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Abstracts: Original Articles



The Benefit Of Virtual Anti-Hypertensive Diets Campaign Towards The Changes Of Knowledge, Attitude, Practice, And Reduction Of Blood Pressure In The Society During Covid-19 Pandemic

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Background. Public health education plays an essential role in the prevention of hypertension, but in the era of COVID-19 pandemic is a challenging question. One of the efforts to reduce hypertension rates in the community is through dietary changes that refer to the Dietary Approach to Stop Hypertension (DASH). We created a virtual education series about dietary guideline using DASH by adapting the local wisdom of the Surabaya community. We aimed to evaluate the impact of Airlangga Comprehensive Anti-Hypertensive Diets Virtual Education Series towards knowledge, attitude, practice, and reduction of blood pressure

Methods. This type of online action research is quantitative with a quasi-experimental design using one group pretest-posttest, conducted in October-December 2020. The population were all patients with hypertension who were treated in Mojo primary health care setting. A purposive sampling technique were done to receive 110 participants using online questionnaire

Results. A total of 110 participants were included, 55 in the intervention group and 55 in the control group. The only parameter that showed significant improvement were knowledge and attitude ($p < 0.001$). There is no significant change in the skill parameters ($p = 0.131$) and blood pressure parameters ($p = 0.433$)

Conclusion. Our study seems to be effective to improve knowledge and attitude of participants, however, this program seems to be ineffective to improve skill and blood pressure reduction in participants. Future study with longer durations and more comprehensive programme needs to be done

Keywords: Airlangga Comprehensive Anti-Hypertensive Diets Virtual Education Series, Knowledge, Attitude, Practice, Primary Care Setting, Hypertension



The Effect Of External Counter Pulsation (ECP) On Angiogenesis In Patients With Refractory Angina

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Background: Vascular Endothelial Growth Factor-A (VEGF-A) and Vascular Endovascular Growth Factor Receptor-2 (VEGFR-2) is key mediator for angiogenesis. The study aims to evaluate the ECP therapy's effect on angiogenesis by assessing VEGF-A and VEGFR-2 in patients with refractory angina (RA).

Methods: Fifty symptomatic RA patients with coronary artery disease were randomized (1:1 ratio) to thirty-five 1-hour sessions of either ECP (n = 25) or sham (n = 25). Plasma levels of VEGF-A and VEGFR-2 were assayed with the ELISA technique.

Results: The level of VEGF-A in the ECP group was significantly preserved compared to the sham group [1 pg/ml (-139 to+160) vs. -136 pg/ml (-237 to+67); $P = 0.026$], it was proven by the difference in the delta (change) between the groups. The reduction of VEGFR-2 was significantly lower in the sham group compared to the ECP group [-517pg/ml (-1549 to+1407) vs. -171 (-844to+1166); $P = 0.012$]. In addition, the improvement of the 6-minutes walk test (6-MWT) score and quality of life (QoL) score in the ECP group were higher than in the sham group. There was reduction of angina CCS score in the ECP group, but not in the sham group.

Conclusion: The ECP led to improved angiogenesis, by preserving the expression of VEGF-A and VEGFR-2.

Keywords: External Counterpulsation, Refractory Angina, VEGF-A, VEGFR-2



Correlation between Renal Function and Six-Minute Walk Test in Coronary Artery Disease Patients who Underwent PCI

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Background and Objective: Renal dysfunction is a risk factor for coronary artery disease (CAD). Patients with renal dysfunction have a reduced level of physical performance. However, the correlation between renal function and physical performance in CAD patients has not yet been established. Six-minute walk test (6MWT) is commonly used to measure physical performance. This study aims to determine the correlation between renal function and 6MWT in CAD patients who underwent percutaneous coronary intervention (PCI).

Methods: The study included 181 CAD patients who underwent PCI. Correlation between renal function using estimated glomerular filtration rate (eGFR) and exercise capacity (metabolic equivalents [METs]) using 6MWT before hospital discharge were analyzed using Pearson Correlation Test.

Results: The mean age of the patients was 57.95 ± 9.90 years old and most of the study subjects were male (82%). We found a significant positive correlation between eGFR and 6MWT ($p = 0.000$, $r = 0.324$) also with METs ($p = 0.000$, $r = 0.336$).

Conclusion: There was a positive and statistically significant correlation between renal function and 6MWT in CAD patients who underwent PCI.

Keywords: eGFR, 6MWT, METs, CAD



Correlation between Serum Uric Acid and Six-Minute Walk Test in Coronary Artery Disease Patients who Underwent PCI

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Background and Objective: Serum uric acid was closely associated with metabolic syndrome and its components. A high level of uric acid is an independent risk factor for coronary artery disease (CAD). Contradictory, it also has antioxidant activity, and it is expected to protect against CAD. A Six-minute walk test (6MWT) is commonly used to measure physical performance. A direct correlation between increased serum uric acid and physical performance in CAD patients has not yet been established. This study aims to determine the correlation between serum uric acid and 6MWT in CAD patients who underwent percutaneous coronary intervention (PCI).

Methods: The study included 151 CAD patients who underwent PCI. Correlation between serum uric acid level and exercise capacity (metabolic equivalents [METs]) using 6MWT before hospital discharge were analyzed using Pearson Correlation Test.

Results: The mean age of the patients was 57.94 ± 9.86 years old and most of the study subjects were male (82%). We found a significant negative correlation between serum uric acid level and 6MWT ($p = 0.008$, $r = -0.214$) also with METs ($p=0.033$, $r=-0.173$). However, the correlation was not significant in non-hypertensive group.

Conclusion: There was a negative and statistically significant correlation between serum uric acid levels and 6MWT in CAD patients who underwent PCI.

Keywords: Uric Acid, 6MWT, METs, CAD



Risk Factors and Comorbidities of Chronic Coronary Syndromes in Outpatient Cardiology Clinic at Bhayangkara Denpasar Hospital

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Background: Current updates of chronic coronary syndromes which previously known as stable coronary artery disease bring a new paradigm in major cardiology. Dynamic process of coronary syndromes should be controlled properly. Management strategy based on risk factors and comorbidities plays a key role in stabilization and prevention of disease progression. This study aimed to describe risk factors and comorbidities among chronic coronary syndromes patients in the setting of outpatient clinic.

Methods: This descriptive cross-sectional study was conducted using secondary data of 84 medical records of patients diagnosed with chronic coronary syndromes in outpatient cardiology clinic at Bhayangkara Hospital Denpasar in May 2021. The data were presented in frequency distribution table and risk factors crosstabulation which processed by SPSS 25.

Results: Among 84 samples that met inclusive criteria, with mean age of 62,02 years, male predominates the gender (75%). Body mass index of overweight/obese (≥ 25 kg/m²) was found in 65.5% subjects. The others risk factors and comorbidities observed including hypertension (55.9%), high triglyceride level (46.4%), high LDL cholesterol level (39.3%), high total cholesterol level (35.7%), diabetes mellitus (28.6%), and low HDL cholesterol level (21.4%).

Conclusion: The most common cardiovascular risk factors and comorbidities encountered in this study were male gender, overweight/obesity, and hypertension. Identification of risk factors and comorbidities is very important to provide benefit in comprehensive management of chronic coronary syndromes.

Keywords: Chronic Coronary Syndromes, Comorbidities, Risk Factors



The Association between Duke Treadmill Score and Hospital Readmissions among Patients with Cardiovascular Disease in Sanglah General Hospital, Bali

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Background: Duke Treadmill Score (DTS) is known to be used for risk and prognostic stratification in patients with Coronary Artery Disease (CAD), and has been found to have a strong correlation with coronary lesion severity. The relationship between DTS and hospital readmission as one of the quality of care indicators has not been widely studied.

Objectives/Aims: The aims of this study were to determine the association between DTS and hospital readmission among patients with cardiovascular disease.

Methods: This retrospective cohort study included 136 medical records of patients with cardiovascular disease underwent Treadmill Stress Test (TST) at cardiology clinic, Sanglah General Hospital from 2018 until 2020. DTS was calculated and we determined <-0.5 as DTS cut-off value for predicted significant coronary lesion, as obtained in previous study. The data of 1-year readmissions after TST were documented. Pearson Chi-square was used to evaluate the association between DTS and hospital readmission.

Results: Subjects mean age was 54.7 years old, 71.3% were male and 37.5% were obese. Advanced age and smoking status were associated with low DTS value with age mean difference and smoking status PR respectively 8.06 (95%CI 3.70-12.41; p=0.001) and 1.81 (95%CI 1.03-3.18; p=0.029). Hospital readmissions were found in 59.3% subjects and associated with low DTS value (OR 3.738, 95%CI 2.17-6.45; p=0.001).

Conclusion: Advanced age and smoking status were associated with low DTS value. Low DTS value is also a risk factor of hospital readmissions in the future.

Keywords: Duke Treadmill Score, Cardiovascular Disease, Hospital Readmissions



The Relationship of Heart Rate Recovery with Cardiovascular Risk Factors and Hospital Readmissions: A Retrospective Study in Sanglah General Hospital, Bali

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Background: Heart Rate Recovery (HRR) is an important indicator of cardiovascular health, a noninvasive assessment, and has been implicated for screening of cardiovascular events, including hospital readmissions. Hospital readmissions for cardiovascular disease contribute to increase of healthcare costs and are marker of quality of care. The purpose of this study is to evaluate the relationship of HRR with cardiovascular risk factors and hospital readmission.

Methods: This retrospective, comparative study included 136 medical records of patients who underwent a Treadmill Stress Test (TST) in cardiology clinic, at Sanglah General Hospital from 2018 until 2020. The laboratory parameters, and hospital readmissions data were collected and analyzed using SPSS.

Results: Attenuated HRR were higher in males (79%). From this study, the cardiovascular risk factors significantly associated with abnormal HRR were Diabetes Mellitus (DM), irrespective of HbA1C status (PR 2.09; 95% CI 1.8-10.7) and advanced age (PR 1.9; 95% CI 1.5-10.9). Abnormal HRR also significantly related with 1-year hospital readmissions with OR 1.5 (95% CI 1.01-2.28; p-value <0,05).

Conclusion: Exercise testing is recognized as a comprehensive health evaluation in several populations, both in patients with cardiovascular diseases and healthy individuals. Our findings suggested that abnormal HRR after exercise testing were predominantly found in males. Abnormal HRR were also associated with advanced age, DM, and hospital readmissions, which supports the recommendation of routine HRR evaluation for cardiovascular risk assessment.

Keywords: Heart Rate Recovery, Hospital Readmission, Cardiovascular Risk Factors



Effectivity of the Chronic Disease Management Program (PROLANIS) in Controlling Hypertension and Its Comorbidities during the COVID-19 Pandemics: Single-Center Study

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Background: PROLANIS is a program by the Indonesian government to control chronic diseases, including hypertension in primary health care. Reported studies have stated that PROLANIS is effective in controlling hypertension. However, due to COVID-19 pandemic, all activities were minimized to stop spreading infection. Therefore, this study was conducted to know whether PROLANIS was still effective during the COVID-19 pandemic.

Methods: The retrospective cohort study was conducted by obtaining secondary data that met the inclusion criteria. Comparative analysis of PROLANIS examinations between June 2020 and February 2021 was done with the paired T-test and the Wilcoxon Signed-Rank test. The evaluations that were observed were blood pressure (BP), blood sugar level, body mass index (BMI), total cholesterol, triglyceride, high-density lipid (HDL), low-density lipid (LDL), and estimated glomerular filtration rate (EGFR).

Results: A total of 26 hypertensive participants that routinely participated in PROLANIS were analyzed in this study. There was no significant difference in the results of the evaluation of blood sugar levels, BMI, SBP, DBP, total cholesterol, and LDL. Significant differences were found on the TG, HDL, and EGFR examinations. The TG level had a median increase, HDL and EGFR levels had a median decrease from the PROLANIS evaluation.

Conclusion: PROLANIS during the COVID-19 pandemic in controlling hypertension and its comorbidities was not effective. Future study needs to compare effectivity of PROLANIS during the COVID-19 pandemic with not.

Keywords: PROLANIS, Hypertension, Comorbidity, COVID-19 Pandemics.



Early Detection of Hypertension among Adolescent Student (Age 10-19 years old) at Urban and Rural Area in Malang and It's Correlation with Body Mass Index (BMI) and Heart Rate

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Background: Early screening of hypertension should be done early to decrease the number of mortality and morbidity. Body mass index (BMI) and heart rate has a relationship with hypertension. Prevalence of cardiovascular disease in East Java was 0.2 % higher than national prevalence. Malang is one of the largest city in East Java with high population growth (BPS, 2017), hence early detection of cardiovascular disease has become highlight issue. We aim to find the number of hypertension among adolescence student (age 10-19 years old) in urban and rural area in Malang and it's correlation with body mass index (BMI) and heart rate.

Method: We did a cross sectional survey study method among 216 students in urban and rural area in Malang on September 2019 and October 2020. The correlation between each variable were analyse with pearson correlational study using 22th SPSS.

Results: Hypertension resulted in 14.6 % of student in urban area and 27.9 % of student in rural area. The average blood pressure in rural area (121.3±13.9) was higher than in urban area (115.2±14.9) with significantly different (p 0.000). In rural area, BMI and heart rate had significant correlation with blood pressure (r 0.41; p 0.000) (r 0.25; p 0.016) but in urban area BMI and heart rate had no significant correlation with blood pressure (r 0.106; p 0.242) (r 0.056; p 0.53). The prevalence of familial history of cardiovascular disease among urban and rural was equal (11,5 %, 11.2 %).

Conclusion: The prevalence of hypertension among study population was higher in rural than urban area and had significant correlation with body mass index (BMI) and heart rate.

Keywords: Hypertension, Adolescence, Urban, Rural.



Correlation Between Diagonal Earlobe Crease And Degree Of Coronary Lesion Severity Based On Gensini Score In Patients With Stable Angina Pectoris

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Background: Diagonal earlobe crease is a crease that expand more than one third of the distance between inferior part of tragus and inferoposterior part of the ear. Diagonal earlobe crease is one of the dermatological sign of Coronary Artery Disease (CAD). Coronary lesion severity is one of the predictors of mortality in CAD patients, and Gensini score is the most commonly used lesion severity scores. This study aims to find the correlation between diagonal earlobe crease and the degree of coronary lesion severity based on the Gensini score in stable angina pectoris patients.

Methods: This study was a cross sectional study conducted at Dr. Hasan Sadikin Hospital. Subjects were stable angina pectoris patients over the age of 18 who already done coronary angiography with coronary artery stenosis more than 50%.

Results: There were 62 patients with bilateral diagonal earlobe crease, 39 patients with unilateral earlobe crease, and 22 patients without earlobe crease. The average Gensini score for bilateral, unilateral, and without earlobe crease group were $77,4 \pm 41,7$, $58,3 \pm 29,9$, and $48,0 \pm 30,3$ respectively. Multivariate analysis showed bilateral diagonal earlobe crease was significantly associated with Gensini Score ($p < 0,001$). Correlation analysis showed bilateral diagonal earlobe crease and hypertension had a weak correlation with Gensini score (r values of 0,307 and 0,209, $p < 0,05$).

Conclusion: Bilateral diagonal earlobe crease was positively correlated with the severity of coronary lesions based on Gensini score in stable angina pectoris patients.

Keywords: Stable Angina Pectoris; Diagonal Earlobe Crease; Gensini Score



Family History is The Only Traditional Risk Factor Associated with In-hospital Mortality in Females with Acute Coronary Syndrome

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Background. Gender-related differences have been reported in patients with Acute Coronary Syndrome (ACS). Nevertheless, it remains unclear whether the traditional risk factors associate with in-hospital mortality in ACS, especially in female patients. This study aims analyze the association between traditional risk factors and in-hospital mortality in females with ACS

Methods. A retrospective study with correlative analysis was conducted on patients with ACS in Hasan Sadikin General Hospital from January 2018 until December 2020. Data were obtained from medical records consecutively. The association between traditional risk factors consisted of age, hypertension, diabetes mellitus, dyslipidemia, family history, obesity, and smoking status were evaluated with mortality during hospitalization. The Chi-square test was used to analyze the significance between variables.

Results. A total of 1157 subjects consisting of 874 males and 283 females were involved in this study. In females, there was no association between age (OR= 1.136, 95% CI 0.568-2.270, p=0.719), hypertension (OR= 0.848, 95% CI 0.378- 1.899, p=0.688), diabetes mellitus (OR=0.557, 95% CI 0.235-1.320, p=0.179), dyslipidemia (OR=0.619, 95% CI 0.261-1.471, p=0.274), obesity (OR=0.729, 95% CI 0.353-1.504, p=0.390) and smoking (OR= 0.959, 95% CI 0.399- 2.310, p=0.926) with increase of in-hospital mortality, nevertheless family history associated with in-hospital mortality among female subjects (OR= 2.51, 95% CI 0.976- 6.405, p=0.05), which was not significant in males (OR= 0.709, 95% CI 0.332- 1.511, p=0.371).

Conclusion. Among the traditional risk factors, family history is the only significant variable associate with increase of in-hospital mortality in females with ACS, which was not significantly different in the male counterparts.

Keywords: Acute Coronary Syndrome, Family History, Females, Traditional Risk Factors Mortality.



Association Between Six-Minute Walk Distance And All-Cause Mortality In Patients With Atrial Septal Defect-Pulmonary Hypertension: Data From Single Centre Congenital Heart Disease In Adult And Pulmonary Hypertension (COHARD-PH) Registry

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Background : The presence of altered pulmonary hypertension (PH) in patients with atrial septal defect (ASD) is common and associated with reduced survival and high hospitalization. A six-minute walk distance (6MWD) results represents the functional capacity and predicts the outcome of patients with PH. Whether the result of 6MWD can be applied to ASD-PH patients has not been confirmed yet. This study aimed to investigate the role of 6MWD results and mortality of ASD- PH patients.

Methods : The study was a retrospective cohort by retrieving the data from COHARD-PH registry, a single centre registry which includes adult patients with congenital heart disease and congenital heart disease related PH. The enrolled patients underwent 6MWD test at baseline and the follow up was performed with outcome of interest was mortality. The cut off 6MWD was constructed by receiver operating characteristic (ROC) curve as an analytical method.

Results : Five hundred and fifty-seven adult patients with ASD were included to this study. The percentage of all-cause mortality was 4% (25 patients). The 6MWD was divided into <317 m (31.4%, 175 patients) and >317 m (68.6%, 382 patients) based on the ROC curve ($p < 0.05$; AUC = 0.246; CI 95% 0.158 – 0.334). The mortality for each classification were 10.3% (18) and 1.8% (7) with the odds ratio 6.14 ($p < 0.05$).

Conclusion : Patients with ASD-PH who had 6MWD >317 m showed better prognosis for surviving mortality. The 6MWD at baseline had 6.14 odds ratio of mortality. Assessing baseline 6MWD is important for clinical management of patients with ASD-PH.

Keywords: 6MWD, 6-Minute Walking Distance, Congenital Heart Disease, Atrial Septal Defect



Association between aPTT Value and Pulmonary Embolism Event in COVID-19 Patients Receiving Heparin Prophylaxis in the Isolation ICU of Pertamina Central Hospital

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Background: Pulmonary embolism (PE) is blockage of pulmonary artery usually caused by blood clot and has high mortality rate. Heparin is used as a prophylactic agent to prevent PE. Heparin dose is adjusted according to the Activated partial thromboplastin time (aPTT) value to achieve $\geq 1,5$ times the baseline control value. This study aimed to determine the association of aPTT value and PE event in COVID-19 Patients.

Method: We conducted a retrospective unmatched case-control study at the Isolation ICU of Pertamina Central Hospital. Data was taken from medical records in September 2020 - May 2021 period. Case group was patients with echocardiographic findings consistent with PE. Samples were collected with total sampling for the case group and simple random sampling for the control group. The analysis was calculated with IBM SPSS Statistic 24 software.

Result: A total of 25 cases and 25 controls were included in this study. In the case group, 25 (100%) patients had Revised Geneva Score of 4-10 (moderate probability of PE) while only 8 (32%) patients in the control group. Median D-dimer value for case group was 6.11 (2.75-8.41) vs 2.21 (1.14-4.41) in the control group. The targeted APTT value was not reached in 12 (48%) of the patient with PE compared to 6 (24%) of the control patients. The odds ratio of PE for targeted APTT not reached versus targeted APTT reached was 2,923 (95% CI, 0,874 - 9,778).

Conclusion: There was no association between APTT level and PE event in COVID-19 patients receiving heparin prophylaxis.

Keywords: aPTT, Heparin Prophylaxis, Pulmonary Embolism, ICU, Covid-19



Is Smoking Associated with Increased Risk of Significant Coronary Artery Disease? A Case-Control Study

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Background: Coronary artery disease (CAD) is the major cause of mortality in patients with risk factors, including smoking. Smoking has been well established as a powerful risk factor for CAD and was identified as a stronger risk factor in women than in men. The objectives of this study were to identify the correlation of smoking as risk factor of CAD and to provide a scientific basis for prevention in CAD.

Methods: A case-control study was performed on subjects with angiographically proven significant CAD in a tertiary referral hospital of Yogyakarta, Indonesia. Control subjects were randomly selected from Sleman Health and Demographic Surveillance System (HDSS) population who had negative indication of CAD in pre-tested questionnaire and normal electrocardiography. History of smoking was collected by a questionnaire. Univariate analysis was performed, odds ratios (OR) and 95% confidence intervals (CI) for the association of risk factor with CAD.

Results: A total of 415 subjects with age of 32-85 years with median of 59 years were enrolled in the case group and 830 age-matched subjects in the control group. Smoking in female (n=11 from 252 total female, OR 3,117, 95% CI 1,043-5,190, p=0,000) and male (n=745 from 993 total male, OR 1,067, 95% CI 0,785-1,450, p=0,678) was observed.

Conclusion: Smoking was significantly associated with CAD among female population in Yogyakarta, Indonesia. It has been demonstrated that risk of CAD was higher in female who smoked compared with male. Appropriate intervention should be put in place to prevent CAD including cessation of smoking.

Keywords: Smoking, Risk, Coronary Artery Disease



Community-Based Cardiac Rehabilitation Program: Impact on Improving Quality of Life and Reduce Rehospitalization among Stable Coronary Artery Disease

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Background : Community-based cardiac rehabilitation, adherence to such programs and special considerations including cultural aspects and program implementation. The aim of this study was to compare the Community-based cardiac rehabilitation efficacy between control group (CG) and interventional group (IG) with quality of life and rehospitalization rate among CAD patients.

Methods : This cohort study was conducted in stable CAD patients with optimal medical and device treatment as indicated by ESC guideline. The CAD patients were randomly assigned to CG (CG = 78) or IG (underwent 1 year, 2 years, 3 years, 4 years program) (IG = 70). IG received exercise program three times a week (396 METs/min/week) for 6 months. Patients with poor medical compliance and inadequate treatment were excluded. All participants were individually interviewed with a structured questionnaire for collecting baseline characteristics. Quality of life (SF 36 and SAQ), Diet (DASH diet), and Physical activity (IPAQ) were assessed by the individual level at the baseline and 6-month post-intervention.

Results : A better quality of life observed significant in CAD patient who are in IG, in term of HRQOL (SAQ score 94.80 ± 6.98 vs 84.54 ± 14.8 , $p < 0.000$), physical functioning (SF 36 score 90.22 ± 9.79 vs 82.11 ± 17.49 , $p < 0.001$). The physical activity level (IPAQ score) also showed higher IG than CG (44.3% vs 23.1%, $p < 0.000$) suggesting the CAD patients of IG more active than those of CG. The rehospitalization rate was lower in IG compare to CG (2.9% vs 20.5%, $p < 0.000$).

Conclusion : Community-based cardiac rehabilitation program significantly improve quality of life and reduce hospitalization among stable coronary artery disease patients.

Keywords: Community-Based Cardiac Rehabilitation, Quality Of Life, Rehospitalization



The Effect Of Community-Based Heart Rehabilitation Intervention On Patients Medication Compliance With Stable Coronary Heart Disease

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Background: Based on the report 48% of deaths in the world are due to cardiovascular disease, a cohort study at the Harapan Kita National Heart Center and 5 hospitals in Indonesia in 2006 showed that the death rate from heart disease in hospitals was 6-12% and the hospitalization rate was 29%. The role of community-based cardiac rehabilitation interventions has a good effect on addressing the problem of mortality and rehabilitation of patients with stable coronary heart disease. This study aimed to assess the effect of community-based cardiac rehabilitation interventions on stable coronary heart disease.

Methods: A prospective observational cohort study was conducted in Malang cardiovascular community and Aisyah Islamic hospital in Malang, East Java during May 2018 - May 2019. A validated questionnaire MMS-8, QOL (SF-36) and SAQ questionnaire were used to interview the participants. . Data were analyzed using multiple logistic regression.

Results: A total of 73 intervention and 73 control patients were enrolled for this study. Its indicated that intervention patients were 2.04 fold associated with better physical function and 3.85 fold better adherence than control patients. In the subgroup analysis, it showed that the intervention group that had participated for 2 years had the highest score of MMS-8 compared to the other groups with $p = 0.000$.

Conclusion: Our study reveals that community-based cardiac rehabilitation interventions have better adherence to treatment and quality of life compared to patient controls, and also reduce hospitalizations and mortality.

Keywords: Effects of community-based cardiac rehabilitation interventions on medical adherence and quality of life.



Anxiety or Depression in Patients with Coronary Heart Disease: How Its Association with Cardiovascular Risk Factors?

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Background: Managing psychosocial factors, which potentially contributes in sympathetic responses that affecting cardiovascular risk factors in coronary heart disease (CHD), may improve achieving the cardiovascular risk factor target. However, their clinical association remains unknown. This study aimed to investigate the association between cardiovascular risk factors and the prevalence of anxiety or depression in CHD patients.

Methods: The study consisted of CHD patients hospitalized at Hasan Sadikin General Hospital Bandung from July to October 2019. The inclusion criteria were patients with acute coronary syndrome or post revascularization chronic coronary syndrome who were given the Hospital Anxiety and Depression Scale (HADS) questionnaire before discharge. Patients were categorized according to normal (score 0-7) or abnormal levels of anxiety or depression (score 8-21). Cardiovascular risk factors consisted of smoking, physical activity levels, family history, hypertension, diabetes mellitus (DM), or dyslipidemia.

Results: A total of 99 patients (mean age: 59±10 years, 79% male) were included. Most of them were smoker (40%), had low physical activity (60%), and only 7% had a family history of cardiovascular diseases. Based on their past medical history, 57% had hypertension, 11% had dyslipidemia, and 13% had DM. Of all subjects, 23% had abnormal levels of anxiety or depression. The association between anxiety or depression in CHD patients and smoking ($p=0.802$), physical activity ($p=0.562$), family history ($p=0.563$), hypertension ($p=0.283$), dyslipidemia ($p=0.738$), and DM ($p=0.403$) were not significant.

Conclusion: Anxiety or depression in CHD patients is not associated with cardiovascular risk factors.

Keywords: Coronary Heart Disease, HADS, Depression, Anxiety, Cardiovascular Risk Factors



Positive Predictive Values of the Hospital Anxiety and Depression Scale (HADS) for Screening of Anxiety and Depression in Patients with Acute Myocardial Infarction

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Background: Anxiety and depression are common in patients with Acute Myocardial Infarction (AMI) and are associated with increased morbidity and mortality. Hospital Anxiety and Depression Scale (HADS) is a valid, reliable and sensitive screening tool that can be used. This study aimed to determine the Positive Predictive Value (PPV) of HADS for screening of anxiety and depression in AMI patients, compared with the diagnosis made by psychiatrists.

Methods: This study had cross-sectional design, and was conducted at Sanglah General Hospital from November-December 2020. Patients diagnosed with AMI were asked to complete the HADS questionnaire for screening purposes. Patients with score ≥ 8 were evaluated by psychiatrists for further diagnostic investigation.

Results: A total of 66 patients were included in the analysis. The mean of the age was 55.54 and majority (80.3%) were male. The prevalence of anxiety and depression detected using HADS were 28% and 27% respectively. Meanwhile, prevalence of patients diagnosed with anxiety and depression based on psychiatrist's assessment were 21.2% and 15.2% respectively. It was found that, PPV for HADS-A in the diagnosis of anxiety was 68% and PPV for HADS-D in the diagnosis of depression was 47%.

Conclusion: Anxiety and depression are commonly found in AMI patients, but are often overlooked. Hence, early recognition by using HADS is relevant to be used in clinical setting for early detection of those psychiatric disorders, to obtain better quality of life and reduced morbidity in patients with AMI.

Keywords: Acute Myocardial Infarction, Anxiety, Depression, Hospital Anxiety and Depression Scale.



Relationship Between Level of Smoking with Coronary Lesion in Acute Coronary Syndrome

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Background : Smoking promotes arteriosclerosis and is one of the most important coronary risk factors. Few studies have investigated there was association between smoking habits and the severity of coronary stenosis as assessed by CT cardiac only in stable CAD patients. While in ACS has different pathophysiology with stable CAD. This study aimed to corelate level of smoking with severity level of coronary angiography in ACS patients.

Methods : This study uses cross-sectional method. Data were taken from questionnaire of ACS patients by convenience sampling who are hospitalized in Hasan Sadikin Hospitals Bandung in July-October 2019. Smoker divided into category using Brinkman index into four level smoker group. Severity level of coronary angiography assessed by Gensini index. Data was analyzed using one-way ANOVA test.

Results : 50 data patients diagnosed with Acute Coronary Syndrome were collected. The proportion were 40 male (80%) with mean age for both group 58.7 years old. The prevalence of hypertension patients was 66%, diabetes 38%, dyslipidemia 30% and only 8% was overweight. The proportion of non-smoker group was 20%, mild smoker 10%, moderate smoker 54% and heavy smoker 16%. Mean Gensini index score for each group were 73.2, 35.8, 67.1 and 77.5, there were no significant different between group ($p=0.367$).

Conclusion: There is no association between severity level of smoking with extensive lesion in ACS patient.

Keywords: Acute Coronary Syndrome, Brinkman index, Smoking, Gensini Score



Factors Affecting Improvement of Functional Capacity after Exercise Based-CR Program in CAD-post Revascularization Patients

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Background: Improved functional capacity is a better prognostic factor in post revascularization cardiac patients. However, there is a limited study about factors that could predict functional capacity improvement after an exercise-based cardiac rehabilitation program. This study aims to determine the factors that can improve functional capacity after exercise cardiac rehabilitation program in coronary artery disease (CAD) patients after revascularization.

Methods: This was a retrospective cohort study in post revascularization CAD patients who attended cardiac rehabilitation program phase II, 4-8 weeks (twice weekly), consisted of 6-12 education sessions and supervised aerobic exercises (using ergo cycle and treadmill), taken from January 2019 – May 2021. We collect the characteristics of the patients and their traditional risk factors like hypertension, diabetes mellitus, smoking, dyslipidemia, family history. The patients' functional capacity improvement was determined from the difference between functional capacity before (obtained using 6 minutes walking test) and after the cardiac rehabilitation program. Data were analyzed using multiple linear regression tests.

Result: From 166 patients, 144 patients were analyzed, with a mean age of 56.95 ± 8.7 years old, most were male (90.3%), the mean baseline functional capacity was 4.01 ± 0.87 METS, the mean functional capacity after rehabilitation was 7.79 ± 1.64 METS and the mean improvement was 3.79 ± 1.57 METS. Factors affecting functional capacity improvement are age ($B = -0.391$), gender ($B = -0.247$), and Diabetes Mellitus ($B = +0.172$) with $p < 0.005$ that could explain 19.7% of functional capacity improvement.

Conclusion: Male, young, and Diabetes Mellitus patients tend to have better functional capacity improvement after exercise based-CR program in CAD-post revascularization patients.

Keywords: Affecting, Capacity, Factors, Functional, Improvement, Rehabilitation



Factors Affecting Chronic Heart Failure in Patients with End-Stage Renal Disease at Bhayangkara Hospital Denpasar

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Background :Patients with end-stage renal disease (ESRD) have a twofold risk of developing heart failure. A number of factors in ESRD patients are related to chronic heart failure (CHF). The intervention of cardiovascular risk factors in the early stages of chronic kidney disease (CKD) can reduce mortality from heart disease and slow the severity of kidney deterioration. This study aims to examine the factors that affecting CHF in patients with ESRD.

Methods : This study was a cross-sectional analytic observational study of 49 patients with ESRD based on consecutive sampling. The data collected were primary and secondary data on ESRD patients at the Cardiac Polyclinic, Internal Medicine Polyclinic, and the Medical Records Unit Bhayangkara Hospital Denpasar.

Results : In this study, it was found that most patients were in the age group ≥ 40 years (92%) and male gender (63%). From the chi-square test analysis, it was found that the factors affecting CHF in patients with ESRD are hypertension (HT) (p-value < 0.001) with prevalence ratio (PR) 11.19 (1.69-73.92), type 2 diabetes mellitus (T2DM) (p-value = 0.008) with PR 1.72 (1.18-2.51), obesity (p-value < 0.001) with PR 6.67 (2.34-18.92), and history of smoking (p-value = 0.027) with PR 1.6 (1.02-2.49).

Conclusion: It can be concluded that the factors affecting CHF in patients with ESRD are HT, T2DM, obesity, and smoking. The results of this study are expected to be used as an illustration so that in the future, prevention can be made for factors affecting the CHF in ESRD patients.

Keywords: Factors, Chronic Heart Failure, End-Stage Renal Disease, Prevention



External Counter Pulsation (ECP) Effect On Flow-Sensitive Mir-92a In Refractory Angina Patients

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Background : External counterpulsation (ECP) provides long term improvement in angina symptoms and quality of life in patients with refractory angina (RA). This is thought to be the result of high pulsatile shear stress on the endothelium. miR-92a is a *flow-sensitive* miRNA that is regulated by shear stress and has pro-atherosclerosis effect. It is postulated that ECP's anti-atherosclerotic effect is achieved through regulation of miR-92a.

Methods : Fifty RA patients were randomized (1:1 ratio) to thirty-five 1-hour sessions of either ECP (n = 25) or sham (n = 25). Plasma levels of miR-92a was measured by quantitative reverse transcription-polymerase chain reaction (qRT-PCR) before and after completion of treatment.

Results : Plasma miR-92a levels increase significantly in both groups [5.1 (+4.2 to +6.4) to 5.9 (+4.8 to +6.4), $p < 0.001$ in ECP group; 5.2 (+4.1 to +9.4) to 5.6 (+4.8 to +6.3), $p = 0.008$ in sham group]. However, delta changes was larger in ECP group compared to sham (0.7(-0.5 to +1.6) vs 0.5 (-4.2 to +1.2), respectively, $p = 0.33$) although not statistically significant. Likewise, fold changes was higher in ECP group compared to sham (4.6 (0.3 to 36.5) vs. 2.8 (0 to 15), $p = 0.33$, respectively].

Conclusion : ECP regulate angiogenesis by affecting circulating miR-92a level in RA patients. The increase in circulating miR-92a level might indicate increased release and decreased uptake by target cell, which might mitigate its intracellular pro atherosclerotic effect.

Keywords : External Counter Pulsation, Refractory Angina, Atherosclerosis, Mir-92a, Flow-Sensitive Mirna, Microna



Walking pace as a simple prognosticator for predicting risk of mortality in patients with heart failure: A dose-response meta-analysis of prospective observational studies

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Background: Heart failure patients exhibit impaired functional capacities that may be related to their prognosis. Walking pace has been widely used as an objective measurement of functional capabilities. It can be measured quickly and is sensitive to changes in health condition, particularly in older adults. Thus, walking pace was suggested as a strong predictor of survival in patients with heart failure. This study aimed to summarise the relationship between walking pace and mortality risk in heart failure patients using a dose-response meta-analysis given the inconsistencies across the published studies.

Methods: A systematic literature search was conducted using PubMed, EuropePMC, and SCOPUS up until May 2021. A dose-response relationship meta-analysis was conducted to measure the risk ratios (RR) of mortality between heart failure patients with the slowest versus the fastest walking pace using a random-effects model with 95% confidence interval (CI).

Results: The current meta-analysis comprised 19 studies (19,507 participants, 66.39% male, mean age 70.61 years, mean length of observation 3.35 years). Individuals with the fastest walking pace category (mean 1.16 m/s) were associated with a lower risk of mortality as compared to the slowest walking pace category (mean 0.69 m/s) (RR: 0.85 [0.81–0.89], $P < 0.001$; $I^2 = 86.9\%$). Consistent results were obtained during meta-regression analyses. The risk of mortality decreased by 8% per 0.1 m/s increment in walking pace in line with the dose-response meta-analysis.

Conclusion: Walking pace is a simple and reliable prognosticator to help determine risk of mortality in patients with heart failure.

Keywords: Walking Pace, Mortality, Heart Failure, Meta-Analysis



Comparative Study of Six-Minute Walk Test Distance in Patients with Anterior and Inferior ST Segment Elevation Myocardial Infarction Post Primary Percutaneous Coronary Intervention

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Introduction: Six minute walk test (6MWT) is a safe, simple, inexpensive and useful for measuring functional status, therapy respond and morbidity and mortality predictor in patients with ST Segment Elevation Myocardial Infarction (STEMI) Post Primary Percutaneous Coronary Intervention (PPCI). One of the parameters is walking distance. However there isn't any data that compare walking distance in patients with STEMI anterior and inferior post PPCI. This study aimed to compare of 6MWT distance in patients with anterior and inferior STEMI post PPCI

Method: This was a analytic descriptive cross-sectional study. Sampling technique was purposive sampling. Sample of patients was 118 patients STEMI post PPCI who had undergone 6MWT between January 2020 until April 2021.

Result: From 118 patients STEMI post PPCI who had undergone 6MWT, 66 patients (55,9%) had anterior STEMI and 52 patients (44.1%) had inferior STEMI. Male and female patients were 101 (85.6%) and 17 (14.4%). Mean age of patients was 54.31 years. Anterior STEMI 6MWT distance was 260 meters (SD \pm 88.49) with 21 patients (31.8%) reached >300 meters and inferior STEMI was 273 meters (SD \pm 83.32) with 18 patients reached >300 meters (34.6%). The independent T-Test showed that there is no significant difference in the distance of 6MWT between anterior and inferior STEMI with p value of 0.416 ($p > 0.05$).

Conclusion: There is no significant difference in the distance of 6MWT between anterior and inferior STEMI.

Keyword: 6MWT, STEMI, Distance, PPCI



Evaluation of Cardiometabolic Factors Affecting Chronotropic Incompetence: A Cross-Sectional Retrospective Study in Sanglah General Hospital, Bali

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Background: Recent studies have identified that chronotropic incompetence is correlated with poor cardiometabolic health and systemic inflammation that results in exercise intolerance, impaired quality of life and death due to cardiovascular disease (CVD). Unfortunately, there's still paucity of data regarding cardiometabolic factors associated with chronotropic incompetence. The purpose of this study was to identify the cardiometabolic factors associated with chronotropic incompetence.

Methods: This study was a cross-sectional retrospective study using cardiac treadmill stress test data at Sanglah General Hospital from May 2018 - May 2020 and 136 patients was enrolled. Data analysis used SPSS version 21. Pearson chi-square test was used to compare categorical variables based on cardiometabolic risk factors in chronotropic incompetence.

Results: Patients were divided based on the characteristics of age, gender, smoking status, body mass index, coronary artery disease, heart failure, hypertension, dyslipidemia, type 2 diabetes mellitus (T2DM), the levels of HbA1C, total cholesterol, LDL, HDL, and triglyceride. In this study, it was found that T2DM (PR 2.29; 95%CI 1.16–3.37), HbA1C (PR 3.13; 95%CI 2.31-4.22), dyslipidemia (PR 1.773; 95%CI 1.170–2.687), total cholesterol (PR 2.396; 95%CI 1.650-3;481), and LDL (PR 1.853, 95%CI 1.229-2.794) were significantly associated with chronotropic incompetence (all p-value <0.05), while other factors were not significantly related.

Conclusion: Chronotropic incompetence can impair quality of life and causing cardiovascular mortality. However, T2DM, high HbA1C, dyslipidemia, high total cholesterol and LDL levels were associated with chronotropic incompetence. This may contribute to higher cardiovascular risk attributed to those factors.

Keywords: Chronotropic Incompetence, T2DM, HbA1C, Dyslipidemia, LDL, Total Cholesterol



Factors Associated with the Occurrence of In-Hospital Anxiety and Depression Based on Hospital Anxiety and Depression Scale (HADS) in Patients with Acute Myocardial Infarction in Sanglah General Hospital

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Background: Patients with Acute Myocardial Infarction (AMI) are more likely to experience anxiety and depression compared with a healthy population. The prevalence of depression and anxiety have been extensively investigated, but only a few studies have evaluated the factors associated with anxiety and depression in AMI patients. The aim of this study is to investigate the contributing factors associated with in-hospital anxiety and/or depression, as indicated by Hospital Anxiety and Depression Scale (HADS) in patients with AMI.

Methods: This was a cross-sectional study that enrolled AMI patients who were admitted to Sanglah General Hospital in November-December 2020. Data collection were done by interviewing patients and reviewing medical records. The subjects were asked to complete the HADS questionnaires, for later analyzed.

Results: We included 68 patients with AMI with a mean age of 55.2 years. In this study, the proportion of STEMI and NSTEMI were 58.8% and 41.2%. The prevalence of in-hospital anxiety was 25% and depression was 23.5%. On bivariate analysis, we found that female gender ($p = 0.012$) and hypertension (PR 0.22; 95%CI 0.06-0.75; $p=0.012$) were significantly associated with the prevalence of in-hospital anxiety based on HADS. No variable was found to be associated with the prevalence of depression.

Conclusion: Female gender significantly associated with in-hospital anxiety, while hypertension is negatively associated with in-hospital anxiety in patients with AMI. HADS is a convenient instrument for anxiety and depression screening, and may be used in AMI patients.

Keywords: Anxiety, Depression, Acute Myocardial Infarction, HADS.



The Impact of Phase II Cardiac Rehabilitation on Functional Capacity, Blood Pressure, Heart Rate, and Body Mass Index among Post-Acute Myocardial Infarction Patients in Sanglah General Hospital

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Background: Cardiac Rehabilitation (CR) is essential in cardiovascular disease management because it has been proven to improve patient's quality of life, both physical and psychological. The effects of CR may vary in every cardiac centre and could be influenced by comorbidities and demography. The aims of this study were to determine the impact of phase II CR on functional capacity, Blood Pressure (BP), resting Heart Rate (HR), and Body Mass Index (BMI) among post-Acute Myocardial Infarction (AMI) patients at Sanglah General Hospital from 2019 until 2021.

Methods: This was a cross-sectional study enrolled a total of 37 patients who attended the CR program. Functional capacity before and after CR was evaluated respectively using 6-Minutes Walking Test (6MWT) and treadmill stress test with Bruce Protocol. Paired T-test was used to compare the functional capacity before and after program.

Results: The mean \pm SD of METs which reflected functional capacity before and after phase II CR were 5.9 ± 1.45 and 7.78 ± 1.9 , respectively. In this study, there was a 30.5% increase in METs after CR ($p < 0.05$; 95%CI 1.27-2.3). The SBP, HR and BMI also found to be decreased 4.3% ($p < 0.05$; 95%CI 2.8-6.8), 1.63% ($p < 0.05$; 95% CI 3.6-5.1), and 1.63% ($p < 0.05$; 95% CI 0.23- 0.6) respectively after the program.

Conclusion: There was significant improvement in functional capacity, SBP, HR, and BMI after constitution of phase II Cardiac Rehabilitation. The results of this study support the role of cardiac rehabilitation in improving the outcome of post-AMI patients.

Keywords: Cardiac Rehabilitation, Functional Capacity, Acute Myocardial Infarction



The Combination of Extra Virgine Olive Oil – EVOO and Aerobic Exercise To Lipid Profile Levels In Dyslipidemia

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Background: Dyslipidemia is a disorder of lipid metabolism characterized by an abnormal plasma lipid profile. Currently, various studies have been carried out on phytopharmaceuticals derived from natural ingredients to prevent dyslipidemia. Olive Oil is one of the phytopharmaceuticals that contain Mono Unsaturated Fatty Acid (MUFA) and polyphenols which have an antioxidant effect and reduce LDL cholesterol and increase HDL cholesterol. Aerobic exercise is included in the category of moderate-intensity exercise, which in previous studies was reported to reduce triglyceride levels. Consumption of olive oil in combination with aerobic exercise will be an effective way to control lipid metabolism. To determine the effect of olive oil and aerobic exercise on LDL, HDL and Triglyceride levels.

Method: True experimental, Pretest and Post test designed with Control Group. The research was divided into 4 groups, namely Control (K) given egg yolk 5mg/200 gram BW/day. P(1) was given 0.9 grams of olive oil daily. P(2) was given exercise for 1 minute 10 seconds. P(3) was given olive oil and aerobic exercise and compared LDL, HDL and Triglyceride levels in each group.

Results: The mean value of LDL levels in P(1) pre test 10.66 mg/dl - post test 7.66 mg/dl, P(2) pre test 16.16 mg/dl - post test 8 mg/dl, P (3) pre test 19.16 mg/dl - post test 5.33 mg/dl. The mean value of HDL levels at P(1) pretest 50.83 – posttest 53.33 mg/dL, P(2) pretest 46.67 - posttest 52.00 mg/dl, P(3) pretest 47.50 – posttest 58 ,67 mg/dl. The mean value of triglyceride levels at P(1) pretest 95.00 mg/dl – posttest 92.16 mg/dl, P(2) pretest 112.85 mg/dl – posttest 71.75 mg/dl, P(3) pretest 112.85 mg/dl – posttest 97.14 mg/dl.

Conclusion: Olive oil with aerobic exercise has an effect in reducing LDL levels, triglycerides and increasing HDL levels to prevent dyslipidemia.

Keywords: Dyslipidemia, Lipid Profile, Olive Oil, Exercise