



Palestine Health Research Results

Heart Disease



2015

المقدمة:

يعتبر البحث العلمي من أهم الأنشطة الإنسانية التي يمارسها الإنسان فوق سطح كوكب الأرض في هذا العصر وفي العصور السابقة، وقد كان البحث العلمي على مر الأزمنة أساس النهضات والتقدم والتطور، وما ننعم به اليوم من رقي وحضارة هو نتاج البحث العلمي المستمر بمختلف مجالاته.

ويعرف البحث الصحي بأنه كل جهد علمي منظم يهدف إلى تنمية المعرفة و المهارات في المجالات الصحية المختلفة و إيجاد الطرق الأفضل للوقاية والعلاج من الأمراض وكذلك تطوير نظام صحي قادر على الاستجابة بفعالية ونجاعة لاحتياجات السكان في ظل بيئة صحية ديناميكية.

وأيضا فإن البحوث الصحية يمكن أن توفر معلومات هامة حول اتجاهات الأمراض وعوامل الخطر، ونتائج البرامج أو التدخلات الصحية العامة، وأنماط الرعاية المختلفة وتكاليف الرعاية الصحية واستخدامها، وكذلك يمكن أن توفر معلومات هامة حول فعالية التدخلات الطبية والجراحية، وتحسين استخدام الأدوية واللقاحات، أو تطوير الأجهزة الطبية، وطرق التشخيص.

كما أنها حيوية لتسجيل وتقييم الخبرة في الممارسة السريرية من أجل وضع مبادئ توجيهية لأفضل الممارسات وضمان الرعاية العالية الجودة للمرضى.

ونحن في وزارة الصحة وإدراكا منا للدور الهام للبحث العلمي وكذلك للمسؤولية والدور المناط بنا في قيادة مسار التطوير والتدريب أتحنا الفرصة للباحثين وطلبة كليات الطب والصيدلة والعلوم الطبية الأخرى لعمل الأبحاث والتدريب في مرافق وزارة الصحة المختلفة ضمن الضوابط والقوانين المنظمة والمعمول بها من أجل تحقيق الهدف والنهوض بالقطاع الصحي من خلال دعم التعليم الطبي والبحث الصحي.

ونحن في الإدارة العامة لتنمية القوى البشرية نقوم بتنظيم ومتابعة هذا النشاط البحثي من خلال دائرة البحث الصحي التي تقوم في هذا المجال بـ:

- الإشراف علي هذا النشاط البحثي داخل مرافق الوزارة
- توجيه الباحثين للأماكن التي سيقومون بتنفيذ الأبحاث بها
- التأكد من الإجراءات التي تحفظ حقوق المبحوثين
- تدقيق الجانب الأخلاقي من الأبحاث
- الحفاظ على ممتلكات الوزارة.
- توثيق الأبحاث التي يتم إنجازها
- توصيل نتائج البحوث لذوي العلاقة والمهتمين وصناع القرار في الوزارة.
- عمل الإحصائيات والتقارير المتعلقة بالأبحاث

لكن يبقى السؤال الملح وهو كيف يمكن الاستفادة من هذه الأبحاث ونتائجها في تطوير وتحسين الخدمات الصحية؟ لذلك قمنا بإنشاء صفحة على شبكة الانترنت (ضمن موقع الوزارة) خاصة بعرض ملخصات البحوث التي تجرى في الوزارة، كما قمنا بتصنيف رسائل الماجستير (التي حصلنا عليها من الجامعات و الباحثين) إلى عدة موضوعات وقد بدأنا بإعداد مجلة تشمل ملخصات الرسائل العلمية ونتائجها وتوصياتها من أجل توصيلها لذوي العلاقة والمهتمين وصناع القرار في المستويين الطبي والإداري.

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Homocysteine levels of cardiovascular disease patients attending the cardiac unit at El Shifa hospital, Gaza Strip

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Abstract

Background: Cardiovascular disease (CVD) is the first leading cause of death among the Palestinians. Although Hyperhomocysteinemia has been strongly linked to CVD, biochemical tests are restricted to monitoring cardiac enzymes activities. Therefore, introducing homocysteine test in Gaza hospitals for CVD patients may provide a clearer picture on the patient condition and help in the disease management.

Objective: To assess homocysteine of CVD in patients from Gaza Governorate, Gaza Strip.

Material and methods: This case-control study comprised 82 CVD patients and 82 healthy controls. Questionnaire interview was applied. Serum homocysteine, cholesterol, triglycerides, low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C), lactate dehydrogenase (LDH), Aspartate aminotransferase (AST), Creatine Kinase (CK) and creatine kinase muscle and brain (CKMB) were determined. Data were analyzed using SPSS version 18.0.

Results: The mean ages of controls and cases were 44.7 ± 10.2 and 45.5 ± 8.8 years, respectively. CVD was more frequent among lower educated, smoker and unemployed individuals, families with less income and individuals with family history of CVD ($P < 0.05$). BMI of cases was significantly higher than that of controls (31.1 ± 6.4 vs. 25.7 ± 3.7 , $P = 0.000$). Clinical data showed that, high blood cholesterol, hypertension, stroke, diabetes and obesity are risk factor of CVD. Among food stuff, daily consumption of meat was found to be a risk factors of CVD. The mean levels of homocysteine was significantly higher in cases compared to controls (22.2 ± 7.0 vs. 13.4 ± 3.7 $\mu\text{mol/l}$, $P = 0.000$). The average levels of cholesterol, triglycerides and LDL-C were found to be higher in cases (236.7 ± 50.0 , 188.7 ± 90.8 and 171.3 ± 41.1 mg/dl, respectively) compared to controls (182.2 ± 31.2 , 133.6 ± 69.2 and 113.8 ± 27.9 mg/dl, respectively) with $P < 0.05$. In contrast, HDL-C was significantly lower in cases than in controls (26.3 ± 9.6 vs. 39.9 ± 4.3 mg/dl, $P = 0.000$). The mean activities of LDH and CKMB were significantly elevated in cases compared to controls

(416.1 ± 195.5 and 14.2 ± 10.8 vs. 325.5 ± 71.3 and 10.6 ± 3.4 U/L) with $P=0.005$, $P=0.038$, respectively. Homocysteine levels were higher in low educated, smoker and unemployed individuals, less family income and family history of CVD ($P<0.05$). Homocysteine levels were also higher in high blood cholesterol, hypertensive, stroke, diabetic and obese individuals as well as in individuals who ate meat daily ($P<0.05$). Homocysteine levels were positively correlated with BMI ($r=0.225$, $P=0.034$), cholesterol ($r=0.304$, $P=0.004$), LDLC ($r=0.396$, $P=0.000$), LDH ($r=0.286$, $P=0.007$) and negatively correlated with HDL-C ($r=-0.403$, $P=0.000$).

Conclusions: Serum homocysteine was significantly higher in CVD patients compared to controls. Homocysteine levels were higher in low educated, smoker and unemployed individuals, less family income individuals as well as in individuals with family history of CVD. High blood cholesterol, hypertensive, stroke, diabetic and obese individuals as well as individuals who ate meat daily had also higher levels of homocysteine. Homocysteine levels were positively correlated with BMI, cholesterol, LDL-C, LDH and negatively correlated with HDL-C.

Keywords: Cardiovascular disease, homocysteine, lipid profile, Gaza strip

Conclusions and Recommendations

Conclusions

1. The study population included 82 controls (41 males and 41 females) and 82 CVD patient (cases: 41 males and 41 females). The mean ages of controls and cases were 44.7 ± 10.2 and 45.8 ± 8.8 years old.
2. CVD was more prevalent among lower educated, smoker and unemployed individuals, families with less income and individuals with family history of CVD.
3. Body mass index of cases was significantly higher than controls.
4. Clinical data showed that high blood cholesterol, hypertension, stroke attack, diabetes mellitus and obesity are risk factors of CVD.
5. Among food stuff, only daily consumption of meat was found to be a risk factor of CVD.
6. The mean levels of homocysteine was significantly higher in cases compared to controls.
7. The average levels of cholesterol, triacylglycerol and LDL-C were significantly higher compared to controls. In contrast, HDL-C was lower in cases.
8. Lactate dehydrogenase and CKMB activities showed significant increase in cases compared to controls.
9. Homocysteine levels were significantly higher in low educated, smoker, and unemployed individual, low income family individuals as well as in individuals with family history of CVD.
10. Homocysteine levels were significantly higher in high blood cholesterol, hypertensive, stroke, diabetes mellitus and obesity.
11. Homocysteine levels were higher in individuals who ate meat daily.

12. Homocysteine levels showed significant positive correlated with BMI, cholesterol, LDL-C, LDH and significant negative correlation with HDL-C.

Recommendations

1. Introducing of homocysteine test for CVD patients in Gaza hospitals is highly recommended.
2. Frequent monitoring of homocysteine levels particularly in smokers and individuals with family history of CVD, hypertensive, diabetic and obese individuals as well as individuals who ate meat frequently.
3. Launching of health education programs on smoking, obesity and diabetes mellitus.
4. Follow up a healthy diet in term of reducing meat intake.

Vitamin D and Lipid Profile as Indicators of Coronary Heart Disease: A Case-Control Study

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Abstract

This study on Coronary Heart Disease (CHD) that determines the 25 (OH) vitamin D levels of participants, allows comparisons between vitamin D status and CHD.

Objectives: This study was conducted to identify the relation of vitamin D levels with CHD, to reveal the relation of patients' lipid profile with CHD, and to study the nutritional status of study population.

Methodology: A retrospective case-control study was conducted at Al Remal Clinic in Gaza city. The study consisted of 50 cases of CHD and 50 age matched controls chosen by convenience sampling method. Data collection was done by direct methods that included serum Vitamin D level and lipid profile and indirect methods through a structured interview questionnaire.

Results: Regarding vitamin D status, average serum vitamin D level in CHD patients was 22.52 ± 9.07 ng/ml, and 28.82 ± 8.18 ng/ml in controls (*P value* 0.001); 64% of CHD patients were vitamin D deficient while only 32% of controls were vitamin D deficient [Odds Ratio 3.78, 95%CI(1.65-8.65)]. Serum lipids levels were positively correlated with CHD, as: high total cholesterol and LDL-C (*P value* 0.01), and high triglycerides (*P value* 0.009); low HDL-C in men was inversely correlated with CHD (*P value* 0.01). Other factors were significantly correlated with CHD such as: associated medical conditions: 54% of cases had hypertension and none of the controls (*P value* 0.001), and obesity: 44% of cases compared to 12 % of controls (*P value* 0.001); lifestyle: 46% of cases were smokers, and 14% of controls (*P value* 0.001), and dietary factors [high intake of vegetables and fruits was inversely correlated with CHD (*P value* 0.001)].

Conclusion: Many traditional risk factors including hyperlipidemia and novel, as Vitamin D deficiency may contribute to the development of CHD.

Recommendation: for policy makers, a strategy for determining the level of vitamin D in CHD patients is recommended. It is highly suggested providing vitamin D supplement for

people who aged more than 50 years; is not protective for their bone mass, it is also protective for their hearts as well.

Key words: *Coronary Heart Disease, vitamin D deficiency, hyperlipidemia, Gaza Strip.*

Conclusions and Recommendations

Conclusions

In the current study, the goal was to reveal the relationship between vitamin D and lipid status and Coronary Heart Disease. The study was conducted in Al Remal PHC center and included 50 Cases of CHD and 50 controls. This research indicated that CHD may be influenced by many variables, as follows:

1. Majority of cases of CHD were men.
2. Lower socioeconomic status such as low educational level, not working and unsatisfaction with financial income were inversely correlated with CHD.
3. Concerning serum Vitamin D levels, 64% of CHD patients had a low serum Vitamin D compared to 32% of healthy participants who were Vitamin D deficient, which means an inverse association between CHD and vitamin D deficiency.
4. Regarding serum lipids level, high levels of total cholesterol, LDL-C and serum TG were positively associated with CHD; lower levels of HDL-C in men were inversely correlated with CHD, with statistical significance.
5. Related to participants' associated medical conditions, HTN, obesity, hyperlipidemia and depression were positively associated with CHD, as a positive family history of CHD and hyperlipidemia.
6. About lifestyle factors, current smoking and exposure to stress were significantly positively correlated with CHD.
7. Among nutritional status indicators, a significant positive association was observed between abdominal obesity in men and CHD.
8. Concerning dietary habits variables, consumption of lamb, un-trimmed meat, appetizer and sweets was positively associated with CHD.
9. About different food groups, a high intake of vegetables and fruits was inversely correlated with CHD, with statistical significance.
10. Regarding drinks intake, a significant positive association between coffee and CHD was observed and herbal drinks were inversely correlated with CHD state.

Recommendations

Efforts to early discover and improve condition of patients with CHD are addressed to policy makers, providers and patients with Coronary Heart Disease. Therefore, the following recommendations are suggested:

Recommendations to policy makers and health providers

1. To take advantage of the presence of a nutritionist in each health center to provide a complete nutritional counseling.

2. Design of informative material (e.g. small booklets) with major food groups, including sources rich in vitamin D, and explain their role in prevention or alleviation of CHD.
3. Conducting a screening of serum lipids for patients in each clinic according to recommendations of international organizations, for early discovery and treatment of hyperlipidemia.
4. To advise patients that vitamin D deficiency could be a sign of illness and therefore should be treated promptly.
5. To support and supply vitamin D analysis in PHC for its major role in CAD.

Advices to CHD patients

1. Visiting health centers in which are registered regularly for early detection of risk factors and their control.
2. Increasing their information about CVD, through brochures and pamphlets prepared by clinical nutritionists and physicians.
3. To follow health provider advices on adequate sun exposure, as the main source of vitamin D in humans.
4. CHD patients should follow clinical nutritionists advices and diet plans for Cardiovascular Disease risk reduction, such as: a healthy diet, maintaining a healthy body weight, recommended levels of blood lipids, a normal blood pressure and blood glucose level, regular physical activity, and avoid smoking.

The Role of N-Acetylcysteine or N-Acetylcysteine plus Ascorbic Acid in Prevention of Contrast-Induced Nephropathy in High-Risk Patients With Ischemic Heart Disease.

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Background Several protective therapies have been developed to prevent contrast-induced nephropathy (CIN). This study aimed to evaluate the effect of high dose of *N*-acetylcysteine (NAC) plus hydration, low dose of (NAC) plus Ascorbic acid and hydration or hydration alone on the prevention of (CIN) in high-risk patients undergoing coronary or peripheral angiography and/or intervention at European Gaza Hospital cardiac catheterization center,

Methods We prospectively enrolled 105 high risk patients who were scheduled for cardiovascular procedures and had a baseline creatinine level 0.96mg/dl, Creatinine Clearance Level 76.63ml/min, Urea plasma level 35.07 mmol/L. The patients were divided into 3 different groups and assigned 1 of 3 prophylactic regimens: Group A (n=30) (NAC) 1200mg orally before angiography and 1200-mg orally twice daily for three doses, Group B (n=30) (NAC) 600mg before angiography and 600-mg orally twice daily for three doses plus Ascorbic acid (3000mg one dose) before angiography and 2000mg two doses after angiography and hydration, Group C (n=45) hydration with (0.9% saline) started just before contrast media injection and continued for 12hrs at a rate 1.0ml/kg/min after angiography intervention, or 0.5 ml per kilogram per hour in cases of overt heart failure for 12hrs, Contrast-induced nephropathy was defined as an increase in serum creatinine level $\geq 25\%$ or 0.5 mg/dL after 48 hrs.

Results: We include that different types of risky patients with diabetes mellitus 84 (80%), heart failure 5 (4.8%), Age >70 years 22 (21%), Serum Creatinine >1.5 mg/dl 6 (5.7%), male/female were 61 (58.1%) 44 (41.9%) respectively and patients who took contrast media >300 cc 13 (12.3%), the incidence of CIN significantly lower in group A 2 (6.66%) compared with Group B 5 (16.66%) and Group C 8 (17.77%).

The differences between group A and B and between group A and C were highly significant ($P = 0.001$). In contrast, the differences between group B and C were non-statistically significant ($P=0.37$).

Conclusion: High dose of NAC (1200mg) plus hydration provides better protection against CIN than the combination therapy of NAC 600mg plus ascorbic acid plus hydration or hydration alone. Combination therapy of NAC plus hydration did not offer additional benefit over hydration alone.

Key word: contrast induced nephropathy (CIN), N-acetylcysteine (NAC), serum creatinine, creatinine clearance, urea plasma level.

Conclusions

At the end of this clinical study we concluded:-

1. High dose of NAC (1200mg) plus hydration provide significant lowering in the incidence of CIN in high risk patients undergoing angiography procedures.
2. High dose of NAC (1200mg) plus hydration caused significant decrease in the incidence of CIN in comparison with hydrations alone.
3. High dose of NAC (1200mg) plus hydration significantly decreased the incidence of CIN in comparison with combining regimen of NAC plus ascorbic acid and hydrations.
4. The effect of NAC in preventing CIN was similar in male and female patients.
5. The effect of NAC in preventing CIN was similar in diabetic and non diabetic patients.

5.7 Recommendations :-

1. Recommend to adopt high dose of NAC (1200mg) plus hydration protocol in high risky patients undergoing angiography procedure.
2. Group the patients according to the risk factors before undergoing angiography procedures.
3. Further research should be carried out on isolated risky patients.
4. Further research should be performed on the use of ascorbic acid alone in reducing CIN.
5. Further research should be done on the effect of different treatment groups on male and female patients.

The Effect of Statins on Liver Function among Patients with Coronary Heart Disease in Gaza Strip

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Abstract

Statins, which are inhibitors of 3-hydroxy-3-methylglutaryl-CoA (HMG-CoA) reductase, are considered as one of the most important drugs and the drug of choice for reducing an abnormal cholesterol level. Statins are normally used to decrease the risk of coronary heart disease (CHD), but they tend to be associated with liver adverse effects and others.

The objective of this prospective study was to investigate the influence of statins therapy on the liver function in patients with CHD, to assess their efficacy on lipid profiles and to clarify other statins side effects. To achieve this, 66 newly diagnosed CHD patients were selected from UNRWA clinics in Gaza Strip-Palestine. The patients were clinically examined and treated with atorvastatin (10-40 mg/day). A questionnaire was used to collect the data concerning socio-demographic characteristics, life style habits, family and medical history, drug data, drug interaction, and other concerning data. Total cholesterol (TC), triglycerides (TG), high density lipoprotein cholesterol (HDL-C), low-density lipoprotein cholesterol (LDL-C), liver enzymes tests such as alanine aminotransferase (ALT) and aspartate aminotransferase (AST) and total and direct blood bilirubin were measured before starting treatment and after 3 and 6 months of treatment. Data were analyzed using the statistical package for social science (SPSS).

The results showed a significant decrease in the plasma levels of TC and LDL, but it showed no significant decrease in the plasma levels of TG. The results also showed no significant increase in the plasma levels of HDL. Regarding the results of statins effects on liver transaminases, there was a significant increase in the mean values of ALT and AST levels after 3 months and decreased back after the next 3 months, but they were higher than the baseline with insignificant association. The results also showed a significant increase in the total and direct bilirubin in the first 3 months and decrease back after the next three months of the study. The new attainable levels of bilirubin were higher but statistically insignificant.

The results showed other statins adverse effects such as: muscle pain; abdominal pain; sleep disturbances; loss of appetite and peripheral neuropathy.

Keywords: statins, coronary heart disease, adverse effects, liver transaminases, lipid profile.

Conclusion and Recommendations

Conclusion

Coronary heart disease (CHD) is the principle cause of morbidity and mortality worldwide. The main cause of CHD is atherosclerosis that develops in the arteries that encircle the heart and supply it with blood.

Statins or 3-hydroxy-3-methylglutaryl coenzyme A reductase inhibitors which used for prevention and treatment of CHD; they lower cholesterol levels by 20 – 30%, and even more at higher doses, and this has been clinically proven to produce an equivalent decrease in the risk of myocardial infarction and death. Statins have become one of the best-selling medication classes to date since their introduction into the marketplace.

Statins like all medications, have potential adverse effects. The most serious are muscle side effects, hepatic dysfunction which is the major of the nonmuscle side effects and others such as cognitive loss, neuropathy, sexual dysfunction and pancreatic dysfunction.

Abnormal hepatic transaminase levels are recognized as an infrequent occurrence of statin therapy. In particular, the transaminases seem to increase within the first 3 and 6 months months of therapy .

This study was conducted to investigate the influence of statins therapy on the liver function in patients with CHD.

A total of 66 patients were newly diagnosed with CHD participated in the study, 37 males and 29 females, the mean age of both males and females was between 55+10.3 years.

They were treated with atorvastatin (10-40 mg). The study carried out in seven UNRWA health centers, data collection were performed via face to face questionnaire to identify the socio-demographic characteristics, life style and other variables and through biochemical analysis for blood lipid profile (Total cholesterol, triglycerides, LDL-C and HDL-C), liver enzymes (ALT, AST) and total and direct bilirubin.

The results of the current study showed significant decrease in both total cholesterol and LDL-C, but no significant decrease in triglycerides or an increase in HDL-C following 6 months of treatment. Moreover it showed significant elevation in liver enzymes (ALT and AST) and bilirubin mean values after the first 3 months of statins treatment compared to pretreatment values, but there was no significant elevation of them after the next 3 months of the study. The mechanisms behind these adverse effects are unclear, but a few possibilities have been suggested. Therefore, more studies are necessary to investigate the mechanism of these adverse effects in the future.

The study also showed that the incidence of statins adverse effects on liver may increase because of the presence other risk factors such as (dose, drug interactions, obesity) which could increase patient liver adverse effects susceptibility. Furthermore, the study showed that patients might suffered from other adverse effects like weakness muscle pain, headache, abdominal pain, sleep disturbances, loss of appetite and peripheral neuropathy.

Recommendations

1. Emphasizing the role of statins as efficient lipid lowering drugs and highlighting their importance in prevention and treatment of CHD.
2. Since significant changes on liver function were seen after statins treatment among patients with CHD. Careful monitoring for liver function and dose adjustment of statins should be done.
3. Careful clinical and laboratory monitoring for lipid profiles and liver function tests, including Liver enzymes (ALT and AST) and bilirubin (total and direct), should continue before, every 3 months during statins treatments and after discontinuation and dose changes.
4. Raising the awareness towards the adverse effects follow up among patients and physicians.
5. The present study emphasizes the importance of clinical pharmacologists' role in prescribing and monitoring drugs.
6. The results indicate the importance of clinical pharmacologists' role in highlighting other risk factors that increase the incidence of adverse effects.

Research recommendations

1. Further studies on a larger number of patients and for a longer period of time are warranted to study the long-term effects of statins on lipid profiles and liver function among CHD patients in Palestine.
2. Further studies to assess other adverse effects such as muscle adverse effects.
3. Further comparative and experimental studies on different statins to assess their efficacy and adverse effects.
4. Further studies to discover the mechanisms of statins on liver function.
5. Further studies to suggest solutions to decrease the statins adverse effects or suggest new combinations.

The Use of Classification Methods to Identify the Most Important Risk Factors for Cardiovascular Patients in the Gaza Strip

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Abstract

Reports and studies indicate that coronary artery disease (CAD) is one of the main leading causes of mortality in the world. In Palestine, CAD is the most leading cause of mortality among adults. This requires specialists in this field to conduct scientific research on this disease and to identify the most important risk factors associated with it. Therefore, this study aims to identify the most important risk factors associated with the cardiovascular disease using three important classification methods (Logistic regression, discriminant analysis and neural network).

In this study we will compare those three statistical models in the classification of data related to cardiovascular disease patients in the Gaza Strip, using three different assessment techniques (leave-one-out cross-validation, classification table, and the area under the ROC curve), in terms of their accuracy and error rates.

We obtain the best model that has the highest accuracy and the least error rate. The best model will then be used in the analysis of CAD patients in order to identify the most important risk factors associated with the disease in Gaza.

The results of the comparisons indicates that neural networks (ANN) approach provides the best classification model for this data set in terms of accuracy and error rates. The logistic regression model and discriminant analysis provide almost similar degree of accuracy and error rates and less that of ANN. The results showed that there are many risk factors that have direct impacts on the development of this disease.

These factors, ordered according to their degree of risk, are: number of marriages, hypertension status, home exposed to shelling or shooting by Israeli occupation forces, smoking, previous history of CAD, Number of times a person had cardiac catheterization before, high density Lipoprotein and age .

The Important Risk Factors of CAD

From the results in chapter three , we achieved three statistical models which are : LR, LDA and ANN where these models demonstrates the most important risk factors for CAD disease. Some of the risk factor were achieved in all the three models. This means that these risk factors are important in building the three statistical models, but with different degrees. We

can identify the importance of each risk factor through the value of the odd ratio of each risk factor. The variable numbers of marriages (NOM) has the highest value of odds ratio and equals 0.14. which means that a person who has been married only once have the chance to suffer from CAD diseased approximately (7.1) times as much as a person who has been married more than once.

Next comes the variable suffering from hypertension (SFH) which has a value of odds ratio equals 4.6 which means that people who suffer from hypertension have the chance to suffer from CAD disease approximately (4.6) times as much as a person who do not suffer from hypertension. The next one is the variable home exposed to shelling or shooting by Israeli occupation forces (HEFS) which has value of odds ratio equals 0.22 which means that people who suffered from shelling or shooting by the Israeli occupation forces have the chance to suffer from CAD approximately (4.5) times as much as people who did not have their homes shelled or shoot by the Israeli occupation forces. Next comes the variable smoking (SN) which has a value of odds ratio equals 3.85 which means that people who smokes have the chance to suffer from CAD disease approximately (3.85) times as much as a person who did not smoke. The next one is the previous history of CAD (PHOCAD) which has a value of odds ratio equals 3.4 which means that a person who had coronary heart disease before have the chance to suffer from CAD again approximately (3.4) times as much as people who did not have previous history of CAD disease. Then the times of cardiac catheterization (TOCC) has a value of odds ratio equals 3.4 which means that a person who have more than once cardiac catheterization have the chance to suffer from CAD approximately (3.24) times as much as a person who have only one cardiac catheterization. And the final risk factor is the high density lipoprotein level (HDL) which has a value of odds ratio equals 3.04, which means that a person who have low high density lipoprotein have the chance to suffer from CAD approximately indicate (3.04) times as much as a persons who have normal high density lipoprotein.

Final Models

Display variables that have been shown to have significant effects on the variable response and included in the final model, which was obtained which contains the most important risk factors for cardiovascular disease. From all the discussion in this study the following conclusion can be drawn. The results of neural networks model are better than the logistic regression and discriminant analysis models' results and more efficient for the classification of cardiovascular disease cases in the Gaza Strip. In artificial neural network model we included the variables NOM, SFH, HEFS, SN, PHOCAD, TOCC, HDL and OLD. The size of the resulting artificial neural network classification, was a three-layer structure with 12 input layers,8 hidden layers and 1 output layer.

Recommendations

From the above discussion we can conclude the following:

1. Reduction the proportion of high density lipoprotein in the blood through the practice of physical activity is important in minimizing the risk of CAD disease because it is considered as one of the risk factors on cardiovascular disease according to this study.
2. We recommend that the Ministry of Health to provide a good electronic database can be used in the field of research and give great importance to cardiovascular disease because it is considered as the first leading cause of death in the world. Yet, CAD now accounts for nearly 30% of deaths globally.
3. We recommend that the medical community to conduct research on the control of hypertension in the community because it is considered one of the main risk factors on cardiovascular disease
4. We recommend that the Ministry of Health to conduct research on tobacco control to reduce the prevalence of regular tobacco use in the community, because it is considered one of the main risk factors on cardiovascular disease.
5. Attention should be taken by persons who have a family history of CAD disease and should be provided to care them, because it is considered as one of the risk factors
 1. on cardiovascular disease.
6. Examination of cholesterol level in the blood and keeping it is so important to CAD patients because they are risk factors according to this study.
7. Provide psychological care and support for people who have lost a first degree relative, or their home shelled or shoot by Israeli occupation forces .
8. We recommend that the health and medical practitioners, should use the neural networks models for the classification of cardiovascular disease cases in the Gaza Strip because of their efficiency in prediction and their low error rates and hedge against potential risks in medical matters.

Coronary Artery Disease Nutritional Assessment Among Adult Population In Gaza Strip, Hospital Based Case-Control Study

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Abstract

This study aimed to assess the nutritional status of coronary arteries patients, and to identify the most common coronary artery disease (CAD) risk factors among adult population in Gaza Strip.

The design of the study is a case-control hospital based one and was carried out at the cardiac catheterization unit of the European Gaza Hospital (EGH). The study sample included 130 cases with different age groups above 30 years, who were diagnosed as having CAD, and matched with age and sex to 130 controls who were taken from the noncardiac outpatients clinics. Data were collected through direct and indirect methods using measurement of biomedical information and a structured interviewed questionnaire, respectively.

The study revealed that, the most common modifiable risk factors were physical inactivity, obesity, hypertension, diabetes mellitus, hypercholesterolemia, low HDL-c levels, high triglycerides, and smoking. All these factors were positively and significantly associated with the development of CAD. In contrast to other studies, we conclude that the higher educated subjects have a higher risk to develop coronary arteries defects than the lower educated subjects, whereas, the most common non-modifiable risk factors were age 50 years and more, sex, family history of CAD. Regarding food intake, there was a good awareness and commitment from coronary arteries patients towards a relatively healthy intake of bran (whole grains), desserts, eggs, fish, fruits and vegetables, legumes, nuts, rice (refined cereals), salty foods, soda beverages, and vegetable oils, whereas, those patients followed unhealthy intake of coffee, green tea, lean red meat trimmed from visible fat, sweetened fruit juice.

Results highlighted serious issues that need a community-based intervention programs integrated to school health and health education programs. Clients with the identified risk factors need more attentions and follow up; also, clients must continuously encouraged and reinforced to consume a healthy diet in order to decrease morbidity and mortality from CAD.

Keywords: *Coronary artery disease, nutritional status, risk factors, morbidity, Gaza Strip.*

Conclusion & Recommendations

Conclusion

1. Coronary artery disease can be preventable in many cases; because most of the risk factors are modifiable.
2. The most common modifiable risk factors were physical inactivity, obesity, hypertension, diabetes mellitus, hypercholesterolemia, low HDL-C levels, high LDL-C, high triglycerides, and smoking. All these factors were positively associated with the development of CAD.
3. Higher educated subjects have a higher risk to develop coronary arteries defects than the lower educated subjects.
4. The most common non-modifiable risk factors were age 50 years and more, sex, family history of CAD.
5. Regarding food intake, we revealed good awareness and commitment from coronary artery patients (during the period that elongated from the newly diagnosis of them as having coronary arteries defects till they have come to the CCU for coronary angiography, which was the period of data collection) towards a relatively healthy intake of bran (whole grains), desserts, eggs, fish, fruits and vegetables, legumes, nuts, rice (refined cereals), salty foods, soda beverages, and vegetable oils, whereas, those patients followed unhealthy intake (wrong nutritional conceptions) of coffee, green tea, lean red meat trimmed from visible fat, sweetened fruit juice. Either these risk factors may work independently or interaction may take place between one and another.

Recommendations

1. Preventive strategies should be established on the basis of community-wide health education programs and focus on children, the community, or the workplaces about cardiovascular disease risk factors.
2. Adopt the consumption of a healthy diet which is high in fruits, vegetables, fish, whole grains, nuts, legumes, monounsaturated fatty acids and polyunsaturated fatty acids, and low in refined grains, salty or sugary foods, as well as low in saturated and trans fatty acids.
3. Monitor tobacco consumption trends in vulnerable groups such as children and adolescents.
4. Research on tobacco control should be undertaken to estimated the prevalence of regular tobacco use in the community.
5. Antismoking campaign in public places and work sites should be implemented in order to reduce the impact of passive smoking on the target population.
6. Maintain a healthy body weight.
7. Research on the control of hypertension should be undertaken to estimate the distribution of high blood pressure and the prevalence of hypertension in the community.

8. Research should be undertaken to estimate the prevalence and distribution of dyslipidemia and diabetes mellitus.
9. Cholesterol screening programs to be implemented in high schools, universities, and even at work sites to evaluate and determine the high-risk group.
10. Cardiovascular disease family history screening programs especially in universities.
11. Counseling should be implemented from physicians, clinical nutritionists, and other health care providers to increase and or promote the patient's awareness about the CVD risk factors and adopt the intake of a healthy diet.

Dietary Magnesium Intake Related to C - Reactive Protein in Newly Diagnosed Coronary Heart Disease Patients at Middle Zone, Gaza Strip. A Hospital Based Study

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Abstract

Introduction: Coronary Heart Disease (CHD) is a highly prevalent disease all over the world. It is considered as a multifactorial disease associated with hereditary, unhealthy dietary habits, obesity, smoking and physical inactivity. Magnesium (Mg) play a role in CHD but still unclear. C-Reactive Protein (CRP) is an inflammatory marker may rise in CHD.
Goal of the study: To study the impact of dietary Mg intake and its level in relation to CRP among newly diagnosed CHD at middle zone of Gaza Strip.

Materials and methods: A case-control study was consisted of 140 participants, conducted in Al-Aqsa martyrs' hospital at the middle zone of Gaza Strip. Food Frequency Questionnaire was used to assess intake of dietary Mg. Anthropometric measurements were done included weight, height, waist circumference, body mass index, and waist to height ratio. Magnesium and calcium were detected by colorimetric methods in the serum of cases and controls. CRP latex slide test is used for measurement of CRP. SPSS software was used to analyze the obtained data.

Results: Dietary magnesium intake and serum Mg was inversely associated with development of CHD. There was statistically significant difference ($P = 0.001$) between cases and controls in the mean of serum Mg among cases (1.80) was found to be lower than controls (2.41). There was statistically significant differences ($P = 0.005$) between cases and controls in the percent of positive CRP that was higher in cases (32.9%) than controls (12.9%). There was inverse relationship between Mg and CRP that the mean of serum Mg was (1.96 ± 0.47) for positive CRP which was lower than the mean of serum Mg (2.15 ± 0.44) for negative CRP.

Conclusion: Newly diagnosed patients with CHD have a positive CRP, low serum and low dietary magnesium intake, and low serum magnesium was associated with elevated CRP.

Key words: Coronary heart disease, C - reactive protein, magnesium, dietary behavior, waist circumference, life style

Conclusion & Recommendations

Conclusion

The study concluded the following:

1. Inadequate dietary Mg intake was inversely associated with the development of CHD.
2. There was a direct relationship between “Positive” CRP and the development of CHD.
3. There was a relationship between low serum magnesium and elevated CRP.
4. There was relationship between gender and CHD events, that male was twice as female.
5. Advancing in age may associate with increased risk for development of CHD.
6. There was inverse association between education level, income, employment and risk for CHD, and direct relationship with family members, crowded housing, active smoking, passive smoking, low physical activity, intake of coffee, lamb chop, chicken, sugar, fatty food and family history of hypertension, high blood cholesterol, heart disease, obesity and diabetes mellitus.
7. There was no relationship between development of CHD, tuna consumption and family history of some other diseases included cancer, gastrointestinal disease, allergies, asthma and psychological disorders.
8. There were inverse association between CHD and consumption of vegetables, fruits, whole grains, nut, seeds, legumes, dairy products and cacao.
9. There was a relationship between increased waist circumference (WC) and increased body mass index (BMI) and risk for CHD . Waist to height ratio was more indicative for risk of CHD than BMI.
10. Hypocalcaemia was a significant sign of hypomagnesaemia.

Recommendation

CHD is considered as a serious health problem, associated with many factors, so the researcher summarized the following recommendations:

Recommendation to policy makers

1. Physicians recommended to include testing of serum Mg, CRP and Ca with lipid profile in the periodic checkups.
2. Intensify the training and educational programs for risky people of CHD taking in consideration the role of family history, gender, age, active smoking, passive smoking, physical inactivity and low intake of healthy food.
3. Interactive Educational programs may adopted by governmental and the Non-Governmental Organizations (NGOs) to maximize knowledge related to importance of healthy life style and dietary habits. Those programs may accompanied with practical interventions including establishment of free sport clubs for both genders and offering rewards for the enterprisers of healthy life style and dietary habits.
4. Rely on Weight to Height Ratio instead of Body Mass Index in determination of CHD Risk

Recommendation to community

People should adopt a healthy life style and eat a healthy food to minimize the risk for development of CHD that can be applied by adhering to the following:

1. Increase intake of vegetables, fruits, whole grains, whole meal bread, legumes and moderate intake of low salted raw seeds and nuts which are rich in magnesium.
2. Decrease intake of saturated fat found in fast food, falafel, red meat, chicken and dairy products. Also, decrease consumption of coffee and sugar.
3. Routinely monitor weight and manage overweight and obesity as early as possible.
4. Regularly exercise at least one hour for three days per week.

Recommendation to researchers

1. To conduct further researches in this field using more specific test such as hs-CRP and 24-hour urinary magnesium excretion.
2. To conduct study on large-scale sample as national survey.

Risk Factors of Cardiovascular Disease among Children with Chronic Kidney Disease in Gaza strip

by

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Abstract

Background: Chronic kidney disease (CKD) is increasingly recognized as a global public health problem. Cardiovascular disease (CVD) is a major cause of mortality in patients with mild to moderate CKD and end-stage renal disease (ESRD). There is accumulating evidence that the increase in CVD burden is present in CKD patients prior to dialysis, due to both conventional risk factors as well as those specific to kidney disease. Detection and initiation of treatment for CVD risk factors at earlier stages of CKD should be effective in reducing CVD events both before and after the onset of kidney failure.

Aim of the study: this study aimed to assess a group of traditional CVD risk factors including, hypertension, diabetes, dyslipidemia, physical inactivity, body mass index (BMI), family history of CVD, and CKD-specific CVD risk factors including, hypo albuminemia, albuminuria, anemia, Ca x P product, and inflammation (C-reactive protein), in CKD patients in Gaza strip, aged ≤ 12 years old and haven't undergone kidney replacement therapy.

Methods: Patients of the study (40 male and 20 female) were categorized into 4 stages (2, 3, 4, and 5) where stage 1 was not encountered. Stage 4 had the highest distribution, followed by stage 3, stage 5 and stage 2.

Results: There were statistically significant differences between patients and controls in the terms of height, weight, systolic blood pressure (SBP), and diastolic blood pressure (DBP), where the mean values indicated that the patients were shorter, had lower weight, higher SBP and DBP with 47% of the patients having hypertension. Frequency of physical inactivity among patients was 2-fold higher as compared to controls (50% vs. 25%). As compared to controls, patients had significantly higher means of cholesterol (163.6 ± 39.8 vs. 141.8 ± 24.2 mg/dl, $p=0.001$), triglycerides (145.5 ± 67.1 vs. 82.9 ± 39.8 mg/dl, $p=0.000$), Low density lipoprotein (LDL) (92.6 ± 31.9 vs. 72.5 ± 19 mg/dl, $p=0.000$), and they had lower means of high density lipoprotein (HDL) (41.9 ± 11.0 vs. 52.7 ± 11.7 mg/dl, $p=0.000$). As compared to controls, patients had significantly lower hemoglobin (9.8 ± 1.4 vs. 11.9 ± 0.8 g/dl, $p=0.000$),

albumin (4.6 ± 0.6 vs. 4.8 ± 0.2 g/dl, $p=0.012$) and higher albumin/creatinine ratio (ACR) (1792 ± 3183 vs. 11.1 ± 6.6 mg/g, $p=0.000$). C- reactive protein (CRP) showed high occurrence among patients (40% were positive for CRP). Calcium and phosphorus evaluation showed significantly lower calcium and higher phosphorus among patients. However, Ca X P product was not statistically significant in patients compared to controls (52.4 vs. 53.4 mg²/dl², $p= 0.582$).

Conclusion: This study indicates that many of the CVD risk factors are associated with different stages of CKD in children patients prior to dialysis, and that these factors are exacerbated as CKD progresses.

Key words: *Chronic kidney disease, Cardiovascular disease, Cardiovascular risk factors, Children, Gaza strip.*

Conclusion

Chronic kidney disease, with its high burden of CVD risk factors, represents an important public health concern. The identification of an individual with CKD should alert the practitioners to a large underlying burden of potentially modifiable CVD risk factors.

The study showed a significant association between a number of CVD risk factors and CKD, such CVD risk factors include hypertension, dyslipidemia (increased total cholesterol, triglycerides, LDL, and decreased HDL), physical inactivity, anemia, albuminuria, hypoalbuminemia, and inflammation. This positive association was shown in all stages of CKD prior to dialysis.

Some CVD risk factors revealed progressive nature such as hypertension, physical inactivity, dyslipidemia, and anemia, since these factors were increased as CKD progressed.

Other studied CVD risk factors, including obesity, and family history of CVD, did not show statistically significant association with CKD in the patients of the study.

Although, Ca X P product showed no statistical significant association with CKD in the study population, the patients showed significantly lower total calcium and higher phosphorus as compared to the controls.

Other studied CVD risk factors were not present in the study population such as: Diabetes, obesity.

Recommendations

1. Patients with CKD should be classified into stages according to the NKF-KDOQI and routinely tested for GFR and ACR levels to observe the progression of the disease.
2. Regular evaluation of CVD risk factors in CKD patients is needed for early diagnosis of these risk factors.
3. Aggressive management of CVD risk factors, especially modifiable risk factors such as: hypertension, anemia, dyslipidemia, and physical inactivity in early stages, is important in controlling the disease progression and may reduce the CVD events.
4. Increase attention to CVD events, even at early stages of CKD, not only by nephrologists, but more importantly by cardiologists and the general medical community.
5. Encourage the general physician for early referral of the patients with primary kidney deterioration to the nephrology centers will enable early prevention of CVD.
6. Increase awareness of CKD and its complications and methods of control and prevention, on the level of public community, is important in reducing its adverse consequences.
7. Further studies are needed to investigate other emerging cardiovascular risk factors, such as homocysteinaemia, High sensitivity C-reactive protein, lipoprotein (a), and oxidative stress. Ultrasonographic measurements such as the measurement of increased intima-media thickness (IMT) of large arteries, is important as early marker and sensitive predictor of CVD events in CKD patients.
8. Large study is needed for measurement of BMI of our children in pediatric age, since the majority of the study subjects were underweight.
9. Regular reporting and documentation on the incidence and prevalence of CKD, especially in children are needed in our community.

Assessment of *Helicobacter pylori* Infection as a Risk Factor for Coronary Artery Disease in Gaza Strip

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Abstract

Background: Coronary artery disease (CAD) is a common form of cardiovascular disease (CVD). It caused by atherosclerosis, which restricts blood flow to the heart, and when the blood flow completely cut off, the result is heart attack. Cardiovascular disease remains the leading cause of death in the world as well as in Palestine. *Helicobacter pylori* (*H. pylori*) infection believed to be associated with CAD.

Objective: Assessment of *H. pylori* infection as a risk factor for CAD in Gaza strip.

Material and methods: This case-control study comprised 62 CAD patients (Cases: 31 males and 31 females) and 62 healthy controls (31 males and 31 females). Questionnaire interview was applied. Blood samples were collected, processed and analyzed. Serum *H. pylori* IgG, cholesterol, triglycerides, low density lipoprotein cholesterol (LDL-C), high density lipoprotein cholesterol (HDL-C), aspartate aminotransferase (AST), lactate dehydrogenase (LDH), creatinine phosphokinase (CK) and creatinine phosphokinase MB (CKMB) were determined. White blood cell (WBC), red blood cell (RBC), hemoglobin (Hb) and platelet (PLT) were also determined. Data were analyzed using SPSS version 18.0.

Results: Coronary artery disease was more prevalent among less educated and unemployed individuals, families with low income, individuals with family history of the disease as well as among smokers. The number of cases who had diabetes mellitus, hypertension and peptic ulcer was significantly higher than that of controls. The BMI was significantly higher in cases compared to controls (31.7 ± 4.8 vs 27.6 ± 4.4 , % difference=13.8 and $P=0.000$). There were significant elevations in the activities of serum AST and LDH in cases compared to controls (36.3 ± 24.5 and 540.8 ± 310.7 U/L vs 18.6 ± 6.0 and 321.3 ± 66.1 U/L, % difference=64.5 and 50.9, respectively $P=0.000$). Similarly CK and CKMB activities were higher in cases (225.7 ± 216.1 and 22.7 ± 15.5 U/L vs 101.2 ± 50.0 and 11.4 ± 4.9 U/L, % difference=76.2 and 67.8, respectively $P=0.000$). The levels of cholesterol, triglycerides and LDL-C were found to be higher in cases (208.9 ± 47.6 , 218.0 ± 110.1 and 131.6 ± 41.9 mg/dl, respectively) compared to controls (174.8 ± 34.1 , 167.4 ± 57.7 and 104.4 ± 31.2 mg/dl, %

differences of 17.8%, 26.3%, and 23.1 and $P=0.000$, $P=0.001$, $P=0.000$ respectively). On the other hand, the level of HDL-C was significantly lower in cases (33.7 ± 9.8 vs 37.6 ± 8.4 mg/dl, % difference=10.9, $P=0.020$). The WBC count was significantly higher in cases compared to controls (9.80 ± 3.3 vs $7.8 \pm 1.6 \times 10^9/L$, % difference 22.7, $P=0.000$), whereas RBC count, hemoglobin content and PLT count did not show significant differences between cases and controls ($P>0.05$). The prevalence of *H. pylori* among CAD patients 46 (74.2%) was significantly higher than controls 26 (41.9%) with $P=0.000$. When related to *H. pylori*, serum triglycerides was significantly increased in *H. pylori* positive cases more than in negative cases (235.8 ± 112.8 vs 166.6 ± 85.7 mg/dl, $P=0.029$), whereas HDL-C level was significantly lower in positive cases (31.7 ± 8.0 vs 39.5 ± 12.3 mg/dl, $P=0.005$).

The WBC count was significantly higher in positive compared to negative cases (5.01 ± 3.1 vs 7.9 ± 205 $P=0.007$).

Conclusions: *H. pylori* infection was significantly higher in CAD patients compared to controls. *H. pylori* infection was associated with higher triglyceride levels and WBC count, and lower HDL-C levels, and. Therefore, monitoring of *H. pylori* infection as a possible risk factor of coronary artery disease is of clinical value.

Keywords: *Helicobacter pylori*, coronary artery disease, Risk factor, Gaza Strip.

Conclusions & Recommendations

Conclusions

1. Coronary artery disease was more prevalent among less educated and unemployed individuals, families with low income, individuals with family history of the disease as well as among smokers.
2. The number of cases doing exercise was significantly lower than controls. However, the number of cases who followed diet was significantly higher than controls.
3. The number of cases who had diabetes mellitus, hypertension and peptic ulcer was significantly higher than that of controls.
4. The BMI was significantly higher in cases than controls.
5. The activities of cardiac enzymes AST, LDH, CK and CKMB were significantly elevated in cases compared to controls.
6. The levels of cholesterol, triglycerides and LDL-C were significantly higher in cases compared to controls, whereas the level of HDL-C was significantly lower in cases.
7. The white blood cell count was significantly higher in cases compared to controls.
8. The prevalence of *H. pylori* in CAD patients was significantly higher than in controls.
9. When related to *H. pylori*, serum triglycerides levels were significantly increased in *H. pylori* positive cases than in negative cases, whereas HDL-C level was significantly lower in positive cases.
10. The WBC count was significantly elevated in *H. pylori* positive cases compared to negative cases.

Recommendations

1. Frequent monitoring of *H. pylori* infection as a risk factor of coronary artery disease.
2. Estimation of lipid profile and WBC count is recommended to avoid the deleterious effect of *H. pylori* infection associated with CAD.
3. Quitting smoking and doing exercising are recommended to decrease the risk of CAD, particularly in persons with family history of the disease.
4. Further research is highly recommended on the role of *H. pylori* in pathogenesis mechanism of CAD and *H. pylori* infection among other chronic diseases.

Assessment of Apolipoprotein C- III as A predictor of Cardiovascular Diseases among Type 2 Diabetic Men in Gaza Strip

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Abstract

Background: Diabetes mellitus is one of the most important risk factors for cardiovascular diseases. Apolipoprotein C-III (apo C-III) is a multifunctional protein that not only regulates the metabolism of triacylglycerols but also an important regulator of endothelial function. In the presence of hyperlipidemia, apo C-III exerts proinflammatory effects on both monocytes and endothelial cells that are important for transendothelial migration of monocytes into the vessels' intima and development of atherosclerosis.

Objectives: To investigate the prognostic value of plasma apo C-III concentrations for cardiovascular complication among Type 2 Diabetes mellitus (T2DM) patients in Gaza strip.

Subjects and methods: This study is a case-control study; a total of 89 male of T2DM were evaluated and classified into two groups according to heart disease [52 of T2DM patients without heart disease and 37 with heart disease] and equal number of normal subjects (n=89) were run in parallel with each group as a control. Apo C-III and apoA1 were measured using immunoturbidimetric methods. Glucose, creatine kinase (CPK), creatine kinase MB (CK-MB), aspartate aminotransferase (AST), Lactate aminotransferase (LDH), cholesterol, triacylglycerols (T.G) and, HDL-C were measured using colorimetric and kinetic method and low density lipoprotein (LDL-C) was calculated using the empirical relationship of Friedewald.

Results: The concentration of apo C-III, glucose, LDL, cholesterol, triacylglycerols, apoA1, LDH, AST, CPK and, CK-MB were significantly increased among T2DM patients ($P < 0.05$). There was positive correlation between apo C-III and plasma triacylglycerols in T2DM patients compared with control ($r = 0.755$, $p < 0.001$ and $r = 0.426$, $p = 0.001$ respectively). Also, there were positive correlation between apo C-III and glucose, cholesterols, AST and apoA1 among T2DM patients ($r = 0.238$, $p = 0.012$, $r = 0.340$, $p = 0.001$, $r = 0.237$, $p = 0.013$, $r = 0.242$, $p = 0.011$ respectively). There was statistically significant difference between apo C-III ($p < 0.05$) in the two cases groups of T2DM (with/without heart disease) and between the obese and non-obese T2DM patients. There was significant difference between apo C-III and insulin treatment ($p < 0.05$), while no significant difference was found between lipid-lowering drug and apo C-III.

Conclusion: High level of Apo C-III and low level of apoA1 concentration in plasma, independently of fasting triacylglycerols and other traditional risk factors, predicts cardiovascular mortality among T2DM patients.

Keywords: *apolipoprotein C-III, cardiovascular disease, type 2 Diabetes mellitus, triacylglycerol-rich lipoproteins, dyslipoproteinemia, Gaza strip.*

Conclusions

The findings of this study reflect the importance of apolipoprotein C-III as non-invasive tests to find T2DM patients who are at risk to develop CVD. The current study showed that concentration of apo C-III level in 89 T2DM patients were significantly elevated, and may play a role in prognosis of CVD complication. So estimation of this marker is of interest for management and follow-up of such patients.

1. Significant difference was found in the means of biochemical parameters between the patients and control groups.
2. Obesity and overweight were found to be significantly associated with diabetes, as they considered as risk factors for T2DM.
3. Significant correlation was found between apo C-III and glucose, cholesterol, triacylglycerol, apoA1 and AST.
4. The mean of apo C-III in T2DM and T2DM+HD patients were higher than controls, and the mean of apo C-III in T2DM patients is higher than in T2DM+HD, which consider risk factor for CVD.
5. Hypertension is one of the risk factor for CVD, which play a role for accelerating CAD.
6. The mean of triacylglycerols in T2DM patients is higher than T2DM+HD, which may increase the risk of CVD complication among those patients.
7. Higher concentration of apo C-III was found among T2DM patients who suffered from diabetes for less than 5 years than T2DM patients who suffered from diabetes for more than 5 years.
8. The mean of apo C-III in obese diabetes was higher than non-obese diabetes.
9. Apo AI is significantly decreased among T2DM patients more than controls.

Recommendations

1. There is a need to improve the diabetic patients' and general populations' awareness of diabetic complications, cardiovascular risk factors and the importance of lifestyle modifications. This could be achieved by improving patients' counselling by health care, or through campaigns and media to aware general populations.
2. In the MOH and UNRWA diabetes clinics, only glucose, triacylglycerols and, cholesterol are used to evaluate diabetic patients. Other important measures as apo C-III and apo A1 are recommended to be measured.
3. Measurement of LDL and HDL are not applied to screening T2DM in the MOH and UNRWA diabetes clinics, thus those test should be used as routine for screening all patients under risk of CVD.

4. Sustainable availability of expensive dyslipidemia medications are rarely achieved in MOH and never in UNRWA. So we recommend more attention from the decision makers about the problem of dyslipidemia in diabetic patients and the availability of medications.

Recommendations for future research

1. Further research is needed to investigate the changes in the different variables and apo C-III among T1DM patients.
2. Further research is needed to investigate the changes in the different variables and apo C-III among female T2DM patients.
3. Investigate the effect of apo C-III on the gestational DM for pregnant women and influencing factors during pregnancy.
4. Study the effect of lower hypoglycemic, lowering lipid agent and insulin on apo C-III levels.

Risk Factors of Hypertension at UNRWA Primary Health Care Centers in Gaza Governorates: Case Control Study

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Abstract

Universally, hypertension is one of the most prevalent and powerful contributors to the development of serious and potentially fatal complications, thus causing considerable human suffering and normous health care costs. The purpose of this study is to help filling a critical gap in the research literature by establishing baseline information for hypertension risk factors among UNRWA adults refugee population in Gaza Strip in order to provide recommendations for future interventions.

The study design is a case control study conducted at the main UNRWA health care NCDs services in five localities in Gaza Governorates (three large clinics and two small ones).

The study sample included 120 cases with different age groups 30 years or more, who were newly diagnosed as having hypertension in the year 2009-2011, and matched with sex, and locality to 120 controls who were chosen among attendance of the same medical centers from NCDs screening clinics. Data was collected by a self-constructed face-to-face interviewed questionnaire. Anthropometric measurements, physical examination, and lab tests were abstracted from patient's file. The data was analyzed by using SPSS program version 13.0. Odds ratio, P. value, chi square, and independent sample t-test were statistical tools of measurement of association.

The study revealed that, the most common modifiable risk factors of hypertension were physical inactivity (72.5% among cases vs. 14.2% among controls), obesity (67.5% vs. 29.2%), diabetes mellitus (19.2% vs. 7.5%), diabetes hypertension (19.2% vs. 0%), high-low density lipoprotein (10.4% vs. 6.5%), hypercholesterolemia (8.3% vs. 6.5%), low- high density lipoprotein (38.3% vs. 0.9%), high triglyceride level (16.8% vs. 1.9%), and smoking (8.3% vs. 16.7%). All these factors were associated with hypertension. Whereas, the most common non-modifiable risk factors were age, sex and family history. The study illustrated a strong positive relationship between the presence of family history and the development of the disease.

On other hand, regarding food intake, the study revealed that, there was a good awareness of hypertensive patients towards healthy intake of fruits, desserts, tea and coffee, and white meat, whereas, those patients followed unhealthy intake (wrong nutritional conception) of milk/products, grains, vegetables, eggs, fish, lean red meat trimmed from visible fat, legumes, soft drinks, fried and salty food. The study showed most if not all of the identified hypertension risk factors could be preventable. These results may highlight the problem as a public in nature that need community-based intervention programs integrated with health promotion programs.

Conclusion

From our results we conclude that:

1. Hypertension disease can be preventable in many cases; because most of the risk factors are modifiable.
2. The most common modifiable risk factors were physical inactivity, obesity, DM, hypercholesterolemia, low HDL-c, high LDL-c, high TG, and smoking. All these factors were associated with the development of HBP.
3. There was a good awareness and commitment from hypertensive patients towards a relatively healthy intake of fruits, desserts, tea and coffee, and white meat, whereas, those patients followed unhealthy intake of milk/products, grains, vegetables, eggs, fish, lean red meat trimmed from visible fat, legumes, soft drinks, fried food, and salty food.

Recommendations

1. Health systems need to be reoriented to accommodate the needs of chronic diseases prevention and control.
2. Counseling and careful communication should be implemented from physicians to educate the patients about hypertension risk factors and their role in controlling their BP particularly in issues related to dietary treatment and other non-pharmacological lifestyle measures.
3. Preventive strategy to integrate healthy lifestyle into the community approach to primary prevention should start early among school students, to combat the bad behavioral habits, to emphasize on the importance of physical activity, and encourage walking and bicycling for transportation and alleviation of deleterious psychosocial factors related to hypertension.
4. Establishing a National Task Force to control and treat obesity. Increase public awareness about the health risks of being overweight and obese, how to achieve a healthy weight, how to prevent inappropriate weight gain, and about methods of obesity measurement.
5. Healthier food choices toward reducing intake of fat, protein, and simple carbohydrate, and encourage the intakes of vitamins, minerals, and fiber are among the critical risk behaviors being addressed. Highlight to the public the role of diet in causing and preventing diet-related chronic disease.
6. screening programs should be implemented in schools, universities, and at work places to determine high-risk group. Treatment of potential abnormalities of lipid and lipoprotein all together in addition to other risk factors supported by community awareness and education campaign.
7. Efforts by policy makers are critically important to enhance health awareness and public education to prevent or delay the onset of type 2 diabetes through a healthy lifestyle, change diet, increase level of physical activity, maintain a healthy weight, and check BP on a regular basis.
8. Antismoking campaign to prevent smoking in homes, public places and work sites should be implemented to reduce the harm of SHS.

Risk Factors of Congenital Heart Disease Among Infants in South of Gaza Strip (Case-control study)

By

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Abstract

CHDs are the most common lethal isolated birth defects among infants. Globally, CHDs accounts for 30 - 45% of all congenital malformation. This study is case-control, aimed to identify the risk factors that contribute to CHD among infants in the southern of GS. The study sample consisted of 200 mothers, 100 cases (have an infant with CHD) and 100 controls (have healthy infants), mothers' age of cases ranged between 18 – 45 years old ($m = 27.840 \pm 6.439$) vs. 18 – 39 years old ($m = 26.230 \pm 3.910$) for controls. Study participants were selected using convenience method, from those who attended pediatric cardiology clinic at EGH and KMC. For data collection, constructed questionnaire was used via face to face interview with mothers at pediatric clinic. The results of the study showed that there was no association between infants gender and CHDs ($P = 0.888$). Infants' admission to ICU was higher among cases compared to controls (41% and 9% respectively). Mothers' age (34 and lower) when delivered current infant was a significant protective factor [OR 0.107, 95% CI (0.024 – 0.480) $P = 0.001$], but marriage age, age at first delivery and mothers' level of education) were not statistically significant as risk factors. Significant associations were found between CHD and unemployment ($P = 0.046$), and living in asbestos house ($P = 0.003$). Regarding heredity / family factor: consanguineous marriage [OR 2.251, 95% CI (1.278 – 3.964) $P = 0.005$], family history of cardiac anomalies [OR 9.333, 95% CI (2.086 – 41.770) $P = 0.001$] were significant positive risk factors, while history of other congenital malformations was not statistically significant. . Concerning maternal factors; significant positive associations with CHD were noticed with anemia during pregnancy [OR 4.163, 95% CI (2.223 – 7.798) P value = 0.000], recurrent genital infection [OR 5.667, 95% CI (2.887 – 11.124) $P = 0.000$], acute health problems during pregnancy [OR 6.655, 95% CI (3.345 – 13.238) $P = 0.000$], and having chronic disease [OR 2.053, 95% CI (1.777 – 2.371) $P = 0.024$] while nonsignificant associations were observed in body weight. Regarding health practices, significant positive association was noticed between CHD and; number of antenatal visits [OR 2.190, 95% CI (1.022 – 4.693) $P = 0.041$] and consuming medication during pregnancy [OR 6.682, 95% CI (1.455 – 30.685) $P = 0.006$], while significant negative association was noticed with taking folic acid during first trimester [OR 0.252, 95% CI

(0.103 – 0.619) $P = 0.002$] and nonsignificant association found with using family planning methods. Regarding environmental factors, exposure to either X-ray and ultrasound were non-significant risk factors, on the other hand, significant positive associations with CHD were observed with exposure to explosive materials [OR 21.732, 95% CI (2.840 – 166.268) $P = 0.000$], exposure to pesticides [OR 3.149, 95% CI (1.535 – 6.460) $P = 0.001$], and exposure to environmental pollutions [OR 9.242, 95% CI (4.565 – 18.708) $P = 0.000$]. The study concluded that CHD is a serious birth defect and a leading cause of death among infant. Many factors contribute to its occurrence, and part of these factors are modifiable Risk factors that could be modified include consanguinity, maintaining balanced diet during pregnancy to maintain normal levels of hemoglobin, and avoid exposure to hazardous environmental materials.

Conclusion and Recommendations

Conclusion

This study was conducted to identify the most common risk factors that contribute to the development of CHDs among infants in southern of GS. Data was collected from mothers who attended pediatric cardiology clinic in Nasser Medical Complex and European Gaza Hospital. The risk factors were categorized into socio-demographic factors, maternal factors, family history, health practices, and environmental factors. The findings of the study might help decision-makers to act toward planning and implementing interventions that help in reduction of risk factors to alleviate or decrease the chances for developing CHDs to the lowest possible level.

The study sample consisted of 200 mothers, divided equally into two groups, 100 for case group (have an infant with CHD) and 100 for control group (have healthy infants). Age of mothers in the case group ranged between 18 – 45 years old ($m = 27.840 \pm 6.439$) and age of mothers in the control group ranged between 18 – 39 years old ($m = 26.230 \pm 3.910$).

The results showed that 51% of infants who have CHD were males and 49% were females and that infant's gender was not a risk factor for developing CHDs (P value = 0.888). Among infants who have CHD 41% were admitted to ICU compared to 9% of infants who do not have CHD, which indicated significant positive association between CHD and admission to ICU (p value = 0.000).

Marriage age and mothers' age at first delivery were not significant risk factors for developing CHD, P value (0.887 and 0.197 respectively), while age (35 and above) at delivering current infant was significant risk factor (P value = 0.001). In addition, mothers' level of education was not a risk factor for CHD (P value = 0.460), working mothers were less likely to have babies with CHDs, and mothers who live in asbestos house are at higher risk of having a baby with CHD (P value = 0.003).

Heredity and family factors

The results showed significant positive association between consanguineous marriage and CHD, and that mothers who were married to a relative husband are two-folds at higher risk of having a baby with CHD compared to mothers married to strangers (P value = 0.005).

Also, the results indicated that mothers who have history of cardiac anomalies are 9.3 times at higher risk of delivering a baby with CHD (P value = 0.001), and that mothers who have previous babies with other types of congenital anomalies are at 2 times at higher risk of having a baby with CHD.

Maternal factors

The results showed that mothers who were overweight and obese are 1.2 times at higher risk of having a baby with CHD, but this association was not statistically significant (P value = 0.470). Hemoglobin level is considered a risk factor, as the results indicated statistically significant positive association between hemoglobin level during pregnancy CHD, which means that mothers' who were anemic (Hgb 10 gm and less) during pregnancy are 4-times at higher risk of having a baby with CHD compared to mothers with normal hemoglobin during pregnancy (P value = 0.000). Regarding infections, the results revealed that recurrent genital infection was significant risk factor for CHD (P value = 0.000). Additionally, there was statistically significant association between acute health problems during pregnancy and CHD, and that mothers who had acute health problems during pregnancy are 6.6-times at higher risk of delivering a baby with CHD (P value = 0.000). Among these disorders, vaginal infection was the dominant (15%) among cases and (5%) among controls, followed by anemia (11%) and PIH (7%). Regarding chronic diseases (hypertension and Diabetes mellitus), the results indicated statistically significant association between chronic disease and CHD, and that mothers who have chronic disease are 2-times at higher risk of having a baby with CHD compared to mothers who do not have chronic disease (P value = 0.024).

Health practices

The results indicated statistically significant positive association between antenatal visits and CHD (P value = 0.041). Regarding medication, the results showed statistically significant positive association between consuming medication and CHD, and that mothers who consumed non-prescribed medication during pregnancy were 6.6-times at higher risk of having a baby with CHD (P value = 0.006). On the other hand, there was negative association between consumption of folic acid during the first trimester of pregnancy and CHD, and that folic acid was a significant protective factor (P value = 0.002). In addition, using family planning methods was not significant risk factor (P value = 0.252).

Environmental factors

The results indicated nonsignificant association between exposure to either X-ray (P value = 0.174) or ultrasound (P value = 0.700) and CHD. Regarding exposure to hazardous materials, the results revealed statistically significant positive association between exposure to explosive materials and CHD, and that mothers who were exposed to explosive materials were 21.7-times at higher risk of giving birth to a baby with CHD (P value = 0.000), also, there was statistically significant positive association between exposure to pesticides and CHD, which means that mothers who were exposed to pesticides were 3-times at higher risk of delivering a baby with CHD (P value = 0.001). In addition, the results showed statistically significant positive association between exposure to environmental pollution and CHD,

which means that mothers who were exposed to environmental pollution (air, water, wastes) were 9-times at higher risk of delivering a baby with CHD (P value = 0.000).

In conclusion, the results of the study indicated that significant risk factors were associated with development of CHD, and part of those factors could be controlled or modified to decrease the chance of delivering a baby with CHD. Factors that could be modified include consanguineous marriage, having good balanced diet during pregnancy to maintain normal levels of hemoglobin, and avoid exposure to hazardous environmental materials.

Recommendations

In the light of the study results, the researcher suggests the following recommendations:

1. Developing and implementing health education program regarding risk factors that contribute to CHD occurrence, to increase public awareness of this problem and work toward modifying these factors including (consanguinity, dietary intake, non-prescribed medication).
2. Instruct pregnant women to avoid exposure to hazardous materials at home including pesticides and organic solvents.
3. Keep frequent, regular visits to antenatal clinics to monitor and follow-up pregnancy.
4. Keep accurate, updated registry of family health history as a base ground information in each health center, and use these records to build a health map for registered families.
5. Use media, especially internet and TV programs to increase public awareness regarding risk factors that contribute to CHDs.
6. Instruct the pregnant women to maintain cleanliness and hygienic practices to avoid infections, especially vaginal and urinary tract infection.
7. Frequent checkup of hemoglobin levels at the beginning of pregnancy and monthly.
8. Emphasize the role of folic acid as a protective factor, instruct pregnant women to take folic acid during first trimester, on the other hand, avoiding consuming medications without prescription from a physician.
9. Establish CHD registry at MOH to maintain accurate records of incidence and prevalence of CHD in Palestine.
10. To include fetal cardiac evaluation as a component of regular antenatal care.

5.3 Suggestions for further studies

1. Conduct a study about incidence and prevalence of CHDs in Palestine.
2. Conduct a study to clarify the role of explosive materials in development of CHDs, especially in GS which is considered a war zone due to Israeli frequent attacks against Gaza.
3. Conduct longitudinal studies to follow the medical management, health progress, and mortality among infants who have CHD.
4. Perform KAP studies regarding risk factors of CHD, these studies should include different strata in the society.

Quality Of Life among Patients with Ischemic Heart Diseases In Gaza City: Cross Sectional Study

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Abstract

Ischemic heart disease (IHD) is considered the leading cause of death in our country. It is classified as a disabling disease, so the quality of life (QOL) for patients who have this disease is negatively affected. This study aims to investigate the perceptions of IHD patients in Gaza city regarding their QOL, and the factors influencing their life conditions, so findings may contribute in making their lives better.

A quantitative cross-sectional study was conducted, by using a new self constructed questionnaire which focuses on a new aspect of QOL (like lifestyle, severity of IHD and health care). A convenience sample of 208 IHD patients who were reported in Alshifa medical complex archive were recruited and completed the questionnaire. General measures of reliability and validity such as standardization of methods & procedures were administered. Cronbach's Alpha reliability test was 0.866.

The study revealed that personal factors affected QOL among IHD patients in various degrees, it may have a strong effect as in monthly income with p-value 0.000, or may have a moderate effect like educational level factor with p-value 0.016, and work experience factor with p-value 0.015, gender with p-value 0.016, or it may have no effect like in; age, work performance, place of residency, type of housing, marital status and number of family members factors. While health history factors were divided according to their effect on QOL into three types; the first when it has a strong effect which including; presence of other disease/s with p-value 0.000, recurrent of disease with p-value equals 0.000, having enough information with p-value equals 0.000, second type; when it has a moderate effect like in medication price burden with p-value 0.027, the third when it has no effect as when patient having previous cardiac surgeries. Most of patients (30.4%) put the sense of security and stability in the first rank of those things that giving them highest QOL level, followed by having ability to perform daily activities (27.1%). Regarding participants' evaluation about their QOL level (global value); 38% were rated their QOL as neither good nor poor, 24.5% were saw it as good & 10.6 as very good, while 22.1% described it as poor & 4.8 % as very poor QOL.

Results highlighted some important recommendations such as the need to give more attention to the most vulnerable groups, like females, those with recurrent heart attacks, who having

other chronic disease/s because their QOL is severely affected. Improving quality of medical care, promoting a respectful care, provide some kind of assistance to those patients, especially in provision of medication & therapeutic requirements, establishing a well designed cardiac rehabilitation programs, counseling, health education, preventive & follow up measures are very crucial to improve their QOL.

Conclusion and Recommendations

This chapter addresses the main conclusions of this study, as well as some recommendations drawn from the results of this study, this part directed to both IHD patients and health care providers by all their levels (decision makers or the working staff in general), it provides perceptions of what they can do to enhance quality of life among IHD patients.

Conclusion

1. IHD pose a major and increasing challenge to the health of the Palestinian population and the government in Gaza city, since it is the first leading cause of death and because it need an increasing efforts and requirements to make the IHD patients reach the highest level of life quality despite this disabling disease.
2. IHD affecting wide range of age groups in our society, with the highest ratio find among those between the age of 50 to 70 years.
3. The QOL level is a proportional conception, so every person have an individualized evaluation stems from his unique situation and his experiences package, this conclusion came from the normal distribution of results regarding the overall fields and especially the global value field, see figure().
4. The researcher find that personal factors affecting QOL among IHD patient in variety degrees:
 - Strong effect: this reflected in relation with monthly income factor.
 - Moderate effect: including factors like; educational level, work experience and gender.
 - No effect: like; place of residency, age groups, work performance, type of housing, marital status and number of family members.
5. Health history factors divided according to their effecting on QOL among IHD patients into three types as following:
 - Has strong effect: including factors like (presence of other disease/s, recurrent of disease and having enough information).
 - Has moderate effect: just one factor has moderate effect which is medication price burden
 - Has no effect: the only factor in this category is having previous cardiac surgeries.
6. In addition to the new dimensions (severity of disease, lifestyle and health care dimensions) that were introduced in the new tool (which make an important apportionment and specification to this measurement tool), the researcher find through his interviews with IHD patients that there are another two important dimensions can be

added to the framework of QOL to be more accurate, these two dimensions are; spiritual dimension, economic dimension.

7. The participants find the questionnaire as simple, clear with no complex terms and good designed, so the response rate was excellent.
8. Because the researcher were followed all validity and reliability measures to insure excellent result, so logic results were found in almost all study fields.
9. Reflecting the conceptions among IHD patients in Gaza city regarding the term QOL, and what it does mean for every one of them, the answers came to direct researcher attention to an important aspect which occupied the first rank according to participants' choices, this choice is the sense of security and stability of the situations (personal, general).
10. Through the questionnaire answers the researcher had seen that those patients know (in some extent) their requirements to achieve good QOL, this realization of what they need emerge from an inherent feeling not based on knowledge of the terminology concept.
11. The inadequacy of the societal and health care system responses to the challenges emerged from IHD and other chronic diseases creates several opportunities for improvement. One of many challenges in improving QOL among IHD patients, also in treatment and prevention of chronic diseases in the occupied Palestinian territory is the dearth of reliable and complete data in this very important field.
12. The literature in the developed countries addressed the issue of quality of life among IHD patients in a lot of detail, many measurements were developed to investigate this complex concept (QOL), some of them general and others were specific. But in our country or in Arab countries there were no like studies or efforts, so by using a new self constructed questionnaire in this study, the researcher make an advance effort in this field.

Recommendations

1. The researcher see that using a qualitative method in studying QOL become more useful and detailed , so it serves this type of studies very well.
2. The MOH need to establish a well designed cardiac rehabilitation programs for IHD patients to help them overcoming disease consequences, and to return to their normal lives and usual work performance (or at least a semi-normal state).
3. To enact regulations for the employers to adopt a new direction based on creating a modification regarding the nature of work for employees with IHD, so the new position should commensurate with their health condition, This decision should take place through the coordination with an authorized physician.
4. Because the economic situation was played an obvious role in the results of this study (the majority of participants had a low monthly income), so in order to enhancing QOL among those patients they need some kind of assistant, especially in provision of medication and therapeutic requirements.
5. Improving quality of medical care and focusing on promoting a respectful care (this not need any economic burden).

6. Activating the continuity of care, counseling, and follow up measures (patients need just reassurance almost in every health visit in order to feel secure).
7. Promoting the preventive measures as a very important aspect to decrease the high level of new cases, through activities of primary care like health education.
8. Giving more attention to female patients, those patients with history of recurrent IHD attacks and those who having another chronic disease/s because it found that the QOL of the previous patients categories affected in a higher degree.
9. The researcher recommended to use his new measurement tool in the similar studies, because it showed an excellent response rate and producing results that reflecting the reality, and he suggest to add another two important dimensions (spiritual and economic dimensions) to QOL framework because these domains appear to be an original fields interact in persons' QOL.
10. understanding the requirements of good life quality among IHD patients should be known by both patients, health care providers and of course the decision makers .
11. Encouraging the population-based studies, registries, and surveillance programs to gather data that can be used as a data base for any improvement efforts.

Recommendations for further research

Researchers are advised to further studies about

1. Qualitative study to the QOL among IHD patients.
2. Factors behind recurrent of heart attacks.
3. Evaluation of QOL measurement tools.
4. Meta-analysis of QOL among patients with chronic diseases in our country.