

3<sup>rd</sup> International Conference on  
**DIABETES, NUTRITION, METABOLISM  
& MEDICARE**  
July 25-26, 2019 | Amsterdam, Netherlands

DIABETES CONFERENCE 2019



**POSTERS**

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Chih-Ming Lin et al., J Diabetol 2019, Volume 3

## **THE UTILITY OF ARTIFICIAL NEURAL NETWORKS FOR THE PREDICTION OF METABOLIC SYNDROME WITH A PERSONAL QUESTIONNAIRE**

**Chih-Ming Lin and Feng-Hsu Wang**

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**A**rtificial neural networks (ANNs) have been previously used for the prediction of diseases in several fields. This study aims to investigate the diagnostic accuracy for the prediction of metabolic syndrome (MS) with socioeconomic status (SES) and lifestyle behaviour using ANNs. The data of 24107 subjects' who underwent repeated examinations and answered repeated questionnaires in three-year stages from 2006 to 2014 at the Major Health Screening Centre in Taiwan, was collected and analyzed. The repeated measurements in the subjects' SES and lifestyle over time were set as predictive factors of MS and the factors were trained and tested using classical analysis performed with ANNs. Multiple layer perceptron and long short term memory networks with/without over-sampling techniques were exploited and compared and the optimal algorithm was identified to be the model of risk prediction with Python package. Among them, 5882 (24.4%), 4703(19.5%) and 3593(14.9%) were diagnosed of MS in the three stages. ANNs analysis using a network with over-sampling technique performed with a sensitivity of 68.2% to 70.7%, specificity of 64.9% to 69.3, overall accuracy of 65.7% to 69.5 and harmony of recall and precision of 55% to 59% in the three stages, respectively. ANNs is a mathematical tool that may promote public health. SES and lifestyle behaviour questionnaire can be used as a useful screening tool to guide health workers involved in primary care decision making when MS is suspected.

## **BIOGRAPHY**

Chih-Ming Lin obtained his PhD degree from National Yang-Ming University, with the specialties including Public Health and Social and Community Medicine and then started working at Ming-Chuan University where he has continued his research. Currently he has been working at Taoyan city, Taiwan.

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Note:

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## **METABOLIC SYNDROME RISK ASSESSMENT IN ADULTS WITH DIFFERENT SEDENTARY RELATED OCCUPATIONS IN TAIWAN**

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**W**ith the rapid development of automation technology and work-pattern change, there are more and more sedentary related occupations. This study is focused on metabolic syndrome (MetS) prevalence with the sedentary related occupation in Taiwan adults. The recent researches showed that sedentary behaviours will not only affect health state but also affect cognitive ability. This study used the raw data from the New Taipei City government annual taxi health Examination Survey (From Far Eastern Memorial Hospital, FEMH) (2012–2016) and the MJ Health-Check- Up-Based Population Database (MJPD) (2012–2016). In order to control the gender effects and to on the results maintain the representative of the analysis, author excluded female cases. There were 2,182 male taxi drivers enrolled from FEMH and 54,680 male cases were enrolled from MJPD. The laboratory data of the two data sets used the same biochemical examination equipment (Hitachi-7600) and all approved by ISO-15189 guidelines. After combining two data-sets, the definition of MetS has based on the National Cholesterol Education Program Adult Treatment Panel (NCEP ATP III) criteria. Age has been proven as an important factor in MetS, so they put all cases into three groups: Age under 40 years-old, 40 to 60 y/o and over 60 y/o. There are 27,010 cases were younger group (age  $\leq$  40 y/o), 30,481 cases were middle-aged group (between 40 y/o to 60 y/o) and 7,087 cases were elderly group (age  $>$  60 y/o). The young group stands for the largest population of the total records. The MetS prevalence rate was 23.02%, 34.01% and 40.21% for the young, middle age and elderly group, respectively. As the analyzed results, sedentary occupation showed a significant tendency towards MetS. Elderly (40.21%) and Taxi driver (33.41%) got a higher MetS prevalence than other age group and occupation type.

## **BIOGRAPHY**

Ming-Shu Chen was the Medical Technologist; he had been graduated from Department of the Industrial Engineering and Management, Yuan-Ze University as PhD and graduated from Department of Institute of Hospital and Health Care Administration, National Yang-Ming University as Master. He with specialists including Health Management; Hospital System Quality Improvement and Chronic Disease Analysis in elderly and practical work experience for more than 20 years, major works at the Health Management Center, Far Eastern Memorial Hospital and Department of Healthcare Administration, Oriental Institute of Technology (OIT) where he has continued his research. Currently he has been working at the OIT, New Taipei City, Taiwan.

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**ACCEPTED ABSTRACTS**

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## **KNOWLEDGE, PERCEPTIONS AND ORAL HEALTH SCREENING BEHAVIOURS OF DIABETES PATIENTS IN PUBLIC HOSPITALS OF ADDIS ABABA, ETHIOPIA, 2018**

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**Background:** Periodontal disease among diabetes is a public health problem globally and more common problem in the developing world.

**Objectives:** The study was aimed at assessing knowledge, perception and oral health screening behaviours of diabetes patients in selected public hospitals of Addis Ababa, Ethiopia, 2018.

**Methods:** Institutional based cross-sectional study was conducted on 388 diabetes patients selected by systematic random sampling method from March to May 2018. The study was conducted at two conveniently selected public hospitals in Addis Ababa. Data were collected with pre-tested, structured and translated questionnaire then entered to SPSS version 23 software for analysis. Descriptive statistics as summary measures were applied. Multivariate logistics regression was conducted to see effects of health belief model components on oral health screening status. A 95% CI with a p-value less than 5% was used as a level of significance.

**Results:** A less than half (48%) of participants had good knowledge. A lower proportion (21.2%) of diabetes patients had undergone oral health screening at a rate of two to more times per year. Participants who perceived they were susceptible to periodontal disease were 19 times more likely to have oral health screening than their counterparts at (95% CI: 4.463-82.579,  $p=0.000$ ). Participants who perceived periodontal disease as severe had 3.4 times more odds of having oral health screening than those who didn't perceive at (95% CI: 1.620-7.489,  $p=.001$ ). Participants who had perceived barriers had lower odds of having oral health screening than those who did not have perceived barriers at (95% CI: 0.065-.270,  $p=0.000$ ). Participants with positive perception cues to action had 3.641 times more odds of having oral health screening than their counterparts at (95% CI: 1.839-7.209,  $p=0.000$ ).

**Conclusion & Recommendation:** A lower proportion of diabetes patients were screened for oral health, while those with perceived more susceptibility, severity and less perceived barriers to periodontal disease had good oral health screening perception than their counterparts.

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**SULPHONYLUREAS: DO THEY STILL HAVE A PLACE IN THE MANAGEMENT OF TYPE 2  
DIABETES?**

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For years, sulphonylureas (SUs) have been the imperative drugs for the management of type 2 diabetes mellitus (T2DM), both as monotherapy and combination therapy. SUs are very efficacious class of drugs with concerns of hypoglycaemia and weight gain. Also the concept of  $\beta$ -cell preservation did not go well with this class of drugs. With these limitations the search went on to find the newer group of drugs such as sodium-glucose co-transporter 2 (SGLT-2) and Glucagon-like peptide 1 (GLP-1) receptor agonists. In 2008, Food & Drug Administration (FDA) issued guidance on the evaluation of cardiovascular risk in new anti-diabetic therapies leading to cardiovascular outcomes trial (CVOT) which changed the way the anti-diabetic drugs were evaluated and preferred. GLP-1 analogues such as Liraglutide and Semaglutide, SGLT-2 inhibitors like Empagliflozin and Canagliflozin have shown to be not only CV safe and but CV protective in these trials. More than 80% of the people globally with T2DM belong to developing countries where access and affordability are a major challenge, using these newer agents may not be practically feasible. Now the debate is whether SUs should be used as the second line agent in the management of T2DM after metformin with lack of evidence of CV safety, risk of hypoglycaemia and weight gain. There might not be a straight answer to this now but SUs would still continue to be an important drug in the treatment of T2DM with the exponential rise in healthcare costs worldwide.

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**COMPARISON OF GLUCOSE DATA AND PHENOMENA FROM TWO DIFFERENT  
MEASUREMENT METHODS (GH-METHOD: MATH-PHYSICAL MEDICINE)**

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**Introduction:** This paper discusses glucose measurement results from two different methods, finger piercing and testing strip (Finger) and Libre's continuous glucose monitoring system (Sensor).

**Method:** The author has been collecting a total of 9,490 glucose data by finger measurement, including both fasting plasma glucose (FPG) once a day since 1/1/2014 (1,825 days) and postprandial plasma glucose (PPG) three times a day since 1/1/2012 (2,555 days). Recently, he has further collected 17,046 glucose data by applying a sensor on his upper arm to collect his glucose values continuously. This sensor measurement is conducted in parallel with his routine finger measurements. During the period of 5/5/2018 to 12/31/2018 (241 days), he has recorded his sensor glucose values about 71 times per day. The measurement rate is approximately every 15 minutes during the day and every hour during the night. In summary, he has collected a total of 964 waveforms 241 FPG and 723 PPG. Other waveforms generated between meals or from eating snack/fruit are not included in this analysis.

**Results:** Sensor's time of peak glucose: 60 minutes after first-bite; PPG rising speed: 33mg/dL per hour, PPG decaying speed: 20mg/dL per hour (~60% of rising), Finger's Average FPG/PPG: 110/116mg/dL (as 100% baseline); Sensor's peak PPG & % over finger: 159mg/dL & 138% (+43mg/dL); Sensor's average PPG & % over Finger: 135mg/dL & 117% (+19mg/dL); FPG (period- from 00:00 to 07:00): Average FPG: 112mg/dL, Peak (crest): 122mg/dL, Valley (trough): 106mg/dL and Period of trough (from 3am to 5am).

**Conclusion:** In average, PPG peak occurs one hour after first-bite of meal, not two hours after; PPG decaying speed is almost twice as slow than its rising speed; Averaged Sensor's PPG is 16% higher (+19mg/dL) than the Averaged finger's PPG; Peak sensor's PPG is 36% higher (+42mg/dL) than the Averaged finger's PPG and FPG wave is much calmer than PPG wave. FPG's lowest trough range occurs during the deep sleep stage (from 3am to 5am).

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## **DIABETES, OBESITY AND WEIGHT LOSS**

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In the US a study have been done to estimate the prevalence of obesity and diabetes among US adults. The study was done on random f 195005 adults aged 18 years or older residing in all states. The main outcome measures the body mass index, based on self-reported weight and height and self-reported diabetes. The results came as follow: The prevalence of obesity (BMI  $\geq 30$ kg/m<sup>2</sup>) was 20.9% (An increase of 5.6%) and the prevalence of diabetes increased to 7.9, (An increase of 8.2%). Overweight and obesity were significantly associated with diabetes, high blood pressure, high cholesterol, asthma, arthritis and poor health status. Increases in obesity and diabetes among US adults continue in genders, all ages, all races, all educational levels and all smoking levels. Obesity is strongly associated with several major health risk factors. In another study they analysed data from a cohort of 51,529 US male health professionals, 40-75 years of age, who completed biennial questionnaires. During five years of follow-up 272 cases of noninsulin-dependent diabetes mellitus (NIDDM) were diagnosed among men without a history of diabetes, heart disease and cancer and who provided complete health information. Relative risks (RRs) associated with different anthropometric measures were calculated controlling for age and multivariate RRs were calculated controlling for smoking, family history of diabetes and age. They found a strong positive association between overall obesity as measured by body mass index (BMI) and risk of diabetes. Men with a BMI of  $\geq 35$  kg/m<sup>2</sup> had a multivariate RR of 42.1 compared with men with a BMI  $< 23.0$  kg/m<sup>2</sup>. BMI at age 21 and absolute weight gain throughout adulthood were also significant independent risk factors for diabetes. Fat distribution, measured by waist-to-hip ratio (WHR) was a good predictor of diabetes only among the top 5%, while waist circumference was positively associated with the risk of diabetes among the top 20% of the cohort. These data suggest that waist circumference may be a better indicator than WHR of the relationship between abdominal adiposity and risk of diabetes. Although early obesity, absolute weight gain throughout adulthood and waist circumference were good predictors of diabetes, attained BMI was the dominant risk factor for NIDDM; even men of average relative weight had significantly elevated RRs. Further studies have been done on individuals who have progressed to pre-diabetes. A Finnish Prevention study and the diabetes prevention program showed conclusively that intensive lifestyle interventions decreased the overall risk of diabetes by 58%. Lifestyle interventions included a weight reduction of 5% or more, reduction of total fat intake to  $< 30\%$  of total calories and increased physical activity ( $\geq 4$  hours/week). Even more encouraging is the report from the Finnish Prevention Study follow-up period averaging seven years, in which the intervention group saw a 43% reduction in risk of diabetes. A study shows that achievable weight loss has a modest effect on A1C levels. However, in several other studies, weight loss was not associated with improvement in glycaemia. Furthermore, other nutrition therapy interventions that tend to focus more on metabolic control and less on weight loss have been shown to improve A1C levels by 1–2%. It is likely that early in the course of the disease process, when insulin resistance is still prominent, either energy restriction or weight loss will improve blood glucose levels. But as the disease progresses and insulin deficiency becomes more prominent, it may be too late for weight loss to be helpful. In fact, at later stages of the disease, when medications, including insulin, need to be combined with nutrition therapy, prevention of weight gain often becomes the goal. However, glycaemic control should take precedence over concerns about weight.



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## **ADVANCE TREATMENT FOR DIABETES GLUCOBEET**

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**D**iabetes is a condition that impairs the body's ability to process blood glucose, otherwise known as blood sugar. In the United States, the estimated number of people over 18 years of age with diagnosed and undiagnosed diabetes is 30.2 million. The figure represents between 27.9 and 32.7% of the population. Patient's satisfaction is major limitation with allopathic or insulin because it can't able to give symptomatic relief in diabetes as with poor compliance. Alternative therapies like herbal supplements, Ayurvedic products also helpful to reduces blood sugar level and improve function of beta cell, hence function of beta cell and alpha cell can be utilize properly. It is also helpful to reduce or stop other medicines and insulin also. Author's Glucobeet Trademark of Orange Organic Pharma is available in herbal and dietary health supplement tablet dosage form. It works with same function as above mention. Glucobeet is very beneficial to type 1 and type 2 diabetic patients. It is doctor recommended product available in market since from last four years and yet not found any side effect. Glucobeet is manufactured with 100 % extract based ingredients. Ingredients and excipients incorporate for granulation and tableting is also approved by FDCA and FSSAI guideline as per pharmacopoeial limits. Product manufactured under GMP certified company. Glucobeet helpful to target on brain signals for adequate insulin secretion by microencapsulation. It heals damaged  $\beta$ -cell, attacked by immune system by unique isolated herbs. Glucose and stored Glycogen in organ system gives symptomatic relief of diabetes. It improves metabolic condition by hepato-protective extracts. It is very beneficial to control type 1 and type 2 diabetes and also helpful to reduce or stop other medicines and insulin.