. Related to this, we are obliged to be able to do good and be useful for many people. One way is to use the knowledge we have, to be able to help people who are sick, in this case, leptospirosis, to establish a definite diagnosis and treat according to the condition of the sick person.

Conclusion

Based on the various explanations above, it can be concluded that the identification of Leptospira bacteria in human urine is

permissible according to the Islamic perspective. This is in accordance with what is in the Qur'an, that Allah SWT has signaled the importance of knowledge and made the process of searching for it a form of worship. Apart from that, the Qur'an also emphasizes that the only source of knowledge is Allah SWT. Thus, in the view of the Al-Qur'an, science, and religion are two things that are integrated and interconnected to the benefit of His people.

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Effectiveness of Heat Therapy on Musculoskeletal Pain Before and After Exercise Therapy in Females

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ABSTRACT

Objective: To compare whether heat therapy (moist heat pack) is more effective before exercise therapy or after exercise therapy in chronic MSK pain in females. **Design** Randomized clinical trial study. **Methodology:** This study is conducted in Abbas institute of medical sciences Muzaffarabad and Muzaffarabad physiotherapy clinic Muzaffarabad.40 female patients with chronic MSK pain are recruited in the study and a questionnaire-based survey was carried out. A self-structured questionnaire is used for demographic details. For screening of chronic MSK pain short form of Orebro pain questionnaire is used. A numeric rating scale in both groups is used to check the intensity of pain. **Result:** The results showed that between group A and B there was no significant difference. But clinically group B showed more improvement than group A.Both groups showed improvement after treatment. **Conclusion:** The application of heat therapy (moist hot pack) was found to be more effective after exercises than its use before exercises to improve pain in females with chronic musculoskeletal pain.

Introduction

Pain is the third leading reason for the absence from work in the united states, where the problem of chronic pain translates into an annual expenditure of at least $ 50billon.(1) Chronic pain has been recognized as pain that persists the past normal healing time and hence lacks acute warning function of physiological nociception. Usually, pain is regarded as chronic when it lasts for more than 3 to 6 months. Chronic pain is a frequent condition, that is affecting an estimated 20% of people worldwide and accounting for 15% to 20% of physician visits. (2) Regional and widespread musculoskeletal pain is somewhat higher today in comparison to forty years ago. (3) The results of a study done by Wijnhoven et al in 2006 showed that prevalence rates of musculoskeletal pain were higher in women than for men in the Dutch general population aged 25 to 64 years based on 2 population-based surveys. (4)

Topical cold and heat are commonly used to treat the injuries of the musculoskeletal system (bone, ligaments, muscles, and tendons). These modalities are useful adjuncts to medication, exercise, and patient education for the comprehensive treatment of many painful musculoskeletal conditions. Although the differences between dry and moist heat are commonly referred to in clinical practice, scientific data supporting the alleged differences are still lacking. This belief began with a 1946 study that showed moist (hot baths) heat warms tissue faster than dry (infrared lamp) heating. Moisture increases the rate of heat energy transfer and warming of tissues. (6)The application of a moist hot pack was found to be more effective before McKenzie exercises than its use after the exercises in the treatment of non-specific low back pain. (7)

There is limited literature found on the best application time of moist heat packs, whether they should be applied before exercises or after exercises to reduce chronic musculoskeletal pain in females. This study aims to find the best application time of moist hot pack in corresponding with exercises to reduce chronic MSK pain among females.

Method

This study was a randomized clinical trial study. This study was conducted in AIMS Muzaffarabad and Muzaffarabad physiotherapy clinic Muzaffarabad on 40 females with chronic MSK pain. Inclusion criteria were females with chronic MSK pain with age group 20-52 years while Exclusion criteria were females with metastasis, blood coagulation disorders deep vein thrombosis, diabetes, open wound, and acute pain.

Result

Table 1. Demographics of Data

Age	**Frequency**	**Percentage**
20-32 years	7	17.5%
33-42 years	13	32.5%
43-52 years	20	50%
Occupation	**Frequency**	**Percentage**
Housewife	26	65%
Teacher	6	15%
Office worker	5	12.5%
Engineer	1	2.5%
Student	1	2.5%
Nurse	1	2.5%
Marital status	**Frequency**	**Percentage**
Married	37	92.5%
Unmarried	3	7.5%
Involved body area	**Frequency**	**Percentage**
Shoulder	10	25%
Knee	4	10%
Back	13	32.5%
Neck	8	20%
Elbow	1	2.5%
Wrist	1	2.5%
Neck+shoulder	1	2.5%
Neck +back	2	5%

Table 2. Numerical Pain Rating Scale Reading Within Group Differences

Group A	**Pre value**	**Post values**
NPRS	**f (%)**	**f (%)**
0	0	4 (20%)
1	0	3 (15%)
2	0	3 (15%)
3	0	5 (25%)
4	0	2 (10%)
5	2 (10%)	3 (15%)
6	7 (35%)	0
7	6 (30%)	0
8	2 (10%)	0
9	2 (10%)	0
10	1 (5%)	0

Group B	Pre value	Post values
NPRS	f (%)	f (%)
0	0	0
1	0	5 (25%)
2	0	7 (35%)
3	0	5 (25%)
4	0	2 (10%)
5	0	1 (5%)
6	1 (5%)	0
7	1 (5%)	0
8	3 (15%)	0
9	7 (35%)	0
10	8 (40%)	0

Table 3. Numeric Pain Rating Scale Reading Between-Group Differences

Group A&B	Post value	Post values	p-value
NPRS	f (%)	f (%)	
0	4 (20%)	0	1.00
1	3 (15%)	5 (25%)	
2	3 (15%)	7 (35%)	
3	5 (25%)	5 (25%)	
4	2 (10%)	2 (10%)	
5	3 (15%	1 (5%)	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Table 3. Orebro Musculoskeletal Pain Screening Questionnaire (Short)

Mean differences		
Group A	**Pre value**	**p-value**
	6.9	0.00
	Post value	
	2.3	
Group B	**Pre value**	0.00
	9.0	
	Post value	
	2.3	
Group A & B	**Group A post value**	1.00
	2.3	
	Group B post value	
	2.3	

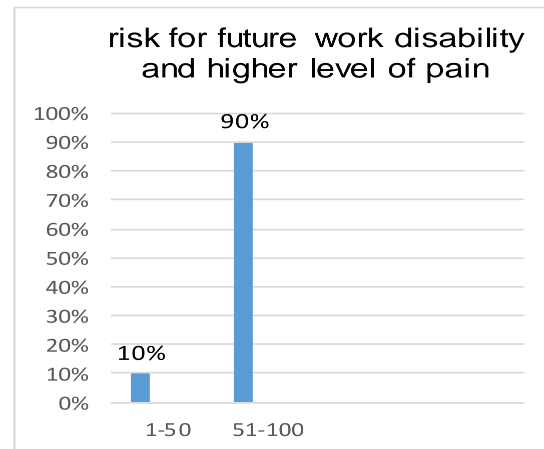

Figure 1. Risk for Future Work Disability and A Higher Level of Pain

Figure 1 shows the risk of future work disability and a higher level of pain. Out of 40 females, 10% have values between 1-50 and have low risk while 90% have values more than 50 and between 51-100 they have a higher risk for future disability and a higher level of pain.

Discussion

In the area of Asia Pacific, the prevalence shows that the pain which is chronic in nature ranges from about twelve to forty-five percent of the population there, with a majority of disease load with MSK, RA, and OA pain. (8) Chronic MSK pain conditions are complicated and ~ twenty percent of the total adult population live their lives with this severe chronic pain, with an increased prevalence rate among women and in people with low income. (9) Females involve in households and caregiving of a child more than that of males so they have more exposure to the risk factors for MSK pain. (10)This study is done on 40 female patients having chronic MSK pain aged group between 20-52 years.

This study is conducted to assess the effects of moist hot pack application before and after exercises in females with chronic MSK pain. Results of this study show that

the application of moist hot pack after exercises is more effective than application of moist hot pack application before exercises for chronic MSK pain and the alternate hypothesis that " application of heat therapy (moist heat pack) after exercise therapy has more effect on musculoskeletal pain" is not rejected. In physiotherapy and physical medicine, the superficial heating modalities are usually used for increasing the circulation in deep tissues and to help healing. (11). Evidence shows that moist heating modalities are more effective than dry heating modalities. This is because studies which investigated heat transfer proved better and faster heat penetration of moist heat than that of the dry heat (12). Moist heat causes the rise in temperature of superficial tissue, which causes dilatation of vessels that rises the oxygen supply and nutrient supply and discharge of carbon dioxide gas and metabolic waste and also arouses superficial nerve ending which in turn provide calming effects. In this study, it was observed that if hot pack application was performed after exercises for chronic musculoskeletal pain it is more effective than hot pack application before the exercises.

This concept is also supported by Mayer et al in their study, which showed the heat application rises the temperature of the muscle tissue which in turn advances the extensibility of the connective tissues (13). Greenberg found that the flow of blood in the forearm increased to double when applying hydrocollator packs for twenty minutes in ten individuals. Abramson measured how much tissue temperature rises by the application of wet heat topically. For this, he passed 1.3cm ed thermocouples in the skin, subcutaneous tissues, and muscles. The temperature of the skin increased an average of 6.4 celsius, the temperature of subcutaneous was 4.5 celsius, the temperature of the muse surface increased by 1.8 celsius. He also measured a rise in the flow of blood and found the same results as that of Greenberg. (6)The application of a moist hot pack was found to be more definite before McKenzie exercises than its use after exercise in the treatment of non-specific low backache. (7)This result does not match with my study.

In this study according to the results, when we compare the output of both groups, there is no significant difference in them. But when we compare the mean difference of pre and post values of both groups there is a greater mean difference in group B than group A it shows that group B which received hot packs after exercises showed clinically significant changes in pain while group A demonstrates less clinical improvement. The possible reason behind this could be that group A mostly had housewives and teachers who have to stand and sit for prolonged periods with obstinate postures most of the time. The limitation of the study was that the effects of the moist hot pack were only observed with stretching and strengthening exercises and the sample size was not large enough to make strong generalizations. Both working and non-working women were included which again limits its generalizability.

Conclusion

The application of heat therapy (moist hot pack) was found to be more effective after exercises than its use before exercises to improve pain in females with chronic musculoskeletal pain.

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Effects of Breathing Exercises on Lung Volumes and Capacities Among Smokers

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ABSTRACT

Objective: To determine the effect of deep breathing exercises on lung volumes and capacities among smokers. **Methodology:** The participants were divided into a control group and an experimental group. The control group was not given any treatment, while the experimental group performed deep breathing exercise techniques. The experimental group performed exercises for six weeks. After six weeks lung function tests were performed to evaluate the effects. Data were compared at baseline and after the intervention. To check within the group's changes paired sample t-test was used. To check between groups changes independent sample t-test was used for normally distributed data. **Results:** In the experimental group, significant changes ($p \leq 0.05$) were observed after the intervention. While comparing groups, significant differences ($p \leq 0.05$) were observed in some variables between experimental and control groups.**Conclusion:** It was concluded that deep breathing exercises are useful among smokers. As deep breathing helps in improving lung volumes and capacities.

Introduction

Smoking is lethal to health, it encompasses harmful substances that are the foundation of different life-threatening diseases like asthma, COPD, bronchitis and cardiovascular diseases, etc. (1). World Health Organization (WHO) expects that figure of smokers who will be expired due to smoking will go beyond the number of people dying from a traffic accident, AIDS, murder, and suicide by 2020. (2) Smoking cigarettes gradually damage pulmonary functions. As a result, chronic obstructive pulmonary disorders are found around about 15–20% of smokers, chronic bronchitis signs in 50%, and only 30% are healthy smokers. (3) A large number of studies have been documented the tobacco smoking epidemiology and its damaging properties on human health. It is assessed that one in ten deaths globally is happening due to tobacco smoking (4) At the present, about partial of the world's male smokers live in 3 countries of Asia: India, China, and Indonesia. (5) The world's major tobacco consumer in Asia and is also the major tobacco maker. (6)

During normal breathing, oxygen is delivered to the body through blood circulation. But carbon monoxide is delivered to the body instead of oxygen in smokers, resulting in respirational issues like breathlessness and coughing in an acute stage. (7) Spirometry is the most common method to test the lung function. The most common values which can be measured through spirometry are forced vital capacity in one second (FEV1) and forced expiratory volume. There are deep breathing exercises which help to improve oxygen saturation and lung function by increasing inhalation and exhalation. Respiratory volumes are the amount of air inhaled, exhaled, and stored within the lungs at any given time.

Although literature was available on the effectiveness of deep breathing exercises in respirational conditions like bronchitis, asthma, COPD, etc. but limited literature was found in healthy smokers about effects on lung functions. This study has been done to investigate the effect of breathing exercises on lung function among smokers. In my study, I have checked the effects of breathing exercises such as deep breathing exercises (pursed-lip breathing exercises, balloon blowing, and diaphragmatic breathing exercises) on lung volumes and capacities among healthy smokers.

Methodology

This was a randomized controlled trial (RCT) which was conducted in the health care clinic Muzaffarabad. In this study, sixty healthy smokers from the last 12 years between the ages of 20-50 year, were selected randomly from the general population in Muzaffarabad. The participants were divided into a control group and an experimental group. The control group was not given any treatment, while the experimental group performed deep breathing exercise techniques. The experimental group performed exercises for six weeks. After six weeks lung function tests were performed to evaluate the effects.

Statistical Analysis:

For analysis of data, SPSS version 21 was used. Data were compared at baseline and after the intervention. To check within the group's changes paired sample t-test was used. To check between groups changes independent sample t-test was used for normally distributed data.

Results

1. Demographics of Data

Table 1. Mean and Standard Division

	Groups	Mean±SD	P-value
Age	Control	1.433±0.504	0.324
	Experimental	1.366±0.49	
Height (feet)	Control	2.000±0.000	---
	Experimental	2.000±0.000	
Cigarette Per day	Control	1.200±0.406	.000
	Experimental	1.466±0.507	
Weight (kg)	Control	2.000±0.000	0.043
	Experimental	1.967±0.182	
History of Smoking (year)	Control	1.700±0.466	0.254

	Groups	Mean±SD	P-value
	Experimental	1.766±0.430	
Blood Pressure (mmhg)	Control	1.666±0.479	0.598
	Experimental	1.633±0.490	
Respiratory Rate (Per Minutes)		1.733±0.449	.0001
	Experimental	1.900±0.305	

Table 2. Lung Function Test Pre and Post Within Group Comparison

Item		Group 1 (Control)		Group 2 (Experimental)	
		Mean± SD/ Median (IQR)	p-value	Mean± SD/ Median (IQR)	p-value
Chest Diameter (Inch)	Week 0	37.96±2.61	0.00	38.100±2.60	0.00
	Week 6	37.96±2.61		38.16±2.05	
Vital Capacity (ml)	Week 0	2.998±0.691	0.000	2.862±0.59	0.257
	Week 6	3.033±0.748		2.940±0.72	
Forced Vital Capacity (ltr)	Week 0	2.955±0.75	0.000	2.755+0.788	0.000
	Week 6	3.043±0.674		3.316±0.926	
Force Expiratory Capacity	Week 0	2.111±0.817	0.000	1.823±0.716	0.744
	Week 6	2.211±0.701		2.315±0.455	
Force Expiratory Volume Reserve	Week 0	0.628±0.213	0.000	0.570±0.209	0.000
	Week 6	0.669±0.151		0.718±0.165	
Peak Expiratory Flow Rate	Week 0	3.029±2.004	0.000	2.308±1.206	0.000
	Week 6	3.069±1.410		2.904±0.887	
Oxygen Saturation %	Week 0	97.46±1.696	0.000	95.900±2.294	0.000
	Week 6	97.66±1.124		96.700±1.622	
FEV1 % Pred	Week 0	65.83±18.80	0.000	56.2667±20.88	0.000
	Week 6	65.83±15.13		68.633±13.99	
	Post	93(5)		92(3)	

Table 3. Post Treatment Lung Function Test Between Groups Comparison

Item	Group	0 Week		After 6th Week	
		Mean± SD/ Median(IQR)	p-value	Mean± SD/ Median(IQR)	p-value
Chest Diameter (inch)	Control	37.966±2.61	0.95	37.96±2.61	0.92
	Experimental	2.8627+0.763		2.9403+0.729	
Vital Capacity(ml)	Control	3.1350+0.763	.352	3.125±0.7672	.651
	Experimental	2.862±0.592		2.9403±0.729	
Force Vital Capacity	Control	2.955±0.756	.75	3.043±0.674	0.00
	Experimental	2.755±0.788		3.167±0.926	
Force Expiratory Volume(ml)	Control	2.111±0.817	.52	2.211±0.701	0.04
	Experimental	1.8233±0.716		2.315±0.455	
Force Expiratory Volume reserve(ml)	Control	0.628±0.213	.56	0.669±.1512	0.78
	Experimental	0.570±0.209		0.718±0.165	
Pea Expiratory Flow Rate	Control	3.0290±2.00	.17	3.069±1.4109	0.14
	Experimental	2.3080±1.206		2.9040±0.887	
Oxygen Saturation (%)	Control	97.46±1.696	.08	97.66±1.124	0.05
	Experimental	95.90±2.294		96.70±1.62	
*FEV1 % Pred	Control	65.83±18.80	.50	65.833±15.134	0.53
	Experimental	56.266±20.88		86.63±13.99	

**Independent Sample T-test*

Discussion

The study was conducted to determine the effectiveness of deep breathing exercises on lung volumes and capacities among smokers. The study hypothesis was accepted to some extend that deep breathing exercises significantly improve lung functions in healthy smokers. As the study showed improvement in some parameters and others remain the same. Significant improvement was seen in vital capacity, forced expiratory volume, and oxygen saturation while other parameters were not significantly improved.

A study was conducted in 2016 that supports the current study that deep breathing exercises are operational for intercostal muscles which help to improve breathing, lung capacities and volume, oxygen saturation, and ultimately the quality of life. As breathing exercises learned easily so a person can perform these exercises any time and at any place. [(08)]

A study was conducted in 2015 to investigate the effectiveness of diaphragmatic breathing exercises on lung function in young male smokers. The results of the study shown significant progresses in pulmonary function with diaphragmatic breathing techniques. [(09)]

A study was conducted in 2017 that shows that deep breathing exercises are very effective in reducing stress and improve mood [(10)], Researches shows that deep breathing exercises are very effective in obstructive lung diseases as above mentioned researches indicates. In another study that was conducted in 2016 Blowing balloon workout is an operative way of improving lung functions and relieving stress in medical students. All the parameters of the pulmonary function test i.e. tidal volume TV, VC, FVC, FEV1, and FEV1/FVC were considerably upgraded after carrying out the blowing balloons exercise. (11), Above mentioned studies support the current study that deep breathing exercises were beneficial in improving lung functions. These exercises are also useful in improving the partial pressure of oxygen.

A previous study that was done in 2018 shows that deep breathing exercises work as anti-smoking and deliver essential evidence for exercises and provide valuable directions for the development of interventions that help in smoking cessation. [(12)] There is a lack of awareness among peoples regarding exercises and their useful effects so they did not follow the exercise plan properly, so there is a need to give awareness.

Conclusion

It was concluded from the results of the present study that deep breathing exercises are useful among smokers for improving lung functions.

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