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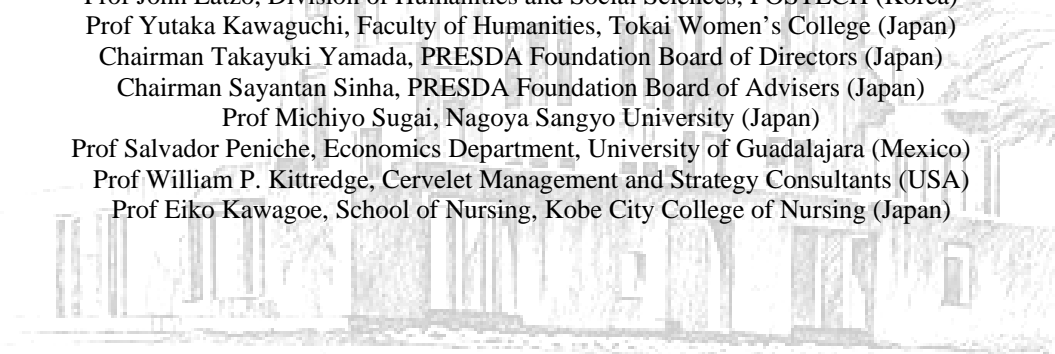
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HWB 2014 Abstracts for Oral Presentations

301 Physicians' Emotional Expression and Patient Satisfaction: Implications for Physicians' Education

Dana Yagil, Moran Shneper-Cohen, *University of Haifa, Haifa, Israel*

During their professional socialization physicians are guided to exhibit positive emotions toward their patients while at the same time maintaining emotional detachment in their inner stratum of experienced emotions (Halpern, 2007). Yet, to date no research has explored the impact of physicians' emotional regulation on patients. This study explored the boundary conditions for the effect of the physician's emotional expression on patient satisfaction following a medical encounter. Data were collected from physicians (N=46) who work in Israeli hospital outpatient clinics and their patients (N=230) who were sampled randomly. Patients filled in the questionnaires before (perceived illness severity) and after (satisfaction) the consultation. Analyses were conducted with Hierarchical Linear Modeling that takes the nested data structure into account. The results show that physician's emotional faking (i.e., surface acting) interacted significantly with patient's perception of severity of illness: emotional faking was related positively to satisfaction under low perceived severity of illness and negatively under high perceived severity. In addition, a significant interaction effect was found between physicians' emotional faking and length of acquaintance: emotional faking was related positively to satisfaction under a short acquaintance and negatively under longer acquaintance. Implications for physicians' education will be discussed.

315 Using Solution Focused Brief Therapy to Resolve the Conflicts between Clinical Educators and Nurse Students and Nourish Profession Growth among Students Nurses

Ying Wai Bryan Ho, *The Hong Kong Polytechnic University, Hong Kong*

In universities, nurse educators transfer their skills and knowledge via different means of classroom education including lecture, laboratory session and tutorial. Meanwhile students, under the facilitation of clinical instructors, are expected to integrate and practice both elements in clinical settings. However, the process of clinical education is not enjoyed by all students. Many of them feel frustrated and despair by the teaching strategies and attitude of their clinical supervisors who are too problem-based. Some students overtly resent their educators during clinical placement, because they perceive the educators as fault finders and amplifiers. The conflicts arise between students and teachers not only influence on the supervisor-supervisee relationships, but also affect students' motivation to learn and performance in practicum. Therefore, a more positive pedagogy should be equipped by supervisors. Solution focused brief therapy, which is a kind of psychotherapy that emphasizes on exploring strengths and resources of an individual and developing alternatives for a given adversities rather than investigating problems, fault and weakness of a person, provides another methodology to teach students. This approach is able to avoid conflicts situations during clinical supervision, and if the conflicts really happen the process helps supervisors resolve them quickly and facilitate students to engage in deep reflective process. Students' horizon can be widened and professional growth is more likely to be nourished. Eventually, the levels of nursing care of student nurses in clinical placement are upgraded. The author reviews relevant literature and shares his experience of using this approach in his nurse education career.

317 Tissue Microarray Analysis of Senescence Biomarker p14 is Associated with High Grade Tumour and Lymphovascular Invasion during Breast Cancer Progression

Rahmawati binti Pare, Cheok Soon Lee, Joo-shik Shin, *University of Western Sydney, NSW, Australia*

Breast cancer is hormonally driven age-related disease in women. Cellular senescence is an age-related irreversible cell cycle arrest at the G1 phase upon intrinsic or extrinsic induction. This study was conducted to assess and characterize the expression of epithelial senescence marker of p14 during breast cancer development. We retrieved retrospective cohorts of 1080 invasive ductal carcinoma cases for 11 years from six provinces in South Sydney west area. Tissue microarray blocks consist of two cores of each normal, benign, premalignant and malignant feature. We, therefore, performed immunohistochemical staining for P14 on formalin fixed-paraffin embedded samples. Covariates such as age, tumour size, lymphovascular and nodal involvement, tumour grade, stage, ER, PR and HER2 status were obtained. We detected increasing p14 positive staining from 33.9% in normal, 34.9% benign and 53.9% premalignant to 59.9% in malignant. There were significant correlation of normal, benign, premalignant and malignant features ($p < 0.0001$). There was a significant association between P14 expressions with tumour grade and lymphovascular invasion ($p < 0.05$), but no significant association with age, lymph node status, tumour size, ER, PR, HER2 and staging. There was no difference in recurrent-free survival ($p = 0.098$) or overall survival ($p = 0.59$). These findings suggest P14 plays an important role in the progression to invasive breast cancer. Positive normal tissue have tendency to have high expression in more progressive features. We conclude while there is a protection from cancer at an early stage; it promoted carcinogenesis in the latter during its progression and associated with aggressive behavior.

319 Learning Professional Attitude: A Qualitative Study of the Experience of Clinical Preceptors Overseeing Nursing Students in Clinical Practicum in Macao

Cindy Sin U Leong, *School of Health Sciences, Macao Polytechnic Institute, Macao SAR of China*

Aim: The purpose of the study was to explore and gain a better understanding of the characteristics that determine successful nursing students, based on interviews with clinical preceptors. **Background:** Clinical preceptors are the primary mentors as well as important role models for nursing students in clinical practice who are learning skills, knowledge and critical decision-making. However, little is known about how the preceptors perceive nursing students in Chinese society during their practicum. From the clinical preceptors' perspective, nursing students need to exert somewhat more effort, especially given the rapid rate of growth of China's population. **Methods:** The study used a qualitative approach to explore and understand nursing students' areas of inadequacy in practicum during a 4-year bachelor degree program. Clinical preceptors were invited to describe their perceptions of nursing students participating in a practicum. The preceptors were from critical-care, surgical, and medical units, health-care centers, and nursing homes. **Results:** Twenty clinical preceptors accepted the invitation to verbalize their perceptions. Their comments regarding one principal theme that emerged from the study, i.e., professional attitude, were transcribed verbatim to convey the interviewees' intended meanings as accurately as possible. **Conclusion:** Nursing students need to work harder to develop a professional attitude so they can provide quality care after they graduate and become registered nurses. The fundamentals of a professional attitude are not difficult for nursing students to learn. Academic educators are in the best position to remind students about the need for a professional attitude before and during the clinical practicum.

330 Electronic Documentation: Trends and Clinicians' Views

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Electronic documentation: trends and clinicians' views Dr Mokholelana Margaret Ramukumba Ms. Fatima Abdulla Al Baloushi Senior lecturer: Department of health studies Director Operations University of South Africa Al Ain Hospital ramukmm@unisa.ac.za fbloushi@alain-hospital.ae
ABSTRACT
Introduction: The implementation of the health information systems (HIS), especially the electronic health records (EHR), raised expectations regarding improved documentation, ease of use, and quality patient outcomes. Purpose: The aim was to identify the documentation tools currently available in the EHR, describe the documentation trends and measure outcomes against 'The Documentation Requirements Guidelines' which require 100% compliance. Methods: One thousand discharge records were reviewed using structured checklists to assess compliance rate. Semi-structured interviews were conducted to elicit perceptions of 6 clinicians regarding factors associated with the observed documentation trends. Quantitative data were analyzed by SPSS. Qualitative content analysis followed Miles and Huberman's framework. Findings: The EHR used in this health care facility contains general templates and 'free text' options to supplement documentation. Variations in documentation styles were observed and there was a noticeable decline in compliance levels. Compliance rate for the selected data elements: Discharge summary 81%, pain assessment 77%, Operative reports 72%, learning assessment 57%, history and physical examination 56%. Qualitative analysis produced three themes: 'Usability of system, coping and managing change, and workflow. Conclusion: Computer entry documentation can produce significant health care outcomes if the appropriate mix can be achieved between training, workflow, system functionality and quality.

Keywords: compliance, documentation, electronic health record, health information system, quality

333 The Prospects of Smart Card Based e-Health Networks in Rwanda

Nsabiyumva Willy, Samiullah Paracha, Shima Hisato, Vunabandi Vianney
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Abstract: Lack of veritable, well-organized and comprehensive patient medical records is a major obstacle in the development of a robust healthcare system in Rwanda. The use of electronic health care and medical treatment services, in today's digital age, have become crucial for providing people with a high level of service that ensures the benefits of convenience, mobility and time saving. In this paper, we propose smart card-based e-health networks that require efficient management of health treatments. This system has five fundamental components: (i) a Patient Prescript Data; (ii) the Health Professional Prescription Data for physicians; (iii) Laboratory Medical Report; (iv) Pharmacists Medicine Recorded Data; and (v) a Smart Card Application Management System. The Entire data is a PIN-protected on smart card incorporating a microprocessor and protected by cryptographic functions. It includes insurance, social security and ID information and entitles patients to seek medical treatment. This system will give physicians and the medical staff a right to access health consumers' personal medical data which is stored either on the card or in the e-health system network. The proposed smart card-based e-health network is a robust low-cost interactive model that will transform the old and slow paper-based procedures into a more sophisticated healthcare service system. It is hoped that, the proposed system will ensure the portable exchange of health information and allow health consumers to maintain their personal health records at all times in an organized, convenient and compact manner.(237/250 words)

Keywords: Smart card-based e-health networks; Interactive model; System security; ID system

336 A Qualitative Exploration of Potential Benefits of Total Relaxation in Cancer Patients

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Background while physical conditions of cancer patients have been extensively intervened by western medicine, methods to alleviate their mental suffering has not been well studied. Total Relaxation (TR) has been introduced as alternative holistic approach by Thai Plum Village International Practice Center. As TR has not been clearly defined, this paper aims to synthesize key concepts of total relaxation that is beneficial to intervention design. Methods This qualitative study applied both in-depth interview with key experts / experienced practitioners in the field and extensive literature review in order to understand the scope and key ideas of total relaxation. Thematic content analysis was used to analyze the data. Results TR is a holistic intervention that comprises both operator and process. Each session usually take 15-45 minutes. Self-practice is encouraged in an experienced one although an experienced practitioner is helpful to guide through the process for beginner. Those with basic meditation skills may find electronic media such as CD useful. Based on the Sutra on Full Awareness of Breathing (Anapanasti Sutra), three components of TR include aware, breath, calm. Aware refers to meditation that harmonize both physical and mental aspects into the same process. Breath is the 'object of meditation' used by the operator in the process to bring his/her mind to body. Unlike other scientific goals, calm is 'progressive outcome' as it is both the context of the intervention and the anticipated result. Conclusion Total Relaxation is a holistic intervention promisingly beneficial to cancer patients.

346 Mental Health of Relocated Survivors after the 2010 Eruptions of Mt. Merapi, Indonesia

Uki Noviana, Yayoi Iwasaki, *Chiba University, Chiba, Japan*

Purpose: The 2010 eruptions of Mt. Merapi in Indonesia killed 386 people and displaced more than 270,000 people to emergency shelters. Approximately 2,000 families from the most affected areas have been permanently relocated to safer areas. There is limited research on the psychological effects of permanent relocation. This study examines survivors' relocation stress and its relationship to mental health. Method: A questionnaire survey using face-to-face interviews was conducted in two relocation areas from the most affected villages. Convenience sampling was used to recruit respondents, and 196 survivors gave informed consent to participate. Relocation stress was measured by a newly developed questionnaire. Mental health was assessed by the WHO Self-Reporting Questionnaire 20 (SRQ-20). Spearman's rank correlation coefficient was used to test association between relocation stress and mental health. Results: Eighty five percent of participants experienced some kind of loss, such as loss of family members or friends, loss of crops, loss of livestock, and loss of houses. Over 25% of respondents reported often or always experienced relocated stress related to neighborhood environment and housing. Mental health problem was negatively associated with loss of houses and crops. Mean score of the SRQ-20 was 5.29. Nearly a third of respondents scored ≥ 7 in the SRQ-20, suggesting mental health problems. The SRQ-20 was significantly associated with relocation stress ($r_s = .411$, $n = 185$, $p < .05$). Discussion: Previous studies revealed that relocated survivors have higher level of mental health problems than the non-relocated ones. The results indicate association between relocation stress and mental health problems.

349 University-Community Engagement, Nursing Education, and Social Impact: A Case of Suranaree University of Technology

Naruemol Singha-Dong, *Institute of Nursing, Suranaree University of Technology, Nakhon Ratchasima, Thailand*

Introduction: This presentation presents a recent engagement practice at Suranaree University of Technology (SUT) and its impacts. This article reflects on the nature of Community-University engagement from three dimensions: nursing education, community services, and research. **Method:** We focus on capacity building for student nurses, community residents, and primary care unit workers. The engagement was initiated by Community Health Nursing Department for Community Nursing Practicum. SUT used work-integrated learning to promote health and well-being of communities. We collaborated with communities, sub-district administration, District Health Office, and district hospitals to conduct community assessment, implement interventions, and conduct evaluation. All parties also involved in community activities including patient home visits and grand round. While faculty offer services and link social capital between community and more powerful players, the community in turn serves as a rich source of learning. **Outcomes:** Integrated learning and engagement resulted in student competencies and 100% success rate in community boarding examination. Guidelines from faculty built health concerns, responsibilities, and encourage positive changes in health behaviors. Patients and those with health risk received better health assessment and access to services responsive to their needs. Evidences of social impacts motivated an intention of involvement from other agencies. **Conclusion:** This engagement offer illustrations of the challenges and strategies for building successful university–community relationships. While university-community engagement contributes to the public good, it also reflects a changed health, well-being, and social context. In addition, this presentation provides a set of guidelines for future efforts targeting sustainable engagement in health and well-being.

350 Role of Rugoscopy in Mass Disasters

Manjunath Sathyanarayan Achar, Shankar Bakkannavar, Pradeep Kumar G, *Kasturba Medical College, Manipal University, Manipal, India*

In this world of natural and man-made disasters identification of an individual becomes an important task for any Disaster Victim Identification team. In almost every disaster, there is an urgent and pressing need to identify the victims on behalf of the next of kin. Comparative data/techniques play a vital role to aid in identity. Palatoscopy or Palatal rugoscopy is the name given to the study of palatal rugae in order to establish a person's identity. Despite the ongoing problem of describing palatal rugae pattern, qualitatively and quantitatively, their uniqueness to individuals has been recognized as providing a potentially reliable source of identification. Rugae patterns have been studied for various purposes mainly in the fields of anthropology, comparative anatomy, genetics, forensic odontology, prosthodontics and orthodontics. The present study is an attempt to compare the palatal rugae patterns among the Indians and Chinese students at Manipal from a small part of peninsular India. Maxillary dental casts of 63 Indians (32 males, 31 females) and 61 Chinese (31 males, 30 females) students of the age group 17-23 years were assessed for the length, shape and unification of rugae based on the classification by Thomas & Kotze (1983). Association between rugae forms; ethnicity and gender were tested using 2 way ANOVA (Univariate analysis of variance) and contingency tables. The statistical analysis of the data revealed significant differences among the Indians and Chinese. These patterns are highly individualistic and could form an useful tool to aid in identification especially in cases of mass disasters.

351 Measuring the Aging Lifecourse in Asia: Emerging Resources for Measuring Health and Life Outcomes

James McNally, *University of Michigan, Ann Arbor, MI, USA*

Easy and equitable access to health information is a long standing goal in the health sciences. Health providers, policy advocates and patients all benefit when health information is made available for review and as an educational resource. In general, the open sharing of health information varies dramatically from institution to institution, and only becomes more complex when we attempt to share health statistics across national borders. Not only the availability and quality of such information can differ significantly, but the capacity local computing infrastructures are far from uniform across Asia. This presentation will present work emerging from the NACDA Program on Aging, located at the University of Michigan in the United States that provides open sharing of international health information at no cost to any interested user with access to a computer. The program "Online Analysis System" OAS allows interested health professionals, researchers, policy advocates and patients to use information stored at the University of Michigan to create informational tables and summaries of health information maintained in our research center and data archive. This service is freely available to an interested individual and it is rapidly growing. One of the strengths of the system is that researchers and health professionals are also welcome to add their information to the system, expanding our understanding of international health and building collaborative knowledge across international borders. The proposed presentation will review the system; provide examples of how it can be used for research and show how users can add to the knowledge base.

373 The Development and Assessment of the Effectiveness of Computer Assisted Instruction Program on Continuous Renal Replacement Therapy for Nursing Students, Faculty of Nursing, Chiang Mai University, Thailand

Chiraporn Tachaudomdach, Nitaya Pinyokham, *Faculty of Nursing, Chiang Mai University, Thailand*

Computer assisted instruction (CAI) is one instructional method that is incorporated into overall teaching strategies. The effectiveness of computer assisted instruction program on continuous renal replacement therapy for nursing students was examined using a two groups, pretest-posttest, and experimental design. Sixty fourth year nursing students volunteered to participate in this study and were randomly assigned to one of two groups: the control group (n=30), who were not exposed to CAI program and the experimental group (n=30), who were exposed to the CAI program. The research tools are consisted of: the learning plan, knowledge test and the Questionnaire for Satisfaction (QS). The results of the study are as follows: 1) Student's knowledge score after completing the participatory learning program on continuous renal replacement therapy was higher than before ($p < .05$). 2) Student's satisfaction score after completing the participatory learning program on continuous renal replacement therapy was high levels. The students said that the advantages of this CAI program are 1) students can learn the content as per his capacity and can repeat the task if not understand by himself 2) immediate feedback motivates students and give direction and if answer of students is wrong then it will help him to correct his mistake. 3) CAI Program has flexibility in terms of time, place and pace. This study revealed that a participatory learning program can improve students' knowledge. Moreover, students are satisfied on computer assisted instruction program on continuous renal replacement therapy. Thus, it could be utilized for nursing education.

377 Prevalence, Awareness, Treatment and Control of Diabetes among Elderly Population in Astana City, Kazakhstan. Cross-sectional Study

Adil Supiyev¹, Alibek Kossumov¹, Madina Khamzina¹, Leila Utepova¹, Talgat Nurgozhin¹, Zhaxybay Zhumadilov¹, Martin Bobak^{2,1} *Centre for Life Sciences, Nazarbayev University, Astana, Kazakhstan, ²Department of Epidemiology and Public Health, University College London, UK*

Objective The aim of the study was to assess the prevalence, awareness, treatment, and control of diabetes and factors associated with these characteristics in a population sample of Astana, Kazakhstan. **Methods** Participants aged 50-75 years old, residing in Astana city, Kazakhstan were included in this cross-sectional design study: subjects were randomly selected from registers of persons attached to Astana polyclinics. A total of 485 adults were interviewed and their fasting blood sugar, height and weight were obtained. Diabetes was diagnosed as fasting blood glucose ≥ 7.0 mmol/l, and/or if the participant was taking treatment for diabetes during the last 2 weeks. The association between diabetes, awareness, treatment and control as the outcomes and socio-economic characteristics and BMI were estimated in logistic regression, all models were adjusted for age and sex. Results among the 485 participants studied, the overall prevalence of diabetes was 18.6%. Among diabetes subjects, 84.4% were aware of their condition, while 72.2% took antihypertensive medications, and 47.8% had blood sugar controlled (< 7 mmol/l). The prevalence of diabetes and awareness, treatment and control were associated with body mass index. None of several socioeconomic measures used was associated with any of diabetes indicators. **Conclusions:** Increased levels of awareness and treatment could be due to high level of education and large proportion of civil servant in this population, however, the proportion of controlled diabetic subjects was relatively modest. Patients with diabetes should be advised to have weight control.

384 Malaria Risk Areas in Thailand Borderline

Natthawut Kaewpitoon¹, Soraya Kaewpitoon², Ratana Rujirakul², *¹Faculty of Public Health, Vongchavalitkul University, Thailand, ²Parasitic Disease Research Unit, Suranaree University of Technology, Thailand*

Malaria is still a seriously problem in Thailand borderline where the cases and death patients are found frequently. Therefore, this study aims to analyze the malaria risk areas in Surin and Buriram province, northeastern of Thailand where located near Thailand-Cambodia borders by using geographic information system, and study the relationship between the environmental and climate factors with number of malaria cases by the multiple regression analysis. The result shows that 846 malaria cases were reported among 2008-2012. The majority of cases was Plasmodium vivax (384 cases; 45.36%). There was found in males (769 cases; 90.89%), age group 31-40 year old (225; 26.61%), and agriculture occupation (501; 26.61%). The most of cases was found in Surin province (681 cases; 80.50%). Environmental factors related to the number of malaria cases were forest ($r=0.123$, $p=0.000$), population density ($r=0.170$, $p=0.000$), adult anopheles density ($r=0.111$, $p=0.000$). Climate factor related to the number of malaria cases was humidity ($r=0.057$, $p=0.003$). The high risk areas of epidemic malaria were 3,014.79 kilometer. The high risk area in Buriram province was 1,640.95 kilometer, especially in Nangrong and Nondaeng district. In Surin province, the high risk area was 1,373.84 kilometer, in Sangka and Buached district, respectively. This study indicated that malaria is still a problem in Thailand-Cambodia border, therefore this study may useful for prevention and control in related organization.

385 Effect of Computer Assisted Instruction of Electrocardiography Interpretation on an Achievement in Learning of Fourth Year Nursing Students, Faculty of Nursing, Chiang Mai University

Nitaya Pinyokham¹, Jittawadee Rhianton^{1,2}, ¹*Faculty of Nursing, Chiang Mai University, Thailand,*

²*Faculty of Nursing Mahidol University, Thailand*

The purposes of this Quasi-experimental research is to investigate the efficiency of Computer Assisted Instruction (CAI) lessons on “interpretation of the electrocardiography” of the fourth year nursing students, Faculty of Nursing, Chiang Mai University, Thailand. The subjects include 125 fourth year nursing students who were attending the course of Emergency and Critical Care Nursing Practice in the 2012 academic year. The subjects were assigned into two groups based on the students’ registration for this course in each semester. Sixty-five students were assigned to the control group since they took this course during the first semester while another 60 students who registered during the second semester were assigned to the experimental group. The students in the experimental group use CAI lessons on “interpretation of the electrocardiography” and the students in the control group study through the conventional lessons in classes. The instruments included CAI lessons on “interpretation of the electrocardiography,” an achievement test and a student questionnaire. The data collection include pre- and post- test achievement scores of both groups and the student’s opinions from the questionnaire. These data were analyzed by using t-test and content analysis. The results show the students’ achievement scores are higher with the conventional lessons than the CAI lessons. The students had a very good attitude toward the CAI lessons because they can access the CAI lessons at any time. When teaching strategies are comparable, CAI is less effective than the conventional lesson plan.

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Keywords: Computer Assisted Instruction on Electrocardiography Interpretation, Achievement in Learning of Fourth Years Nurse Students

388 Can Aging in Place be Cost Effective? A Systematic Review

Erin M Graybill, Peter McMeekin, John Wildman, *Newcastle University, Newcastle upon Tyne, United Kingdom*

Abstract Purpose of the study: To systematically review cost, cost-minimization and cost-effectiveness studies for assisted living technologies (ALTs) that specifically enable older people to ‘age in place’ and highlight what further research is needed to inform decisions regarding aging in place. Design: People aged 65+ and their live-in carers (where applicable), using an ALT to age in place at home opposed to a community-dwelling arrangement. Methods: Studies were identified using a predefined search strategy on two key economic and cost evaluation databases NHS EED, HEED. Studies were assessed using methods recommended by the Campbell and Cochrane Economic Methods Group and presented in a narrative synthesis style. Results: Eight eligible studies were identified from North America spread over a diverse geographical range. The majority of studies reported the ALT intervention group as having lower resource use costs than the control group; though the low methodological quality and heterogeneity of the individual costs and outcomes reported across studies must be considered. Implications: The studies suggest that in some cases ALTs may reduce costs, though little data were identified and what there was of poor quality. Methods to capture quality of life gains were not used, therefore potential effects on health and wellbeing may be missed. Further research is required using newer developments such as the capabilities approach. High quality studies assessing the cost-effectiveness of ALTs for ageing in place are required before robust conclusion on their use can be drawn.

HWB 2014 Abstracts for Poster Presentations

304 Predicting factors of Health-related Quality of Life among Coronary Artery Disease Patients Post Percutaneous Coronary Intervention

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Background: Quality of life is a major outcome in patients with coronary artery disease (CAD). A clear understand of factors affecting patients' perception of quality of life would be useful for improving continues care in CAD patients. Objective: We examined the causal relationships between cardiac self-efficacy, social support, left-ventricular ejection fraction (LVEF), angina, dyspnea, depression, vital exhaustion, functional performance, and quality of life among CAD patients experiencing post-percutaneous coronary intervention (PCI). Methods: This study used a research survey for causal analysis design to explore the theoretical linkage, guided by the revised Wilson and Cleary model. The 303 participants completed the questionnaires, with reliability ranging from 0.72 to 0.98. Data was analyzed using descriptive statistics and a linear structural relationship (LISREL) analysis. Results: The hypothesized model fit the empirical data and explained 54% of the variance in quality of life ($c^2 = 1.90$, $df = 3$, $p = 0.59$, $c^2/df = 0.63$, $RMSEA = 0.00$, $GFI = 0.99$, $AGFI = 0.98$). The significant factors that were found to directly affect the quality of life of post-PCI CAD patients were social support, depression, and vital exhaustion. Cardiac self-efficacy was the only variable that had an indirect effect on quality of life ($\beta = 0.21$, $p < 0.001$). Conclusion: The social support, depression, vital exhaustion, and self-efficacy have a significant effect on quality of life. Thus, health care providers should be aware of the potential effects of these contributing factors, and develop appropriate nursing interventions to improve quality of life in post-PCI CAD patients.

305 The Current State of Evidence-based Practice Education in Taiwan's Undergraduate Nursing Students

Hsiao-Ying Hung, Yu-Wen Wang, Ying-Ju Chang, *National Cheng Kung University, Tainan, Taiwan*.

Evidence-based practice (EBP) has been emphasized as the core competency of nursing professions and has to be cultivated before graduation. However, there is limited information of the EBP education for undergraduate nursing students in Taiwan. The purpose of this study was to explore the current state of EBP education for undergraduate nursing students in Taiwan. A survey using with a structured questionnaire was conducted in 2013 of Taiwan. The questionnaire was self-developed, validated by experts and designed to explore the course design, faculty background, learning performance, and the barriers regarding EBP education. The response rate of the questionnaire was 80.8% (21/26). Eighteen nursing colleges (85.7%, $n=21$) had implemented EBP education in the curriculum. Among these schools, 22.2% conducted an independent course, 50% were incorporated with other courses, and the remains were combined with both methods. EBP steps were mainly taught and 66.7% of school applied with real clinical context as teaching materials for exercise. Only 55.6% of these schools had EBP certified or trained faculties. Learning performances were rarely evaluated. The main barriers of students in learning EBP were unable to "read English references". There were 83.3% of schools encountering difficulties in teaching EBP, including shortage of qualified faculties and less involvement of students in clinical practice. In order to promote EBP education in undergraduate nursing curriculum, we suggested that the nursing school should support faculty in formal EBP training. A systemic curriculum design with multiple teaching strategies and joining with clinical practicum is needed.

307 Developing an Evidence-based Healthcare Curriculum Model for Baccalaureate Nursing Students in Taiwan

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The evidence-based healthcare (EBHC) has become an important component to improve safety and quality of care globally. This study aimed to develop and evaluate an EBHC curriculum model incorporated with formative baccalaureate nursing education in Taiwan. This descriptive qualitative study was approached with focus groups among experts, nursing faculties, and baccalaureate students in 2 phases. In the 1st year, we constructed an EBHC curriculum model according to 9 experts' and 7 students' opinions. In the 2nd year, a pilot study was conducted to evaluate the appropriateness and feasibility of the EBHC curriculum model. Thirty-three baccalaureate nursing students and 9 faculties joined in EBHC teaching activities with lectures and clinical practicums. Levels of objective, core competencies, and course contents of EBHC in different grades were identified in this EBHC curriculum model. Three levels of objective were students are able to "search literature for exploring issues of nursing care", "use the steps of EBHC to answer clinical questions", and "appraise the validity and applicability of evidences." The content analysis of the pilot study revealed that students had a positive learning experience of EBHC, such as improving the ability of reflection in clinical care, seeking the truth, and developing a sense of professionalism. More guidance and self-learning materials of EBHC are necessary to facilitate learning. The EBHC curriculum model provides a pilot framework for the baccalaureate nursing education. Most students appreciated on the EBHC curriculum. We expect the EBHC curriculum model will be a reference of EBHC education for other nursing schools.

308 A Quasi-Experimental Study to Assess Potential Impact of Pre-operative Program to Prevent Pulmonary Complication from Abdominal Surgery

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Background Post-operative pulmonary complication (PPC) could occur in 6-70% of patients underwent abdominal surgery. As the variation could be explained by preventive measures, this study aims to determine potential benefits of adding pre-operative physical therapy program to routine post-operative care. Methods A group of thirty patients aged 50-70 years old, BMI <28 kg/m² with no pulmonary or neuromuscular diseases were recruited and assigned to study and control groups based on surgeon's preference of physical therapy consultation. The study group received one-hour coached intervention with repeated cycles of education and practice sessions whereas the control group received only standard post-operative physical therapy program. Clinical outcomes were measured using PPC incidence, walking distance, and duration of standard post-operative program. Results The baseline characteristics of the two groups were comparable. The walking distance of patients in the study and control group were significantly different (440 vs 249 meters, respectively, p<0.05). The pre-operative program seem to reduce the duration of standard post-operative program by 1.73 days (2.8 vs 4.53, p=0.03). However, the PPC incidences of both groups were similar (p=0.164). Conclusion Pre-operative physical therapy program potentially increase walking distance, reduce duration of post-operative physical therapy program, but its effect on PPC incidence is inconclusive.

309 Interventions to Promote Physical Activity in Workplace: A Scoping Review of Systematic Review

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Background People with long-term physical activity have reduced risk of diseases, as compared to those with sedentary lifestyle. Many health programs have been introduced to promote physical activity for working adult. A number of systematic reviews have been released but the unclear physical activity concepts and heterogeneous review methodologies made it difficult to reach conclusion on practical application in workplace setting. This study aims to synthesize available systematic reviews of interventions to promote physical activity in workplace. **Methods** Articles retrieved from simple search strategy in seven databases (Cochrane Reviews, PubMed, CINAHL, Social Science Research Network, Scopus, EBSCOhost, and Science Direct) were screened by two reviewers for relevant systematic reviews. The methodological quality was assessed using AMSTAR. Thematic content analysis were conducted to identify useful conceptual framework, appropriate categorization and practical applications of physical activity interventions. **Results** We identified 17 systematic reviews and 6 meta-analysis, published during 1999-2014. They assessed 674 primary studies, of which 309 (46%) were randomized controlled trials. The PRECEDE-PROCEED model was relatively the most optimal framework for categorizing the interventions into five domains: (1) predisposing factors (25 interventions), (2) enabling factors (63 interventions), (3) reinforcing factors (50 interventions), (4) organizational policy, and (5) environment. More detailed discussion on applications in workplace settings will also be presented. **Conclusion** With appropriate conceptual framework, this review synthesizes key points about interventions to promote physical activity in workplace. The unclear scope of physical activity interventions limits the useful application of systematic review methodology.

310 Assessment of Large HIV-Prevention Program Impact on Publication and Social Media: A Case of Avahan

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Objective: Avahan, a large HIV/AIDS prevention project in Southern India sponsored by the Bill & Melinda Gates Foundation, has been prolific since its inception in 2003. As part of an evaluation of the influence of Avahan on national and international policy and program debates, we aim to explore some important surrogate measures such as the program impact on publication and social media. **Materials & Methods:** To assess publication impact, a number of bibliometric analysis techniques were applied in PubMed, Embase, Web of Science, Scopus, EconLit, ProQuest, LexisNexis Academic databases using keyword 'Avahan.' Duplicated articles were removed and initial list of articles was produced (List A), each of which was explored to identify citing articles (List B). Key bibliometric characteristics of articles in both lists were extracted. To explore social impact, Mendeley was used to understand how published articles were shared among academicians whereas 'mentions' about Avahan were searched in Facebook and Twitter through Google site search. **Results and Conclusion:** As of July, 2013, 232 Avahan articles were published in standard literature, of which 65 received 502 citations. Also, 114 news and magazine articles as well as 3 master theses and 12 doctoral dissertations were identified. For social impact, we found 118 Avahan publications were shared in Mendeley, of which 81 have one reader. Avahan was mentioned in only 13 Facebook posts and 6 tweets. In conclusion, this study described an innovative and simple approach to explore potential impacts of a large program on publication and social media.

318: The Effects of Preconception Interventions on Improving Reproductive Health and Pregnancy Outcomes in Primary Care

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Background: Reproductive health and pregnancy outcomes may be improved if reproductive risk assessment is moved from the antenatal to preconception period. Primary care has been highlighted as an ideal setting to offer preconception assessment, yet the effectiveness in this setting is still unclear. **Objective:** To evaluate the effects of preconception interventions on improving reproductive health and pregnancy outcomes in primary care. **Method:** Four electronic databases, MEDLINE, CINAHL, Embase and PsycINFO were searched from July 1999 to 24 January 2014. Only interventional studies that provided details of the intervention and a comparator arm were included. **Results:** Nine studies were eligible, all randomised controlled trials, examining the effects of preconception interventions on maternal knowledge; self-efficacy and health locus of control; risk behaviour; adverse pregnancy outcomes and psychological stress. Six of the eligible studies recruited women planning pregnancy. Five studies involved multifactorial reproductive health risks addressing risk factors such as nutrition, lifestyle, infection prevention, vaccination and genetic conditions; two were brief and the remaining intensive interventions. Four studies were interventions for single risk factor, three of these were brief; focused on folate supplementation and alcohol moderation before conception. The results indicated that both multifactorial and single reproductive health risk interventions significantly improved maternal knowledge, self-efficacy towards health lifestyle and preconceptional control of birth outcomes, as well as risk behaviour, irrespective of the duration of intervention. However, there was no clear indication of improvement in adverse pregnancy outcomes. One study reported no undue anxiety following multifactorial reproductive health risks intervention. Overall, reported methodological quality of the studies was moderate to poor. **Conclusion:** The evidence for effectiveness of preconception interventions in primary care is limited. Before implementation can be recommended in primary care, multifactorial reproductive health risk intervention in pragmatically designed trials, including women regardless of their readiness for pregnancy, needs to be performed.

Keywords: Preconception care, reproductive outcomes, pregnancy outcomes, primary care

320 Factors Contributing to Outstanding Achievement in Clinical Practice: A Qualitative Approach in a Baccalaureate Nursing Program in Macau

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Aim The purpose of the study was to explore the reasons for scholarship achievement of nursing students in a baccalaureate nursing school in Macao, a Special Administrative Region of the People's Republic of China. **Background** The better the qualification of the nursing students get today, the better the quality of patient-care will be provided in the future. It is necessary to understand the factors that make some nursing students performing outstanding in professional patient-care and achieving clinical scholarship. **Methods** The study used a qualitative study to exam and understands nursing students who reached scholarship achievement and standard during clinical practice during a 4-year bachelor degree program. Nursing students that have achieved clinical scholarship will be invited to talk about their experiences to be scholarship awarders. These students were from Year 2 to Year 4. **Results** Nine awarded scholarship nursing students accepted the invitation to verbalize their perceptions. Their expressions were transcribed verbatim as accurately as possible. Their comments were grouped into two themes: positive thinking and positive attitude during clinical practice. **Conclusion** These outstanding nursing students' positive comments and philosophy are very useful for other nursing students and nursing faculty to learn and for reference. Being a professional educator, should have the teaching strategy to motivate our young generations to think and behave positively. The perceptions of these outstanding nursing students will give good hints to nursing faculty and other students regard positive thinking and attitude during clinical practice. These elements not only affected the professional nursing behavior as well as quality of patient-care.

321 Youth Risk Behavior Survey: A Case Study of the Urban Youth in Thailand

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Aims: Adolescence is a transitional period for involving in health-risk behaviors that contribute to the leading cause of death and disability, especially low-income adolescents in urban areas who were exposed to several risk factors. Thus, it is important to monitor risk behaviors in adolescents. The purpose of this study was to describe health and health risk behaviors among adolescents. **Methods:** Data were collected using a questionnaire adopted from a CDC Youth Risk Behavior Survey from 148 adolescents aged 12-16 years and were analyzed using descriptive statistics: frequency and percentage. **Results:** Seventy six percent of the students had normal body mass index. Their risky behaviors were smoking (13.5%), drinking alcohol (18.92%), substance use (2.03%), not wearing a helmet (25.68 %) when riding on a motorcycle, not wearing a seat belt (18.92%), and being passengers of drunk drivers (3.38%). The subjects carried weapons in public (6.76%) and participated in violent events (35.14 %). Sixteen point two percent of students were assaulted and needed to be hospitalization. Six point eight percent had had sexual intercourse. The youngest age of having sexual intercourse was 12 years old. When considering gender overall male adolescents involved in health risk behaviors more than female adolescents. **Conclusion:** Adolescents were critical age for engaging in health-risk behaviors due to physical and physiological change. The preventive effort to prevent risky behaviors need to be implemented in urban youth group especially in male adolescents. To prevent sexual intercourse and health related problems, preventive program should be started before 12 years old.

322 Using Factor Analysis to Resolve Overlapping Roles and Responsibilities of Local Health and Non-Health Organizations in Thailand

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Objective Decentralization has been in the Thai Constitution since 1997 as a means to strengthen health systems at sub-district (Tambon) level. However, unclear roles and responsibilities of Tambon Health Promoting Hospital (THPH) and Sub-district Administrative Organization (SAO) for a number of activities have been of concern and therefore were resolved using mixed methods including factor analysis. **Material & Methods** Extensive search was conducted to identify all relevant documents to list health activities to be in the questionnaire for national survey. Forty-five documents from nine sources contained 595 health activities. Confusing sentences were linguistically clarified. To reduce burden to respondents, health activities were randomly split into five different sets of questionnaire. Multistage cluster sampling was used to identify 378 nationally representative samples. Respondents were asked whether each health activity was their responsibility and/or was done by them using 5-point Likert scale. The findings from exploratory factor analysis (EFA) were presented to a panel of eight national experts from Ministry of Public Health, Ministry of Internal Affairs, and Faculty of Political Sciences to reach final conclusions. **Results** Overall response rate was 73.1%. Of 595 health activities, 515 (87%) and 343 (58%) were responsible by THPH and SAO, respectively. There were 151 (25%) health activities that belonged to and implemented by both organizations. However, 23% (119/515) of THPH health activities were left undone, compared to 39% (134/343) of SOA health activities. Despite full responsibility, 38 health activities were implemented by neither THPH nor SAO. Fifty health activities (8%) were ignored by both organizations. The panel of experts concurred with the EFA findings and provided some useful comments on policy implications. **Conclusion** Unclear roles and responsibilities of local organizations for health activities are important but often overlooked. However, it can be empirically resolved using exploratory factor analysis.

326 Effects of Brief Cardiac Rehabilitation Program on Cardiovascular Endurance: Evidence from the Largest Private Hospital in Southeast Asia

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Cardiac rehabilitation (CR) program has been shown to lower mortality, reduce cardiovascular risk factors, and improve quality of life, mainly through better cardiovascular endurance. The standard program (sCR) usually takes three months and therefore requires full patient compliance. However, questionable feasibility has been concerned and more evidence from actual implementation is therefore needed. As the largest private hospital in Southeast Asia, Bumrungrad International Hospital have provided services to more than one million patients from 190 countries annually. Because sCR program is not feasible for our patients, we had to develop a brief version with six sessions in one month (bCR). This study presents our experience in exploring the effect of bCR on cardiovascular endurance, measured by six-minute walk distance (6MWD). We found that the average pre-bCR 6MWD of 441 meters was significantly increased to 525 meters at program completion ($p=0.0002$; paired t-test). The extent of improvement was similar to sCR in published literature. This potential benefit of bCR on cardiovascular endurance should be further tested with randomized controlled trial.

329 Effects of Clinical Supervision by KM Activities on Learning Achievement and Critical Thinking Among Nursing Students of Suranaree University of Technology

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Abstract This classroom research was quasi-experimental designed. The objective of the study was to examine the effect of clinical supervision by using knowledge management activities on learning achievement and critical thinking of nursing students. A total of 47 nursing students, who have studied in 3rd year at Suranaree University of Technology, were purposively assigned to control ($n=32$) and experimental ($n=15$) group. The experimental group received supervision by using knowledge management activities but the control group received routine supervision. The measurement for critical thinking skills Reungurai Amornchai (2007) and knowledge of mental health and psychiatric nursing test were used for data collection. Data were analyzed using paired t – test. The results of the study were as follows : 1. The experimental group had a mean score on critical thinking skill increased from before the experiment ($p < .001$) and significantly higher than the control group. ($p < .05$) 2. The experimental group had a mean score on knowledge of mental health and psychiatric nursing increased from before the experiment ($p < .001$) but not difference from the control group. The results indicated the clinical supervision by using knowledge management activities can increase critical thinking skill of nursing students. Therefore, lecturers should apply this program to improve a thinking system of nursing students for creating effective teaching.

Keywords: Critical Thinking Skill , Knowledge Management Activity, Clinical Supervision

335 Using Trans-disciplinary Team Care Nursing Experience of a Patient with Newly Diagnosed Colon Cancer Surgery

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Purpose : Patients undergoing colon cancer surgery, with the establishment of disease diagnosis. A series of psychological stress social problems and survival coming nursing process. Nurse using a trans-disciplinary team care mode of intervention, guide the patient and their families to participate in care planning, thereby enhancing functional recovery after surgery cases, rebuild and strengthen the body image and self-confidence. Method : Using trans-disciplinary team care mode, nurse assess overall demand , integrate and coordination. Any specialty take team contain nurse practitioners; colon and rectal surgery; oncology; dietitians; social workers and oncology case management together to help the patient through the low period. Using trans-disciplinary team care target can with each other to share information, identify needs, to form plans and to provide appropriate services makes the case can appropriately get holistic care. Result: A patient with newly diagnosed of colon cancer surgery under using trans-disciplinary team Care. Upgrade case quality of care and cause patient adapt disease, smoothly back to life. Conclusion: Through trans-disciplinary team care process, it was possible to provide individual and appropriate nursing interventions that helped the patient to face his disability and supported him and his caregiver learned how to care at home. This, it was possible to promote his self-care abilities and improve his quality of life.

338 Potential Factors affecting Compliance to Edmonton Score in Clinical Care Process: Experience from the Largest Private Hospital in Southeast Asia

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Background Edmonton score has been commonly used in palliative patient care but its compliance has been questionable. This study aims to explore potential provider and patient factors affecting compliance to Edmonton score in clinical care process at our institution. Methods The analysis was conducted using the Horizon Center Cohort Database (HC2D), a prospective cohort data of cancer patients at Horizon Center, Bumrungrad International Hospital. Interviews with care providers and patients were conducted and qualitatively analyzed using thematic content analysis. Results A total of 224 patients during July 2013 – April 2014 were included in this study. Majority were Asian (67.80%), followed by Middle Eastern (17.42%), African (8.33%), and Caucasian (6.44%). Edmonton score was applied in 87 cases (32.95%). Of the ten components, pain was assessed in all 87 cases whereas the rest were assessed in 81-86 cases. Problems other than listed were assessed in 33 patients. Patients from various ethnic origins responded significantly differently ($p=0.006$). Female patients were significantly more likely to comply ($p=0.004$). Care providers expressed concerns about feasibility of Edmonton score, especially in some staff who regarded this scoring as additional burden. Patients initially found the scoring confusing especially during the side effects of chemotherapy; however they later discovered the benefit of the score at the following visits. Conclusion Edmonton score is useful for maintaining continuity of cancer patient care. Variation of compliance to its components existed and could be from provider and patient factors. Different compliance across ethnicities and genders was found and should be further explored.

339 Convergent and Discriminant Validity between the Nursing Child Assessment Teaching Scale and the Maternal/Child Behavior Rating Scale in Children with Developmental Delay

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Background and purpose: The association between quality of parent-child interaction and development in children with developmental delay has been found. Therefore, enhancing parent-child interaction has become the focus in early intervention. In order to capture the quality of parent-child interaction, choosing an appropriate observational measures and applying them in assessing interactional behaviors for parents and children during parent-child interaction are essential for clinical decisions for planning intervention. Methods: We examined the converge and discriminative validity between the following measures: the Nursing Child Assessment Teaching Scale (NCATS), and the Maternal Behavior Rating Scale (MBRS) and the Children Behavior Rating Scale (CBRS) using Pearson correlation. Result: Moderate correlations ($r = .532-.397$, $p < 0.05$) between the two parent's subscales (Sensitivity to Cues and Response to Infant Distress), caregiver total scores of NCATS and three subscales of MBRS (Responsive/Child Oriented, Affect/Animation and Achievement Orientation) were found, while correlations between child's subscales of NCATS and the CBRS were not statistically significantly. Conclusions: The three measures may capture different constructs for parent-child interaction. Using multiple measures to comprehensively explore interactional behavior for parents and children based on the purposes of measuring parent-child interaction were suggested.

340 Heart Rate Variability Responses to Oral Feeding in the Initial Learning-to-feed Period: Differences between Premature Infants with and without Bronchopulmonary Dysplasia in Clinical Situation

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Premature infants with bronchopulmonary dysplasia (BPD) have a compromised respiratory function and suck-swallow-breathe patterns. Heart rate variability (HRV) represents the autonomic control of cardiorespiratory regulation which might play an important role on the readiness of oral feeding. This study aimed to explore HRV responses to oral feeding in premature infants with and without BPD in their first week of learning-to-feed period. Sixty-six premature infants, 44 with BPD and 22 without BPD, of gestational age less than 32 weeks were included in this descriptive study. Spectrum components of HRV, including low frequency (LF, normalized units: nu) and high frequency (HF, normalized units: nu), were measured 5 minutes before, during, and 5 minutes after oral feeding at one meal of daily regular feeding in the first week of learning-to-feed period. The generalized estimating equation model showed that there was no significant difference in HRV responses to oral feeding between infants with and without BPD. However, in infants without BPD, LF was declined ($p = .009$) and HF was increased ($p = .010$) during oral feeding after adjusted for other confounding factors. Girls without BPD had a higher LF and lower HF. In infants with BPD, there was no significant change in LF and HF during feeding. However, girls with BPD had a lower LF and higher HF. The mutual regulation of sympathetic and parasympathetic activities to oral feeding was more prominent in premature infants without BPD than with BPD in their first week of learning-to-feed period.

341 Self-care and Health-seeking Behaviors among Older Persons in Indonesia

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We determined circumstances and factors of self-care and health-seeking behaviors of older persons in Indonesia. This cross-sectional study was done in Tammua sub district, South Sulawesi, Indonesia. There were 140 older persons who participated in the study. A questionnaire was administered to gather data on socio demographics, self-care practices, health-seeking behavior and other health-related data. In addition, REALM-SF was used to determine levels of health literacy, and the General Self-Efficacy Scale was applied to measure self-efficacy. Pearson Chi-Square, Spearman's Rho, and Fisher's Exact tests were used for statistical analysis. Of the respondents, 9.3% had not sought any health assistance in the last year. Almost half of the respondents (43.6%) had inadequate self-care practices. More than one-fourth of the respondents never limited their sugar (39.3%) and salt (28.6%) consumption. No relationship existed between self-care practices and health-seeking behaviors. However, a significant relationship existed between health complaints and health-seeking behaviors ($r=0.29, p<0.05$). In conclusion, we were concerned with inadequate self-care practices and the number of older persons in Indonesia who never seek any health assistance. Based on these findings, an intervention program should be developed to increase the self-care practices of Indonesian older persons.

Keywords: self-care practices, health-seeking behaviors, older persons

343 Physical Therapy Modalities for Non-specific Low Back Pain in the Largest Private Hospital in Southeast Asia

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Non-specific low-back pain (NLBP) is a common condition that affects quality of life. Many physical therapeutic modalities have been offered but time required and patient's preference are the two most important factors for international patients. This study explores the utilization and outcome of physical therapy modalities in Bumrungrad International Hospital (BIH). Data of 225 NLBP patients from 27 countries in the BIH Physical Therapy Cohort (BIH-PTC) database which contains demographic characteristics and clinical outcomes of all NLBP patients from various ethnic origins who attended at least three consecutive sessions were analyzed. Pain was assessed in each visit by numeric rating scale (NRS). Patients were middle-aged (48 years old), over weight (BMI 25.49), and male (49%). The most prevalent manual therapy modality was massage (95.6%), followed by exercise (91.6%), stretching (89.8%), and mobilization (75.1%). The equipment used in physical therapy session were hot pack (94.2%), ultrasound (88.9%), cold pack (16.9%), ultrasound with electrical stimulation (10.67%), transcutaneous electrical nerve stimulation (10.2%), interference current (7.1%), and short wave diathermy (3.1%). NRS was significantly improved from 6.11 in first visit to 4.85 and 4.34 (both with $p<0.0001$, paired t-test) in second and third visits, respectively. Pain improvement at second and third visits significantly differs between Thai and non-Thai patients ($p=0.0051$ and $p=0.0093$, unpaired t-test). This ethnic variation of clinical response should be further investigated.

345 Morphological Changes of Astrocytes in Lumbar Spinal Enlargements of Short-termed Streptozotocin Diabetic Rats

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Diabetic neuropathy is one of the most complication in the diabetic patients with neuropathic pain and most sensation loss in legs. Moreover, the degeneration of neurons in the lumbar enlargements of diabetic spinal cord occurs. Astrocytes, an important neuroglial, play essential roles in the structural support and regulation in functional maintenance for neurons in spinal cord. However, the detail about histological alterations of diabetic astrocytes in this segment is confusing, particularly in the white matter. Thus, the purposes of this research were to investigate and compare the histological alterations of astrocytes in the gray and white matters of streptozotocin (STZ) diabetic rats in short-termed and control groups. Seven diabetic male rats were induced with STZ in the citrate buffer and six control male rats were injected with the same buffer. After the induction, all rats were sacrificed at 4 weeks. Then, the lumbar enlargements were removed for the histological processing. Under light microscopy, the characteristics of astrocytes in both gray and white matters were same in either control or diabetes. In the short-termed diabetes, the increased numbers of astrocytes with swollen nuclei were observed. Moreover, the arrangement of nerve fibers in the diabetes were irregular in the white matter. In conclusion, diabetes leads to destructive morphology in spinal astrocytes. As a result, diabetic neuropathy develops. Consequently, this research should be examined for further ultrastructure of astrocytes to provide the basic knowledge for further therapeutic treatment in diabetic patients and enhance the quality of their life expectancy.

354 Factors Determining the Uptake of Influenza Vaccination among Children with Chronic Illnesses

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Background: Influenza vaccination protects children against influenza and related complications. Previous studies found that parents having greater perceived threat of influenza were more likely to vaccinate their children. Aims: To examine the factors determining the uptake of influenza vaccination among children with chronic illnesses. Methods: We conducted a cross-sectional survey of 623 parents with children having chronic illnesses. The Chinese version of the questionnaire developed by Daley et al. (2006) was used to examine parents' experiences of and attitudes towards influenza, reasons for and barriers to vaccinating their children against influenza, and sources of information about influenza vaccination. Results: The parents' mean age was 40.1 (SD=8.1) years. The most important sources of information about influenza vaccination were television (61%) and healthcare providers (14%). The uptake rate of influenza vaccination of their children was 33% in the past 12 months. Multivariable logistic regression analysis revealed that the uptake was significantly correlated with parents' perceived susceptibility of their children to influenza, and perceived risks, benefits of, and barriers to vaccination. Only 39% of the parents (n=240) intended to vaccinate their children against influenza in the coming flu season. The most important reasons were prevention of influenza (28%) and perceived vulnerability of their children to influenza (23%). Conclusion: This result indicated that the parents lacked awareness of the risks of influenza and had insufficient knowledge about the benefits of vaccination. The findings could inform the development of theory-based community-based interventions to promote the uptake of influenza vaccination among children with chronic illnesses.

355 Using Trans-disciplinary Model an Newly Diagnosis of Tuberculosis Patients

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Purpose: According to World Health Organization(WHO) statistics, In 2012, 860 million people suffering from with tuberculosis and 1.3 million died from tuberculosis. WHO and Stop TB Partnership common goal is guarantee each patient can diagnosis, treatment and cure. Anxiety and social isolation problems were developed due to newly diagnosis. Nurse Practitioner use trans-disciplinary model intervention, guide the patient and their families to participate in care planning, increase patient willingness to treatment. Method: Trans-disciplinary model members Include nurse practitioner; nurse; pulmonologists; social workers; case manager and pharmacist. Integrate common care plan, to help care for patients tide low tide, addition patient adapt suffering TB create psychology Pressure. Nurse practitioner assess patients overall demand, empowering the patient to achieve the right decisions in a timely manner to provide relevant health. Result: TB patient via trans-disciplinary model intervention reducing the pressure to be isolated. Adapt and improve illness perception and compliance medication, Successful reintegration. Conclusion: Through trans-disciplinary model of care. Give a more complete care for the patient's individual needs, thus achieving the common goal of the WHO and Stop TB Partnership organizations.

356 Incorporating Gender and Gender Mainstreaming into Medical Education: Progression & Barriers

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Gender inequality is not just a social issue, but also affects the medical profession and practice. Sex and gender play a critical role in medical and health care, the medical profession should be aware of the relation between gender equality and health caring. Furthermore, medical education should develop and construct gender-issues curriculum to change students' gender imagination and understanding. Gender mainstreaming is an international trend in recent years in promoting gender equality. Therefore, this study investigated how the perspective of gender mainstreaming, as a promoting gender equality policy and guideline in medical education, propose specific reform strategies for the promotion of gender equality education in medical university. In this study, two medical universities in Taiwan as the research objects, through a qualitative case study, the development experiences and hindering factors of gender into medical education curriculum were investigated. This study also analyzed those factors impeding gender into medical education curriculum and proposed strategies to promote gender curriculum. The collection of data utilized focus interviews, in-depth interviews, and document collection. The interviewees included teachers, students, administrative staff and directors, and school policy makers. This study hopes to promote gender mainstreaming and gender equality into Taiwan medical university education policy, integrating gender perspectives into the curriculum and teaching among the tomorrow doctors and future health care staff to cultivation their gender knowledge and competence that will enable men, women, and different sexual orientation people acquired equal health care.

357 Variations of Five Essential Minerals in Healthy Adults: Evidence from the Largest Private Hospital in Southeast Asia

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Data on global reference ranges of essential minerals are limited but could be explored using laboratory information of healthy adults. As a medical tourism hub, Bumrungrad International Hospital has seen more than one million patients from 190 countries annually and therefore is suitable for this exploration. Laboratory findings of 3,624 healthy adults with no underlying diseases or prior nutritional supplements were selected out of 6,514 subjects who visited the Vitallife Wellness Center during January 2007 to December 2011. All measurements were done using standardized equipment. Descriptive statistics including reference ranges calculated by percentile 2.5th and 97.5th and Student t-test were used for data analysis. Average age of the subjects was 48.51 years (range: 18-98 years), 47.08% were male, and 39.13% were Thai. The reference levels of chromium, copper, magnesium, selenium and zinc were 0.14-0.83 µg/L, 63-135 µg/dL, 1.8-2.6 mg/dL, 68.58-131 µg/L, and 62-116 µg/L, respectively. Gender effect was found in all minerals; male subjects have significantly higher magnesium, selenium, and zinc levels whereas chromium and copper were higher in female subjects. Age effect was found only in chromium, selenium, and zinc levels. Thai subjects have significantly higher magnesium, selenium, and zinc levels than Non-Thai, even after adjusted for gender. This study provided initial view of reference range for five essential minerals in healthy adults. The values significantly differs across gender and age whereas ethnic variation is likely and should be further explored.

358 Variations of Micronutrient Levels in Healthy Adults: Evidence from the Largest Private Hospital in Southeast Asia

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Background Micronutrients have gained more attention during the past decades, especially from laypersons. However, data on global reference ranges of micronutrient levels are limited because the blood levels have not routinely been measured in clinical settings. With large number of apparently healthy adults from various ethnic origins, Bumrungrad's Vitallife Wellness Center is the best possible site for this scientific exploration. Methods Of 6,514 subjects who visited Vitallife Wellness Center during January 2007 to December 2011, laboratory findings of 3,052 healthy adults with no underlying diseases or prior nutritional supplements were analyzed. All measurements were done using standardized equipment. Descriptive statistics including reference ranges calculated by percentile 2.5th and 97.5th and Student t-test were used for data analysis. Results Average age of the subjects was 48.51 years (range: 18-98 years), 47.08% were male, and 39.13% were Thai. The reference levels of alpha-carotene, beta-carotene, lycopene, and coenzyme Q10 were 0.02-0.71, 0.17-3.53, 0.11-1.67, and 0.35-2.45 µmol/L, respectively. Gender effect was found in all micronutrients; male subjects have significantly higher lycopene and coenzyme Q10 levels whereas both carotenes were higher in female subjects. Age effect was found in all but lycopene. Thai subjects have significantly higher beta-carotene and coenzyme Q10 but lower lycopene levels than Non-Thai, even after adjusted for gender. Conclusion Based on blood levels of large number of healthy adults, the reference ranges of four micronutrients were estimated. Potential variations across gender, age, and ethnicity were also found and should be further explored.

361 Development of Task Training for Nursing Manageability Related to Fall Prevention

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Abstract Nursing manageability and intervention are necessary for fall prevention, and possessing a high ability for clinical judgment and a supportive organization are contributing factors. The aim of this study was to determine the validity, importance, practicability, and expected effectiveness of training for nursing manageability related to fall prevention. This training was developed based on evidence and consisted of a high level of questions, model answers, and a rubric that included reflection for self-evaluation. The study design was posttest only. Research sites were three general hospitals (124, 230, and 260 beds), and 44 nurses participated. Of the total participants, 31 (70.5%) completed the training. The validity score was 7.4 ± 0.7 , importance was 7.6 ± 0.7 , and practicability was 6.9 ± 0.7 (scale range: 0-9). Effectiveness in increasing nursing manageability related to fall prevention was 69.0 ± 22.5 , increased effectiveness in clinical judgment ability was 67.3 ± 23.2 , and increased effectiveness in care efficacy related to fall prevention was 52.3 ± 27.2 (scale range: 0-100). Reflection of nursing managers was more self-evaluative to improve their management ability, whereas novice nurses relied on the fall risk assessment scale and felt limited in their ability to provide care. In conclusion, it was suggested that the validity of the training was confirmed, but practicability was low. Revision was necessary to become more practical. Reflection was important to develop ability in clinical judgment.

362 Development of New Tools: Measuring Stroke Survivors' Outcome Expectation and Performance of Stroke Self-management Behaviours

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Background Few studies have examined both stroke survivors' self-efficacy and outcome expectation to better understand their participation in stroke self-management. While a tool for measuring Stroke self-management self-efficacy is available, there were no reports of tools to measure either outcome expectation or performance of self-management behaviours. Aims To develop and test two new tools for measuring stroke survivors' outcome expectation and performance of stroke self-management behaviours. Methods A literature review was conducted to identify stroke self-management behaviours and outcome expectations. A 10-item Stroke Self-management Outcome Expectation scale (SSMOE) and a 10-item Stroke Self-management Behaviour Performance Scale (SSMBP) were developed to measure outcome expectation and performance. Both tools are scored on a 10-point Likert scale (0 "not confident at all" to 10 "Very confident" for SSMOE; 0 "Very dissatisfied" to 10 "Very satisfied" for SSMBP). Content validity were conducted by an expert panel of four nurses, two physicians, and one nurse academic. The tools were piloted in a convenience sample of 82 community-dwelling stroke survivors (mean age=60.6 years, SD=9.6). Results Fifty-nine (76.6%) had a first stroke and 43 (58.1%) had ischaemic stroke. Mean length of time since stroke was 9.5 years (SD 5.5). The participants were most confident in feeling happier or supported if they participate in social activities (mean=7.66, SD=1.83). Cronbach's alphas of SSMOE and SSMBP were 0.95 and 0.94 respectively. Conclusion The new tools will be important in assessing effectiveness of stroke self-management interventions. Further exploration of psychometric properties of the tools will be conducted.

363 Hospital Nurses' Experiencing Moral Distress Arising from Caring for the Deceased in Korea: A Qualitative Study

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Background: A popular view of humanism suggests that the nurses need to show respect for the dead and treat them with due care. The nurses who handle the deceased often experience moral distress when they have difficulties acting on their moral judgments due to institutional or other constraints. **Purpose:** The aim of this study was to explore Korean nurses' experiencing moral distress which arises from caring for the deceased on an inpatient and intensive care units and identify constraining factors. **Methods:** Qualitative descriptive methods consisting of semi structured questions were presented to inpatient care unit's nurses (n=6) and intensive care unit's nurses (n=6) participating in focus groups from April to June, 2012. Conventional content analysis was used to analyze data and organize results. **Results:** The factors which cause the nurses to undergo moral distress when performing their given duty were classified into 3 categories and 10 themes. Constraints have been identified as internal (guilty feelings & legal concerns, self-blame, negative attitude towards the death), external (lack of colleague emotional support, considering as objects, family's interference, previous relationship with patient or family), and institutional (workload, compulsion to work, institutional policies). **Conclusions:** This study was the first to explore the experiences of Korean nurses towards caring for the deceased and provided an exhaustive list of each of these constraints. In order to prevent and treat these moral tensions, the nurses would need to acknowledge their own individual or societal barriers and assist themselves to eliminate these barriers.

365 The Effect of Meditative Movement Intervention on Quality of Sleep in the Elderly: Systematic Review and Meta-analysis

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Background & Aims: Meditative movement interventions (MMI), a new category of exercise integrating physical activity and meditation (e.g., tai chi, yoga, and qigong), may benefit older people with sleep problems. In this systematic review, we synthesized the evidence on MMI's effect on older people's quality of sleep. **Methods:** We searched PubMed, EMBASE, Scopus, CINAHL, PsycINFO, Web of Science, Cochrane Library, CAJ full-text database, and China National Knowledge Infrastructure (CNKI)—through to March 2014—for randomized controlled trials published in English or Chinese. Articles were screened and selected by two researchers. Data were extracted from the included studies using specified forms. The same researchers independently evaluated each article's quality. Meta-analysis was conducted to examine the pooled effect of MMI on sleep quality, compared to control groups. **Results:** Fourteen out of 881 studies with 1,213 subjects were included. Interventions included tai chi, yoga, qigong, and multi-component MMI, lasting 12-24 weeks. Few studies were of high quality. The intervention had moderated benefit on improving sleep quality (SMD: -0.72, 95% CI: -0.98, -0.47). Subgroup analyses revealed tai chi and yoga had a positive effect on sleep quality independently (SMD:-0.54, 95% CI: -0.85,-0.23;SMD:-0.77,95% CI:-1.08,-0.46). However, the evidence is uncertain due to substantial heterogeneity. No serious adverse events were reported. Compliance rates ranged from 45.8% to 100%. **Implications:** MMI had a moderate effect size on improving the quality of sleep for older people with sleep complaints. High-quality studies are needed, with larger sample sizes to confirm the results.

368 The Development of a System Combined with Brainwave Measurement and Optical Stimulation

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The study developed an optical stimulator which is composed of EEG monitor, low level laser stimulation, NI ELVIS II and software LabVIEW 2011. The purpose of this study is to find that the optimization of the optical stimulator on brain wave, especially the frequency adjustment of the stimulator. The experimental results showed that the power bands (including δ band, θ band, slow α band, and fast α band) were increased with laser stimulation (operated at 12 Hz). However, the power δ and θ bands were increased with laser stimulation (operated at 6 Hz). The system is completed and the clinic trial will be conducted in the future.

369 Effect of LED Light Stimulation on Sleep Latency and Autonomic Nervous System in Normal People

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The aim of this study was to explore the effect of the LED array stimulator (LEDAS) on sleep latency and autonomic nervous system (ANS). The improvement of sleep latency and the changes of ANS were accessed with EEG and heart rate variability (HRV) respectively. The LED array stimulator (six LEDs, wavelength 850 nm, output power 10 J/cm², and operation frequency 6 and 10 Hz) was used to irradiate the palm. There are 20 normal subjects were recruited in the study, each subject participated in the active group (LED irradiated) and placebo group (sham LED irradiated). The result indicated that there was not statistical significance between the active group and placebo group, but the average of the sleep latency of the active group was shorter than the one of placebo group except fifth times. And the HRV analysis showed that the low frequency component (LF) was declined at first and then increased gradually. It means that the sympathetic nervous system was inhibited at first and then activated. From this study, stimulating the palm with the LEDAS could improve the sleep quality and regulate the ANS. We thought that this method will be able to apply for clinic treatment with sleep disorder in the future.

370 Study the Influence of Staying up Late on Digesting System with Optical Pulse Measurement System

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Night shift working is an important factor that affects the autonomic nervous system from the point of view of western medicine. However, from the point of view of the traditional Chinese medicine (TCM), the deficiency syndrome in the body will be induced for long time night shift working, so the spleen will be inhibited by the liver, and the digestive system will be disturbed by the unbalanced situation. The main goal of this study is to clarify the deficiency syndrome of the night shift workers, especially the digestive system. In this work, an optical pulse measurement instrument was used to measure the pulse of the subjects. From time and frequency domain analysis, the experimental results show that there are significant differences between the night shift workers and normal subjects on right Guan point (relates to stomach and spleen). It reveals that the digesting systems of the night shift workers are not ready in the morning. These results comply with the theory of TCM.

372 Evaluation of Diabetic Patients' Knowledge, Attitude and Practice of Diabetes and its Self-management with Particular Emphasis on Ocular Complications

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Background: Levels of knowledge, attitude and practice about diabetes mellitus (DM), its complications and self-management in Alkharj city are unknown despite the high prevalence of DM in Saudi Arabia. Objectives: To assess type 2 diabetic patients' knowledge, attitude and practice regarding diabetes and its complications, particularly ocular and self-management. Methods: A cross-sectional study was conducted included diabetic patients (type 2) over 20 years old, who attended the outpatient clinics at selected primary health care centers, King Khalid and university hospitals at Al-Kharj throughout the period September 1st to November 30, 2013. A questionnaire included questions designed to assess patients' general understanding of DM, its complications and management options as well as their attitude towards diabetes and its management and their practices in this regard was used. Results: The study included 393 type 2 diabetic patients. One-hundred sixty three patients (41.5%) were in the age group 40-59 years. Slightly more than half of them (51.9%) were males. More than half of respondents (57%) had average knowledge while only 17% had poor knowledge and 26% had good knowledge regarding fundamental aspects of DM and its management. (73.6%) of type 2 diabetic patients never or not examined regularly by ophthalmologist. Conclusion: In this study, type 2 diabetic subjects in AlKharj city had a significant knowledge of DM and its management. However, there was a clear gap between their knowledge and practice regarding ocular complications. These results highlight the need for educational and awareness programs that reinforces the need for regular eye examinations.

374 The Reality of Social Change

Yu-Hsian Chen, *Mackay Medical College, Taiwan*

The reality of social change Dr. Yu-Hsian Chen / Assistant professor/ Mackay Medical College, Taiwan
The Taiwanese government subcontracts the demand for elderly care by designing immigration policies that promote employing foreign carers as a cheaper option to increased welfare. Thus, over 200,000 foreign carers were working in the households in Taiwan. There has been little research on the interactions between foreign carers, family employees and older persons receiving care. The theoretical framework brought together symbolic interactionism concepts and the social constructionism of Berger and Linkman. Data collection and analysis were informed by Charmer's formulation of grounded theory. Two focus groups and 54 in-depth interviews with total of 57 foreign carers, Taiwanese employees and older persons receiving care were undertaken. The findings reflect the ways in which the foreign carers, Taiwanese employees and older persons receiving care were socially situated within the research context and how their respective social realities were shaped differently by changing social structures and cultural values within a globalizing context. "The reality of social change" refers to the employment of foreign carers as a manifestation of reshaping of the social worlds of the three groups of participants. The findings may have implications for policy considerations for international and national governing bodies. Implications related to nursing professionals and family employers were also provided to consider high quality of long-term care for older people in households.

375 Patient-health Care Professional Gender Concordance and its Association with Weight-related Advice

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Background: Gender concordance between patients and their health care professionals (HCPs) is associated with better quality of patient-HCP communication and higher patient satisfaction. However, little is known about the role of concordance in patients' receiving weight-related advice from HCPs. **Purpose:** To examine the association between patient-HCP gender concordance and weight-related advice given to U.S. adult patients. **Methods:** With cross-sectional and nationally representative data from the Medical Expenditure Panel Survey (MEPS) 2004-2007, we analyzed data for 9,686 pairs of patients and their HCPs for gender concordance. Logistic regression models were fit to test the associations, which adjusted for potential confounders. **Results:** We did not find patient-HCP gender concordance associated with the weight-related advice, and patients' weight status did not moderate the association. Patients appeared to be more likely to receive weight-related advice from female than male HCPs. Overweight and obese male patients seeing male HCPs were less likely to receive the advice, compared to their counterparts seeing female HCPs (exercise advice for overweight patients: OR = 0.62 [95% CI = 0.43 to 0.89]; diet advice for obese patients: OR = 0.66 [0.44 to 0.98]). Overweight females seeing female HCPs were more likely to receive exercise advice compared to those seeing male HCPs (OR = 1.44 [1.10 to 1.89]). **Conclusions:** Patient-HCP gender concordance is not associated with the weight-related advice. Female HCPs were more likely to provide weight-related advice than male HCPs.

378 Association of the FTO Gene SNP rs17817449 with Cardio metabolic Risk Factors in Kazakhstani Population. Astana Health Study.

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Objective The objective of this study was to analyze the association of the FTO rs17817449 genetic variant (T>G polymorphism) with obesity related phenotypes in Astana population. **Subjects and methods** A total of 482 subjects aged 50-75 years from outpatient department in Astana city, Kazakhstan were included in this study; all subjects completed a questionnaire and underwent an examination in a clinic and provided a blood sample and had DNA material available. Genotyping of FTO gene (rs17817449) polymorphism for all subjects was performed by the RT-PCR method as described elsewhere. **Results** The associations between FTO and obesity indices in Astana are similar to those found elsewhere, although the frequency of the most harmful genotype is a bit different from the genotype distribution in other Asian studies. The FTO variant was significantly associated with waist (means in GG, GT and TT were 100.5, 98.4 and 96.7, $p < 0.043$ adjusted for age and sex). Trends with BMI, blood lipids and hypertension were not significant in this study. **Conclusion** Our study replicated the genetic association of FTO variant (rs17817449) with obesity in Astana city population. This study established that FTO (rs17817449) are strongly associated with waist circumference and waist to hip ratio in Kazakhstani population.

380 Information Provision in Pediatric Emergency Telephone Consultation Services

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I. Objective

To investigate public awareness of pediatric emergency telephone consultation services (#8000) in City A, in order to consider measures to disseminate such services.

II. Methods

In 2012, we surveyed individuals whose children were baby salon users or underwent checkups at the ages of 1 and a half years and 3 years in City A.

III. Results

We obtained responses from 99 individuals whose children were baby salon users (younger than 8 months) or underwent checkups at the ages of 1 and a half years and 3 years. Among the responders, mothers, individuals in their 30s, those with 1 child, and those with a nuclear family numbered 82 (83%), 35 (67%), 27 (52%), and 43 (86%), respectively. In City A, #8000 was known by 81% of the responders. The sources of information involved a maternal handbook and child raising supporters visiting newborns in 52 (53%) and 35 (35%) subjects, respectively. Sixty one parents (62%) desired to obtain necessary information regarding #8000 through their maternal handbook. Also, 10 (45%) and 9 (41%) parents, respectively, had sought emergency consultation and observed their children at home without seeking emergency consultation according to the advice provided. Approximately 40% of those seeking consultation were reassured by their consultants, and approximately 30% of the subjects reported that phone calls could not be connected to a service center.

IV. Conclusion

It is necessary to make #8000 more reliable by facilitating night-time services and establishing multiple telephone lines, in order to reassure parents and prevent unnecessary emergency consultations.

381 Development of an Appropriate Haemofiltration Technology for use in Paediatric Cardiopulmonary Bypass in Developing Countries

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Cardiopulmonary bypass (CPB) is known to cause great changes in a patient's physiological fluid homeostasis which frequently results in accumulation of fluid in the interstitial space, more commonly known as edema. If the associated inflammatory response is allowed to reach a severe level it will result in systematic immune response syndrome, which can entail substantial edema along with serious morbidities such as acute respiratory distress syndrome and organ failure. Modified ultrafiltration (MUF) is a technique which has been shown to successfully moderate inflammatory response and haemodilution in paediatric patients for whom edema is a more serious morbidity. MUF involves removing excess blood plasma/water by postoperatively pumping blood through a haemofilter in a shunt position between the aorta and right atrium. MUF also results in reduced requirements for blood transfusions which are expensive, risk transmission of infectious diseases and are unavailable in a timely manner to many living in developing countries. Current haemofilters require use of a vacuum pump which could pose a clinical risk, are expensive to purchase and maintain, and not designed for use in developing countries. The University of Strathclyde Bioengineering Department is developing a MUF device which replaces the application of a vacuum with chemically driven extraction of plasma to improve safety and reduce complexity and cost. Additionally removal of vacuum pump allows the device to be more easily transported thus improving access to the technique to those in remote locations or for use in disaster relief.

387 Development of Bio-psychosocial Screening Factors For Cholangiocarcinoma, Thailand

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Cholangiocarcinoma (CHCA) is a major public health problem in Thailand especially in the Northeastern region. Development of Bio-psychosocial Screening factors related to CHCA patient is necessary for government to plan for future investigation and management. Therefore, this study aims to identify the significant biopsychosocial factors found in patients with CHCA who were serviced in Satuek hospital, Buriram province, during the years 2008 and 2012. Unmatched case-control analytical study was performed. 53 patients with CHCA were studied. Univariate analysis revealed that biopsychosocial factors that were statistically significant in relation to CHCA were: age over 40 years old (OR = 46.34, 95%CI = 6.26 - 342.81), cholethiasis (OR = 36.00, 95%CI = 4.44 - 291.89), body mass index with less than 25 kg./m² (OR = 3.78, 95%CI = 1.10 - 12.89), alcohol consumption (OR = 1.91, 95%CI = 1.008-3.62) and male (OR = 2.79, 95%CI = 1.45 - 5.35). Multivariate analysis narrowed down statistically biopsychosocial factors to: age over 40 years old (AOR = 34.77, 95%CI = 4.64 - 260.50), cholethiasis (AOR = 22.05, 95%CI = 2.61 - 185.87) and male (AOR = 2.33, 95%CI = 1.03 - 5.28). This study indicates evidence of the utility of biopsychosocial screening factors for future use in clinical investigation and management in CHCA in Thailand.

Keywords: Biopsychosocial factors, Cholangiocarcinoma

389 Improve the Occurrence of Medicine-caused Incontinent Dermatitis

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Background: JCAHO (Joint Commission on Accreditation of Health Care Organization) proposed that skin care is high frequency, high-expenditure and needs to be listed on Quality Control items. Skin damage not only makes patients uncomfortable and extends the days of hospitalization, but also increases the costs of medical care and the loading of caregivers, and affects the prognosis. Method: There were 32 patients with medicine-caused incontinent dermatitis out of 892 in-patient from September to December 2013 (the rate was 3.59%). We analyzed the causes of high frequency of incontinent dermatitis were a. medicine-caused diarrhea; b. lack of incontinent dermatitis associated education courses; c. non-prompt involvement of nursing care team; d. inadequate treatment of skin cleaning. Measures: a. establish the process of diarrhea treatment; b. conduct the education courses; c. focus on it during the ward rounds and shift; d. implement the medication counseling & follow-up. Results: The rate of Medicine-caused incontinent dermatitis has dropped down from 3.59% to 0.48% six months after the project was conducted. Conclusions: It is inevitable to have therapeutic diarrhea while using certain drugs, but if we can assess patients and provide the sufficient precaution measures in advance, and it will not only lead to reduce the occurrence of incontinent dermatitis, decrease the death rate and the chances of complications, but also ease the manpower/finance burdens of caregivers and lower the medication expenditure of government. Furthermore, patients are able to get better care and it can achieve the nursing care quality as well.

390 Parental Awareness and Measures to Prevent Child Accidents

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I. Purpose We conducted a survey to promote the prevention of child accidents at home. II. Methods A survey was conducted in 2012 involving 114 parents of children attending 2 nursery schools. Data were obtained by questionnaire with questions regarding accidents, injury prevention awareness, and behavior at home. III. Results Among the participants, mothers, those with 2 children, and those with a nuclear family numbered 108 (95%), 49 (53%), and 86 (79%), respectively. Seventy percent or more of the parents reported accidents or near-miss or close-call incidents involving their children. Accidents at home involved 68(40%) falls, followed by 26 (15%) burns, and 16 (9%) injures. About 30% of parents had visited a hospital due to the accidents. Accidental ingestion and pulmonary aspiration were associated with a high risk of falls, suffocation, burns and near-drowning (RR=3.1 ~ 5.7). A child's near-drowning was associated with a high risk of falls, accidental ingestion, pulmonary aspiration, suffocation, and near-drowning (RR=5.1 ~ 11.6). Parents conscious of accident prevention carried out preventive activities. On the other hand, parents without such consciousness showed a low rate of preventive activities. IV. Conclusion The results showed that a consciousness of accident prevention is related to performing preventive activities. The results suggest that it is important to educate parents in combination with multiple-accident situations, so as to improve the application of preventive measures by parents.

391 A Survey on the Rate of People who have Infants Wear Helmets when Bicycling with Them

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I. Objective

We conducted a survey to assess the support required to increase the rate of people who have infants wear helmets when bicycling with them.

II. Methods

In 2012, upon obtaining consent from 5 kindergartens in A City, we conducted a survey involving the guardians of children who went to those kindergartens.

III. Results

Among the 437 respondents (75%), those riding bicycles with 1 or 2 infants numbered 190 (43%). Among them, those who have the infants wear helmets for every ride numbered 111 (58.42%). The rate of guardians having infants wear helmets when bicycling with them was higher among those aware of the high helmet-wearing rate in their neighborhood ($p=0.58$, $P<0.0001$).

In the open-ended questions, [instability of the bicycle when riding it with an infant(s)] was comprised of 7 sub-categories, such as <difficulty to keep one's balance when riding a bicycle with an infant(s)>. [Road improvement for safe bicycling] was comprised of 2 sub-categories, such as <Wishing to have a bicycle lane built, because the road is narrow and dangerous>. [Factors causing difficulty in wearing helmets] was comprised of 3 sub-categories, such as <Cannot put the helmet on due to being pressed for time>.

IV. Discussion

The rate of people who have infants wear helmets was approximately 70%, being relatively high. The correlation between an awareness of other people using helmets and the rate of people who have infants wear helmets suggests the importance of education in the community.

HWB 2014 Abstracts for Virtual Presentations

347 Increasing Local Capacity in Rural Laos through a Primary Health Care Collaboration with Australian Nursing Students

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International clinical placements to developing countries provide unique learning opportunities for undergraduate student nurses. Benefits to local communities are often overlooked in short term placements, but Griffith University (GU) has established a positive relationship with a community development project in northern Laos. Since 2010, Australian students and faculty from GU have worked alongside local health workers to provide primary health care to remote villages in the Seuang Valley. The district has extremely limited access to healthcare, with most families living below the poverty line. Each year, more than 35 GU students provide mobile health clinics in 12-14 villages during 3 week placements, often seeing over 150 people per day. Almost no English is spoken in this district. Groups work with Lao interpreters to run health promotion sessions, complete health assessments and provide clinical supplies to treat minor illnesses and injuries. As an immersion placement, students and staff live in basic village homestays. This provides additional insight for students into the impact of social determinants of health, as they observe the local living conditions first-hand. As GU continues to collaborate and build relationships within this project, increased engagement has been observed with local health care workers and District Health officials. After extensive reviews in 2013, approval has been given by the Lao Ministries of Health and Education for GU to continue for another 5 years. Students describe enhanced professional and personal development through the exchange of knowledge, whilst gaining an understanding of global health issues and challenging their own cultural values.

382 Social Support and Self-Care Activities among Elderly with Diabetes in Malaysia

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Diabetes is a common issue among elderly and there are a number of factors associated with social support and diabetes self-care activities that may impact the life of patients. This study is aimed at estimating the social support and self-care activities among elderly with diabetes and to determine the associated factors. A survey involves 200 patients, from March to May 2013. Data were obtained by self-administered questionnaires and clinical characteristics were gathered from patients' records. The mean total of social support was 19.26 and the mean of self-care activities was 14.83. Regression analysis showed a positive significant difference between level of Hb1Ac, FBS and duration of diabetic with level of social support, p value were 0.0001, 0.023 and 0.0001 respectively. On the other hand, self-care activities scale shows a highly negative significant difference ($p=0.0001$) with HbA1c, FBS and duration of diabetic. The results show that, elderly with diabetes received a good social support, but have a problem in diabetes self-care activities. The characteristics of patients have influenced the social support and self-care activities. Health care providers have to strengthen their relationship with diabetes to promote compliance of self-care among elderly with diabetes.

392 Internet of Things based Health Diagnostics Network

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Delivery of quality healthcare to non-urban communities at an affordable cost is a huge challenge for healthcare providers globally. Lack of healthcare facilities and trained medical professionals, and high cost of diagnostics equipment are the key impediments to deliver affordable healthcare. Internet of Things (IoT), data analytics, cloud networks and other advances in mobile communications technologies can help address these challenges. uber Diagnostics has deployed one of the first IoT networks for healthcare diagnostics in India. uber Healthcare Diagnostics Network (uHDN) comprises of four major components – Diagnostics Sensors (IoT), Internet, Cloud Storage and Diagnostics Center.

It is estimated that 60 million people will suffer from cardiovascular diseases (CVD) in India by 2015 [2]. CVD is now considered the number 1 killer in India. Keeping this in mind, for our first implementation of HDN, we used CardioTrack, a low cost EKG as the IoT nodal device. A 3-lead single-channel (Lead-II) EKG was used during the first prototype implementation of HDN. As we gain more experience, a 4-lead 6-channel EKG is planned for scaled up version of the HDN. The prototype network has been operational for 3 months with 10 IoT nodes (CardioTrack units). The data from the EKG scans has become very useful to understand the distribution of various CVD related illnesses.

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University Role in Enhancing the Quality of Life Among Ruralites in the Mountainous Areas and Informal Settlers in the Metropolis

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ABSTRACT

The Laws of the Land preserve and protect the Rights of an individual for quality life.

The paper shows the significant inputs of Education in enhancing the living condition of the Ruralites.

It contains various instances where individual persons or groups living in mountainous areas, villages, and suburbs were extended assistance in terms of training and hands on practices in order to alleviate their present statuses. Normally their trainings are being held right where the subject inhabitants live and in some cases at the University itself.

In the Philippines, the Government brings Education at the door steps of the farmer-clients hence, decentralization of the Universities in the provinces and municipalities.

In a very focus attention the University may establish satellite stations until the application of learning is kept in their everyday lives. The system be maintained regularly until assistance may be withdrawn gradually and regularly periodical visits be resorted instead, as it has been done in the past.

The role therefore, of the University in enhancing or reducing poverty should be accorded with the highest consideration until development is continuously sustained.

Keywords: University, Education, Extension, Rural

INTRODUCTION

“Education is the Future of Life. It’s Life itself and in Extreme Case, Education is Life or Death in severe poverty thus it’s preferred to end one’s life than to be enslaved by poverty. An Educated community is healthy and wealthy where Residents live harmoniously with nature.” - rw

It is always believed that education plays an important role in the improvement of every individual. ^[1] Montalvo (2004) stressed that “Education is a basic factor in economic development. At the microeconomic level, education has an important role in social mobility, equity, public health, and better opportunities for employment.”

Philippines is a country that is composed of more than 7,110 islands of diverse people with different cultures, traditions, and practices. Although developments are seen in various places in the country still there remain the issues on poverty especially the indigenous people (or Ruralites) living in remote places.

Most of these Ruralites are living in mountain areas and their sources of income are coming from those areas. Some even work in far distant places as laborers, helpers, and maids. Since it is seen that the quality of life of these Ruralites is difficult, a lot of them believed that it would be better for them to settle and establish themselves in the Metropolis which eventually becomes informal settlers.

On the other hand, higher education has always been provided by Universities – they provide a major role in providing quality education to all its clientele. The main purpose of this paper is to provide information regarding the role of the university in enhancing the quality of life among Ruralites and informal settlers in the Metropolis.

Higher Education in the Philippines

There are more than ^[2] 500 State Universities and Colleges and a number of Private higher educations located in the Philippines. Each of these Universities is offering various curricular programs that cater to the needs of its students and the industries. Some even offer unique and distinct programs that have established good reputations both local and international.

All Universities have three (3) fold Functions, namely: Instruction (teaching), Research, and Extension (country side development). Moreover, production becomes the result of these functions. However, this paper deals only with the Extension Function of the University.

Extension as one of the three-fold Functions of the University

Extension is a method of non-formal education that provides empowerment to its clients and aimed in providing good quality of life and increasing income. Majority of the universities in the Philippines provide extension services as one of their functions.

There are various extension approaches that could be applied and implemented to various clientele. However, background assessment or situational analysis may be done prior to its implementation. Thus, different extension programs, projects, and services are being implemented by various universities are usually the results of a Research Study, Technology Transfer, Literacy, and among others.

Specifically, at the Laguna State Polytechnic University (LSPU) in Siniloan Campus, an Extension Project was piloted in one of the Barangays located in the Mountainous Areas of the Municipality of Siniloan. The Extension workers of the said University conducted a situational analysis and found out that one of the problems of the barangay was “fertility.”

Most of the heads of the families (fathers) work for almost a week and they return during weekends. With this, it resulted to uncontrolled pregnancy or absence of family planning. Because of the usual large number of children per family, this contributes to problems on income and

eventually resulted to poverty where most of their children at the very young age are obliged to work and to earn money to meet both ends at the end of the day. Another finding from the study is limited or absence of some are not having their own comfort rooms or the toilets.

With all these problems identified, the University provided various extension projects in Swine Production in which piglets are provided through the share system (“paiwi”), construction of comfort rooms are, introduction of plants suited to the place, provided income generating projects, and all others towards better living. ^[3] “Give a man a fish, and you feed him for a day; show him how to catch fish, and you feed him for a lifetime” (Anne Isabella Thackeray Ritchie, 1885).

Thru effective implementation of extension program, the barangay residents become aware and empowered and some of their children completed their studies at the University under scholarship grants and student assistance program. At present, most of their children are now helping their parents and some are supporting education of their siblings.

Although the universities have other functions, ^[4] Zivkovic, et. al. (2009) “extension service has undergone numerous changes and has influenced unevenly application of certain scientific achievements in the practice.” This success story is a result of the University’s role in enhancing the quality of life which is definitely remarkable. People empowerment thru extension programs could provide the Ruralites and informal settlers realized that poverty can be reduced, they just need to focus and attend more to the vision and mission of the University in providing quality services that in turn they themselves would benefit.

The Role of the University in Enhancing the Quality of Life

Instruction (teaching) is the major function of all the Universities in the world. This could be achieved in having qualified and equipped professors and instructors. Moreover, having a good Administration through the strong leadership of their President contemplates to reputation of the University.

All universities are providing various scholarship programs to all their qualified students. Some of these scholarship programs are provided to students with exceptional academic performances. However, there are also scholarships provided to deserving students whose family incomes are way below the average.

Another service made by some universities is that they are providing flexible tuition fees and matriculation scheme.

There were other various initiatives made and implemented by different universities in the Philippines which enhanced the quality of life of both Ruralites in mountain areas and informal settlers in the Metropolis.

LSPU Extension Services and Community Outreach

In the past 60 years, LSPU has been historically known as an academic institution which develops the intellectual capacities and sense of professionalism of its most important clientele – the students and the faculty – at the same time, harnesses their agricultural, technical, technological and vocational skills through its various programs and projects. Nevertheless, this institution has always been very generous in sharing what it has to its external stakeholders for the realization of its vision to transform lives and communities.

Extension, as one of the three-fold functions of the university, has been constantly and continuously given utmost consideration and remarkable efforts.

^[5] The different colleges in the four campuses of the University, namely: Similoan (Host), Sta. Cruz (Main), San Pablo City and Los Baños, have undertaken a number of participatory rural appraisals and immersions in different communities within its service areas with the prime intention of promoting social awareness and change in bringing about socio-economic growth and development through sustainable extension programs and projects focusing on literacy, environmental awareness and preservation, livelihood, skill development training, gender and

development, organic farming, culture, sports, information and communication technology and the like.

The Laguna State Polytechnic University has wilfully ensured that its extension programs are based on the actual and immediate needs of the people and are guided by the objectives of the Extension Implementing Units. The implementation of extension projects of the institution involved continuous cycle and activities which is dependent on the output of the monitoring and evaluation cycle.

The university has conducted series of Participatory Rural Appraisal (PRA) regarding the needs, resources, strengths and weaknesses of the communities in its service areas and their constituents.

The Extension Implementing Unit has facilitated a number of consultative assemblies, signing of Memorandum of Understanding (MOU), and ocular visits prior to the implementation of the project to involve the community leaders, students, local government units and other stakeholders in proposal making and development planning to ensure the effectiveness and usefulness of the different extension programs among beneficiaries.

The participation and involvement of the representatives from partner institutions, agencies, local government units (LGU), non-governmental organizations (NGOs), private sectors and other stakeholders has been perceived as an interdisciplinary part of the extension programs. Extension and community service activities conducted by the university are seen in Table 1.

Table 1 LSPU's Extension-Related Activities

Title	Campus
"Kumikitang Kabuhayan sa Kamote Project" – Livelihood Training Seminar on "Flavored Cassava Rolls Making"	Siniloan
"Walang Umay sa Malungay Project" – Livelihood Training Seminar on "Pulvoron Making"	Siniloan
"A Date with Nature Project" – Seminar on Global Warning cum Tree Planting Program	Siniloan
Seminar Workshop on "Development of Coconut Shell as Hand-Made Product"	Siniloan
Natural Farming Inputs: "Natural Farming to a Healthy Living"	Siniloan
"Hubugin ang Anak, Ang Dulot ay Galak"	Siniloan
"Constant Moves to Climate Change Adaptation"	Siniloan
"Muling Buhayin ang Sining"	Siniloan
"Involvement of Women in Nation Building"	Siniloan
"Lingap Agri-Kabuhayan Asenso at Sining Livelihood Program"	Siniloan
"The Kabute-Han ng LSPU Program" – Establishment of a Mushroom Production Center	Siniloan
"Seminar on Simple Project Proposals"	Siniloan
"Mushroom Production: Training on Mushroom Cultivation"	Siniloan
"Community-Based Training Program Shielded Metal Arc Welding"	San Pablo
"Campus-Based Training on Basic Electrical Safety and Basic Appliance Troubleshooting and Repair"	San Pablo
"Kababaihan Tungo sa Pag-unlad"	San Pablo
"Campus-Based Livelihood Training Basic Baking"	San Pablo
"Campus-Based Skills Training Building Wiring"	San Pablo
"Kababaihan Tungo sa Pag-unlad"	San Pablo
"Kababaihan Tungo sa Pag-unlad ng Pamayanan: Mental Health Awareness Program"	San Pablo
"Women Weathering Climate Change: Governance and Accountability Everybody's Responsibilities" – GAD Symposium	San Pablo
"Table Skirting"	San Pablo
"Flower Arrangement"	San Pablo
"Barangay Gender Sensitivity Training"	Sta. Cruz
"Cosmetology"	Los Baños
"Skills and Livelihood Training"	Los Baños
"Livelihood Training on Fish Processing"	Los Baños
"Salted Egg-Making, Banana Chips Making, and PutoPao and Kutsinta Making"	Los Baños
"First LSPU Summer Badminton Clinic"	Siniloan
"Project I'M FREE" – Instructional Materials For Rewarding Experiences in English	Siniloan
"Information Technology System Outreach Program: Gift Giving and Feeding Program"	Siniloan

“Basta CASama Co Siya”	Siniloan
“Feeding Program: Malusog na Katawan at Matalinong Kaisipan Patungo sa Magandang Kinabukasan”	San Pablo
“Blood Letting cum Blood Typing Programs: Share Love by Giving Blood”	San Pablo
“Unity Fun Run for a Cause: Takbo... Guro... Mag-aaral... Kawani... Tulong sa Kapwalay Mo”	San Pablo
“SagipEdukasyon: A Basic Literacy Program”	San Pablo
“Better Life for Rural Communities through Computer Literacy”	San Pablo
“Feeding Program: Malusog na Katawan at Matalinong Kaisipan Patungo sa Magandang Kinabukasan”	San Pablo
“Humanitarian Mission: Donation Campaign for Flood Victims”	San Pablo
“Gift Giving Project 2012”	San Pablo
“Clean Up Drive”	San Pablo
“Handog Kina Lolo at Lola: Blood Pressure Monitoring”	San Pablo
“Operation Tuli”	San Pablo
“Gift Giving”	San Pablo
“Relief Operation”	Sta. Cruz
“Relief Operation”	Sta. Cruz
“Reading Phonics and Writing Literacy”	Los Baños
“Literacy Program: Mathematics Operation”	Los Baños
“Bangus Fish Deboning Training-Seminar”	Los Baños
“Basic Electronics and Domestic Appliance Repair”	San Pablo
“Livelihood Project: Peanut Butter Making”	San Pablo

Source: ^[5] 2012 & ^[6] 2013 LSPU Annual Report

LSPU Scholarship Programs

There are many different types of scholarships offered by a wide range of benefactors to help remedy this situation. Institutional scholarships are offered by the specific college or university the student plans to attend. These will have to be applied for at your school of choice, and can be either based on merit, such as an athletic scholarship, or based on financial need. There are a number of different state and federal scholarship programs based largely on sociological criteria, like race, religion or nationality. Other government backed scholarships are those offered by the armed forces, which of course require time served in the military ^[7] (student.com, 2014).

Indigent but deserving students of LSPU who had difficulty in supporting their education can avail the scholarship or study grants sponsored by different agencies and number of civic-minded and humanitarian individuals. Various scholarship offered by LSPU are seen in Table 2.

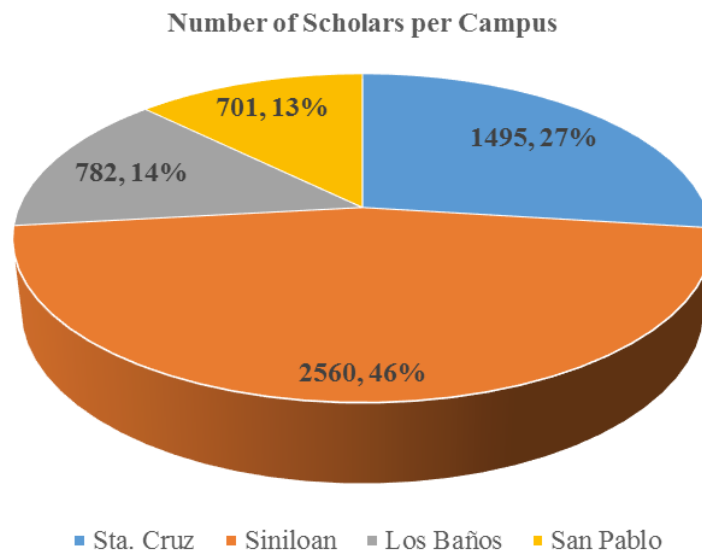


Figure 1: Percentage Distribution of Scholars per Campus

Table 2 Summary of Scholarships per Campus

Type of Scholarship	Sta. Cruz	Siniloan	Los Baños	San Pablo City	Total
Municipality of Los Baños Scholarship			219		219
Municipality of Pila Scholarship		93			93
Sta. Cruz Scholars		1140			1140
Municipality of Pagsanjan Scholarship		86			86
Municipal Indigency Program				166	166
SCUAA Scholarship	13		37	18	68
LSPU Faculty/Personnel Dependent	10	19	6	10	45
Barangay Scholars	85	189	89	6	369
Sanguniang Kabataan (SK)	169			36	205
AFPMBAI				1	1
BHW Scholars			15		15
Philippine National Police (PNP) Scholarship	2				2
(CHED-SAFE) Scholarship CMO 26 s. 2006		2			2
CHED One Town-One Scholar		3			3
DND-CHED		6		6	8
CHED Half Merit Scholarship				1	1
Sto. Niño de Cebu Scholarship			2		2
Dr. Luz Cuello Foundation			3		3
DOST Scholarship	1	34	27	4	66
LSPU Brass Band Scholarship	24	12	18		54
DIWA Scholarship	3	12	4		19
TEXAS/TASTE Scholarship				11	11
OWWA Scholarship		3	3	1	7
ALALAY Foundation				1	1
Villa Escudero Foundation			1		1
CIBAC Scholarship		3		19	22
ROTC Scholarship		9	2	14	25
(HBK) Power Co. Ltd. Scholarship	3	18	220		241
DA-ACEF	14				14
Con Fisheries (Free Tuition)				328	328
DOLE Scholarship		1			1
CAST Student (Free Tuition)	1055				1055
Couples for Christ				2	2
Hon. Nona Ricafort Scholars		2			2
VP Binay Scholarship		5	4	5	14
Cong. Egay San Luis Scholarship		830			830
UCPB II (Coco foundation)		9			9
BalikAral ni Inay Program			1		1
Feed the Hungry Scholarship			2		2
Honorific Scholarship (College)	85		106		191
Dean's List/Academic Scholars	19	28	66	3	116
Varsity Players		44			44
(PVAO) Scholarship		4	2		6
(BFAR)				17	17
San Pablo City Private Pediatrician Association			3		3
Entrance Scholars (Salutatorian)	4		2		6
Entrance Scholars (Valedictorian)	4		2	3	9
AFEBISO Scholars	2				2
SSS Scholars	2				2
Total	1495	2560	782	701	5538

Source: ^[6] 2013 LSPU Annual Report

Extension: LSPU's Response in Mitigating Financial Depression

Extension is a philosophy towards affecting change and is subject to the society and its conditions. It is so designed to address community-based with development issues by ascertaining development needs over and above the skills and resources that are required in their completion.

The overall goal of the State Universities and Colleges (SUCs) Extension Program is the improvement of the capability of the clientele to undertake and/or participate in development and productive activities. With this goal, the countries farmer and the rural population constitute the ultimate clientele of the college/university extension program.

Policy makers, extensionists and specialists of the various development agencies must lead in this worthy endeavor. We must look forward to the time that our client in the rural areas will not be called the "rural poor" anymore, but a "happy, self-reliant and respected members of the Filipino community."

^[5] Extension programs, projects, and activities undertaken by the University are in line with the following thrusts, namely: Sustainable Development, Gender Advocacy Development, Community Development and Good Governance, and Environmental Conservation and Management. Various implemented and on-going extension-related activities champion by the University were seen in Table 1.

In-order for the University to address its response in mitigating financial depression in mountain, village, rural and marginal duellers, diverse program of activities are currently organize.

Natural Farming to a Healthy Living

Week long training on Organic Farming organized by Siniloan Campus' Extension Workers, participated by fifty-eight (58) farmers from the nearby villages and mountain areas in the 4th District of Laguna. Farmers were taught of the value and importance of Organic Farming and how they could benefit from this endeavor. Moreover, the training highlighted that there is a big demand on Organic Rice Production and this would definitely contribute much to increase their income.



Milkfish "Bangus" Deboning

Bangus deboning is one of the post-harvest activity or method of preserving fish in order to increase the shelf life. We all knew that milkfish locally known as "Bangus," *Chanos chanos* its scientific name has many bones and spines that make other people especially children not to eat this fish. Bangus deboning is the solution to this problem. The Bangus Deboning Training-Seminar was conducted in various communities as an Extension Service Project of the College of Fisheries in Los Baños Campus. These communities were all in the Province of Laguna, namely: San Roque in San Pedro City, Malinta in Los Baños, Gulod in Cabuyao City, Sinalhan in Santa Rosa City, and Bangyas in Calauan. Participants of this extension activity were enlightened and women empowerment also integrated – for majority of those women who had been trained and



oriented believed that they themselves would benefit from the University endeavor. Moreover, they also considered Bangus Deboning as a livelihood activity for their community and for their family as well.

Basic Electrical Safety and Basic Appliance Troubleshooting and Repair

This campus-based extension endeavor was initiated by the College of Engineering and Technology of San Pablo City Campus. As a result of community-based assessment conducted by the Extension Workers, they identified that there was a high demand on Electronics Technicians. Although the Campus is offering curricular program and inasmuch as they wanted students to enrol in the program. There still remain those less fortunate individuals who can't afford to attend in formal school to gain knowledge and skills needed to become an Electronics Technician. The University with the



strong support of its faculty members came to the realization of the importance in providing the training on Basic Electrical and Basic Appliance Trouble Shooting and Repair through extension. The extension activity was very timely since the influx of electronic gadgets and devices are certainly common to the community. Various training schedules had been implemented and up to now this time the University endeavor is currently on-going.

Indeed, the existence of a University in a Province and its continues commitment in providing quality of service through its various functions opens the new window of opportunities to all individuals seeking advancement, professionalism, knowledge, skills and among others.

The University role in enhancing the quality of life of diverse people in various places is true imperative. Through its strong Extension function, the presence of a University is remarkably transcending beyond its primary service to students but to provide extreme changes to the community and to further contribute to the success of the country.

As the University faces the 21st century, strong commitment, dedication, passion, and better quality of services should be made into considerations in-order to achieve, provide, and become the Agent of Change.

CONCLUSIONS

The establishment of a University must be thoroughly and carefully studied in order to maximize the purposes for which it shall have been established.

The three-fold functions, namely: Instructions (teaching), Research and Extension (country side development) and in addition to the preceding ultimate functions, production shall also be given due importance and consideration.

RECOMMENDATION

It is therefore, strongly recommended that the all-encompassing functions of a University should be pursued with much vigour for the best interest of the community it serves in particular and the country in general and other areas in the globe where it can influence through its Research and Services of the Alumnae and Alumni.

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The prospects of Smart Card based e-health networks in Rwanda Integrated Patient Health Record System (IPHRS)

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ABSTRACT

Lack of veritable, well-organized and comprehensive patient medical records is a major obstacle in the development of a robust healthcare system in Rwanda. The use of electronic health care and medical treatment services, in today's digital age, have become crucial for providing people with a high level of service that ensures the benefits of convenience, mobility and time saving. In this paper, we propose smart card-based e-health networks that will improve efficient management of health treatments. This system has four fundamental types of patient data: (i) a Patient Prescription Data; (ii) Physicians Prescription Data for Physician; (iii) Medical Laboratory Data; (iv) Pharmacy Patient Medication Data; and entire data managed by Smart Card Application System. It includes insurance, social security and ID information and entitles patients to seek medical treatment. The proposed smart card-based e-health network is a robust low-cost interactive model that will transform the old and slow paper-based procedures into a more sophisticated healthcare service system.

Keywords: Smart card; Interactive Model; System Security; ID System

I. Background

A decade ago, Rwanda was among countries with a lowest life expectancy compared to any country in the world. During 1994 genocide, a considerable number of medical staffs were killed, medical infrastructures almost destroyed. However, Rwanda has rebuilt its health system and positive work has been done and more on progress compared to where the country was in 1994. From 2000, Rwanda has speed up its development in remarkable way by achieving health targets set by United Nation particularly for children and maternal mortality, fighting HIV infection, tuberculosis and Malaria heading to Millennium Development Goals. Life expectancy has been improved from 48 to 63 years old between 2000 up to 2011[1].

Long term capacity building strategy about knowledge transfer, sustainable partnership is ongoing process. Fields such as nursing specialty, hospital management, oral health and capacity building programs are part of Rwandan health education system. In 2011, medical staffs status was looking like this : 625 physicians, 8273 nurses, and 240 midwives providing care within 4 referral hospitals, 41 district hospitals, and 442 health centers nationwide [2].

This paper will attempt to propose an ICT solution to the existing problem which is slow paper based system. The paper is organized as follow; Section II presents current status of health system; section III describes related work; section IV presents the proposed system; section V presents security system; section VI presents evaluation strategy, Section VII presents limitation and future work is presented in section VIII.

II. Current Status of Rwandan Health System

Currently health system in Rwanda is paper based for the entire country. This mean from reception desk level up to pharmacy level everything is done manually. The system is organized in the way that patient medical form copy is kept within hospital archive. Patient paper-based records have a low cost but it has limitations like data access, no way for update, no security, impossible to share its information. Due to that issue, it is not easy for Physician, patient to remember previous medical history particularly about medicine usage also sometime for medical examination results.

In addition to that, repeated work in terms of medical exam, wrong usage of medicine always happens because of health system inefficiency. Introducing an integrated patient health record system as an adequate solution is needed to avoid or reduce prescript error and unnecessary work, [3].

III . Related System

According to the research made in this paper, Germany introduce smart card health system in 2007, the system was implemented under Gematik project. The aim was to establish a health system with telemetric platform within different services such as: local physician's practice, hospitals and pharmacies [4]. E-Cards health system has been issued in Japan since 2003 and from 2011, personalized medical file has been implemented and started to be considered [5].

Since December 2008, Estonia introduced electronic health record system for all citizens by registering all paper based medical history records from birth to death. The ID-Card is taken as compulsory base for identification process for citizens to use electronic health record system [6]. Estonia electronic health record system covers the entire country

Since 2000, Slovenia roll out a smart card based e-health system. Slovenia system is designed in the way that smart card store 90% of data relating to selected physician, patient identification and health insurance status [7].

IV. Smart Card based e-Health Network

The proposed system is called Integrated Patient Health Record System (IPHRS) where Smart card and PDA device will be introduced as new component. Smart card and PDA device will be used to improve capability of health service delivery [8]. Both patient and professional Medical staff have smartcard ID registered under ID system linked to IPHRS. PDA device will be used to read and upload PHR on the Smart card ID by medical Professionals. Within hospital four departments such as Reception, Physician, laboratory and Pharmacy will be exchanging PHR through hospital entity system. The central system will be based at Ministry of Health (MOH), where this one will be taken as first system back up of four national referral hospitals linked to MOH system. Second backup will be the National Data Center.

This new system will also be linked to social security and health insurance system to enable IPHRS being more accurate to any kind of information related to patient. Hospitals have local IPHRS entity system linked to central system at MOH. Actually, Rwanda has 4 referral hospitals located in the capital city of Kigali. These hospitals are connected nationally using fiber optic broadband. The first phase of the evaluation of the proposed system will be done in those 4 hospitals. The following figure depicts the architecture of our system

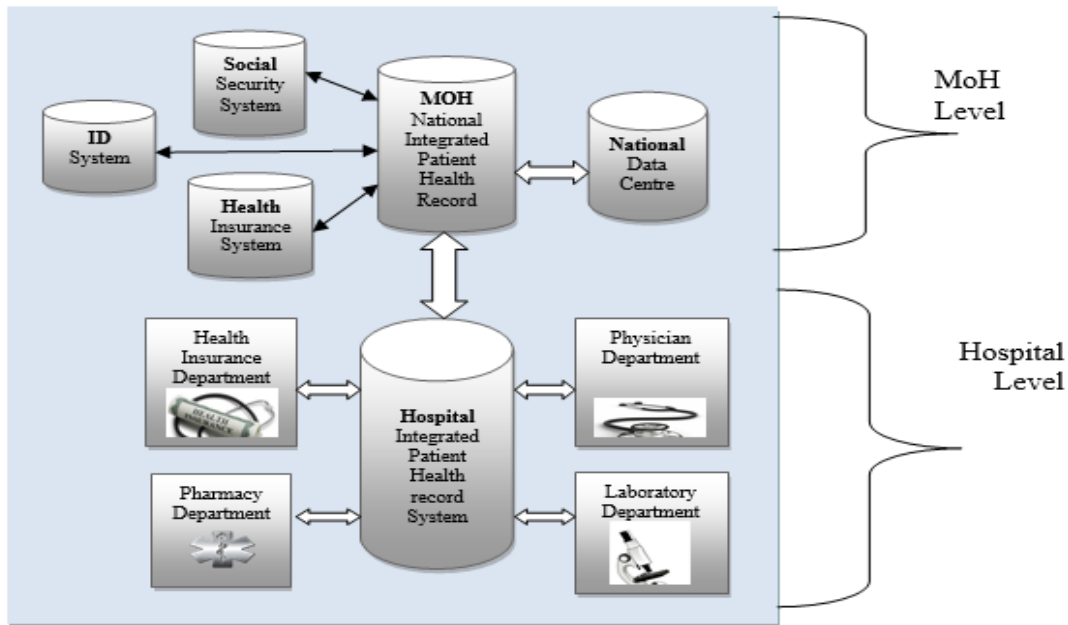


Figure1: System Architecture

System Administration

The entire system (See figure 1) will be dealing with four types of patient health record such as: Patient prescription data (PPD), Professional prescription data for physician (PPDP), Medical laboratory Data (MLD) and Pharmacy Patient Medication Data (PPMD)[9] within hospital service department such as: physician, laboratory, pharmacy, hospital reception and health insurance department. Let us have a look on how PHR will be exchanged.

The entire data mentioned above will be carried by the proposed smart card [10]. With this system, smart card is taken as portable integrated device on which data will be stored and proceed in sense of data exchange system within hospital service department [11].

i. Hospital Reception and Health Insurance:

Medical staff at this level will be composed by Hospital Staff and health insurance staff where patient will be identified using PDA device and smart card ID to conform health Insurance membership and patient ID. ID number is taken as patient unique identifier (PUI). After that patient profile will be transferred to available physician by hospital medical staff.

ii. Physician Department:

Physician access patient profile through system sent by hospital reception staff. Secondly, physician will check patient card using PDA device and check previous patient health record. After this process, physician will do medical consultation where new patient health record will be uploaded on the patient card then after on patient profile within hospital system.

iii. Laboratory Department

Laboratory staff has only right to access medical exam prescription by physician and upload laboratory report data on both patient health record profile within the system and on patient smart Card ID using PDA device. Here laboratory data can be also radiology, scanner exam where this one will be saved within hospital system (IPHRS).

iv. Pharmacy Department

Pharmacist using PDA device and Patient smart Card will be only being able to see or check drug prescript by physician. Then, this one will upload the required prescript medicine data on both smart Card and Patient profile in the hospital integrated patient health record system. By the end of the day the entire process, PHR will be back up at Ministry of Health level as system back up and National data Centre

V. Security

ID system is taken as mandatory system for the IPHRS due to its data accuracy regarding to all rwandan citizens particularly citizen personal and biometric data. System security will be divided into three levels according to hospital Staff and department depending where medical staff is belonging.

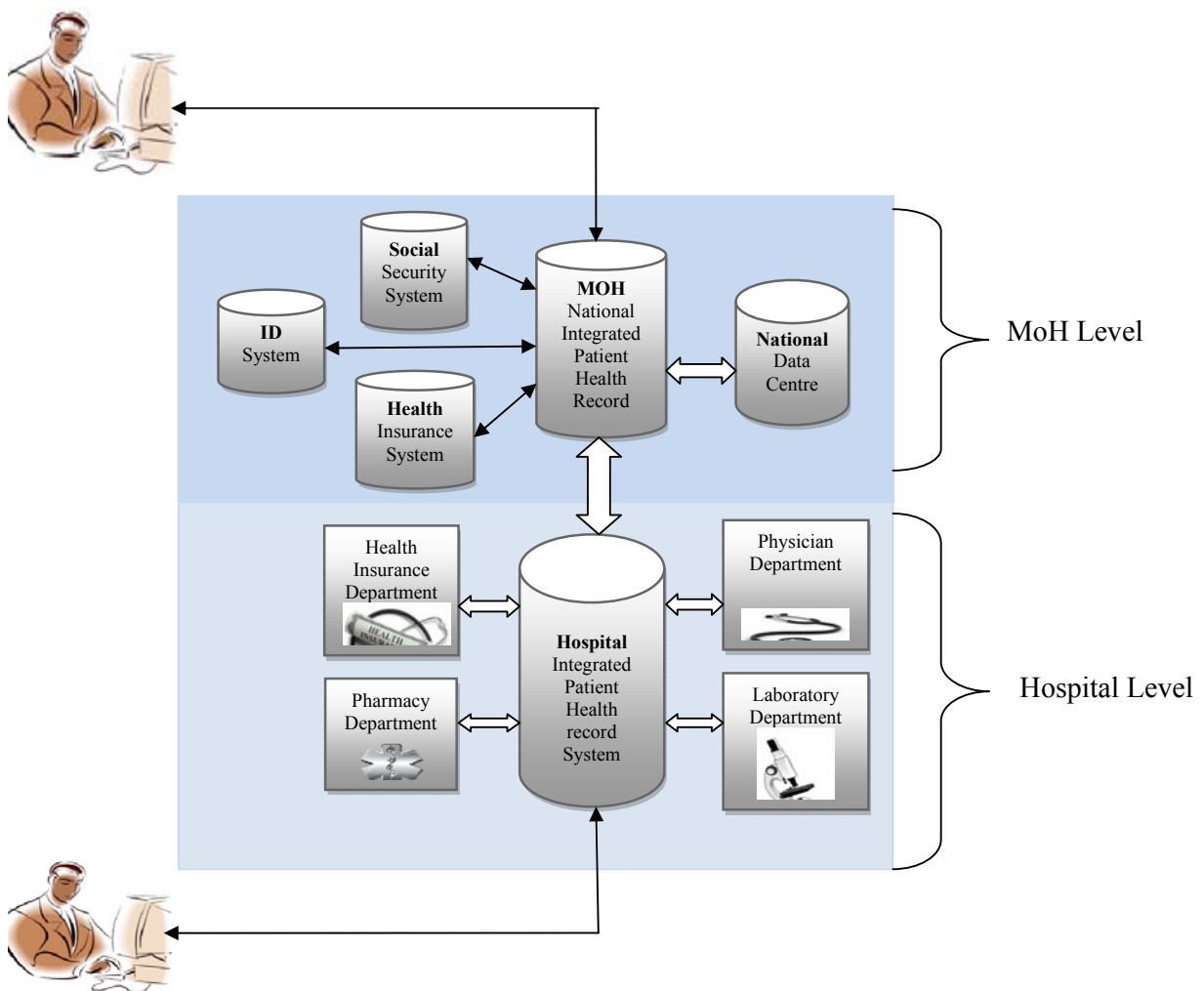


Figure 2: System security Administration

Levels can be described as for instance:

- Level 1 will be for Doctors (Generalist & Specialist) where Doctors will be having full access to patient health record. Also doctors are allowed to access patient sensitive data
- Level 2 will be composed by nurses, laboratory and pharmacist staff where this one will be able to access only data prescribed by doctors
- Level 3 will be composed by billing department staff, this one will be able to have access to billing data related to different services done by different departments in the hospital
- Level 4, will be medical staff at reception where will be allowed to access patient ID and health insurance information.
- Exchanging PHR between hospital departments will be transmitted in cryptography mode

End users system mentioned above are the one allowed to use PDA device to have access of PHR stored on patient smart card ID. Authentication between PDA device and Smart card ID will be based on fingerprint sensor. Remember that ID system has biometric data which will be part of the information stored on smart card. In order to use PDA device, both medical staff and patient will be authenticated by biometric data stored to their respective card using fingerprint. In addition to that communication channel between hospitals departments will be done in cryptography mode.

Figure 2 shows a system security administrator at MOH and hospital level where this is one in charge of monitoring and managing IPHRS on a daily basis. Main task of security administrator will be to monitor data security by supporting each level of users where necessary including regular data backups. As mentioned earlier each referral hospital will be having a system security administrator heading by one senior system security at MOH level

VI. Evaluation Strategy

Evaluation is a systematic determination of a system's merit, worth and significance, using criteria governed by a set of standards. It can assist a design team to ascertain the degree of achievement or value with respect to the aim and objectives of an undertaken project. Evaluation of smart card-based e-health network is not a one-time event, rather envisaged as a permanent process covering a variety of different aspects. It is, therefore, an all-embracing strategy involving a variety of procedures aiming at the evaluation of health consumers' interaction with smart card-based e-health network.

Several evaluations (technological and usability) will be carried during the design and development of smart card-based e-health network. In some respects the overview of the evaluation design has to remain abstract, because the development of smart card-based e-health network is still in progress. Thus, the final and concrete appearance of the evaluation is not entirely clear, yet the evaluation plans have to remain on a level that allows adaptations for final testing.

Experts will be invited to test the final version to better identify technological problems of the software. In a first phase they will evaluate on their own, and in a second phase it will be expected that they compare findings and provide some feedback.

As soon as developers and experts have evaluated the framework, potential users such as health consumers, physicians and medical personnel will also be allowed to test it. These tests will be performed in the field, which means directly in Rwandan hospitals and integrated in the community environment. At the end of the evaluation session, questionnaires are distributed amongst the participants to catch their opinions.

VII. Limitation

Smart cards are beneficial in some scenarios, but they are not the security panacea that some people believe them to be. In some user environments, the costs and inconveniences clearly outweigh the potential benefits of using smart cards [12]. This kind of expense can be prohibitive for healthcare organizations that are already dealing with scarce financial resources.

Some smart card implementations have slower performance than software-based tokens in current Pentium-based PCs, both during initial loading when a user logs on and during message signing and encryption. We found that cards were typically 5 to 100 percent slower during message signing and encryption, but they were up to an order of magnitude slower in the worst cases [12].

VIII. Future Work

In the long run plan, mobilization efforts will be mainly focused on capacity building for healthcare staffs as core part of the system. Implementation of the system within all referral hospitals and pharmacies will be the next priority heading to complete replacement of the old system. Public awareness among population and healthcare staffs to all levels of national health system will be emphasized. We can't ignore technology part of the entire part of this system, a constant training schedule program will be elaborated based on system stakeholders requirements I mean healthcare staffs and population needs.

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Evaluation Of Diabetic Patients' Knowledge, Attitude And Practice Of Diabetes And Its Self-Management With Particular Emphasis On Ocular Complications

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ABSTRACT

Background: Levels of knowledge, attitude and practice about diabetes mellitus (DM), its complications and self-management in AlKharj city are unknown despite the high prevalence of DM in Saudi Arabia.

Objectives: To assess type 2 diabetic patients' knowledge, attitude and practice regarding diabetes and its complications, particularly ocular and self-management.

Methods: A cross-sectional study was conducted included diabetic patients (type 2) over 20 years old, who attended the outpatient clinics at selected primary health care centers, king khalid and university hospitals at Al-Kharj throughout the period September 1st to November 30, 2013. A questionnaire included questions designed to assess patients' general understanding of DM, its complications and management options as well as their attitude towards diabetes and its management and their practices in this regard was used.

Results: The study included 393 type 2 diabetic patients. One-hundred sixty three patients (41.5%) were in the age group 40-59 years. More than half of them (51.9%) were males. More than half of respondents (57%) had average knowledge while only 17% had poor knowledge regarding fundamental aspects of DM and its management.

We found that (73.6%) of type 2 diabetic patients never or not examined regularly by ophthalmologist.

Conclusion: In this study, type 2 diabetic subjects in AlKharj city had a significant knowledge of DM and its management. However, there was a clear gap between their knowledge and practice regarding ocular complications. These results highlight the need for educational and awareness programs that reinforces the need for regular eye examinations.

Keywords: Diabetes mellitus, Type 2, Knowledge, Attitude, Practice, Complication, Ocular.

1 INTRODUCTION

Diabetes is a common chronic syndrome of impaired carbohydrate, protein and fat metabolism, owing to insufficient secretion of insulin and/or target tissue insulin resistant.(Florez JC et al., 2003) It is considered to be an epidemic disease.(Setacci C et al., 2009) Around 171 million people all over the world have diabetes mellitus with estimated four million deaths registered every year from diabetes & its complications.(Levin P., 2008) By the year of 2030 , it is expected to have more than 366 million patients with diabetes.(Levin P., 2008,Wild S et al., 2004) So many causes will lead to this increase in the incidence of diabetes like increase in the prevalence of physical inactivity and obesity.(Bushe C, Holt R., 2004)

In Gulf Area the prevalence of obesity in Saudi Arabia was 23.7 %,(Al-Nozha MM et al., 2004) Qatar 16.7 %,(Bener A, et al., 2009) while in United Arab Emirates it was estimated to be (29%).(Saadi H et al., 2007)

The most common types of diabetes mellitus are type 1, type 2 & gestational diabetes which occur in the pregnancy(Bener A, et al., 2009). The most prevalent type of them is type 2 diabetes with 90 % prevalence.(Bener A, et al., 2009) The quality of life usually affected by diabetes itself & its complication.(Bruce DG et al., 2009)

Diabetes mellitus has a very strong relationship with many diseases. Among them, obesity and hypertension(Ciulla TA et al., 2003,Sachdev N & Sahni A., 2010,Cheng YJ et al., 2009). These two has strong predictors to diabetic complication. (Sachdev N & Sahni A., 2010)

Complication of diabetes mellitus includes both macrovascular (cardiovascular) & microvascular complications (retinopathy, nephropathy or neuropathy).(Sachdev N & Sahni A., 2010)

Some foreign studies done before measuring the level of knowledge of diabetic patients about diabetes & it's complication especially ocular one.(Cheng YJ et al., 2009, Clarke-Farr PC et al., 2006)

1.1 Tables and Figures

Table 1: Baseline characteristics of the participants (n=393)

Characteristic	Number	Percentage (%)
Age (years)	20-39	39.4
	40-59	41.5
	≥60	19.1
Gender	Male	51.9
	Female	48.1
Job status	Governmental employee	39.7
	Retired	18.3
	Unemployed	3.3
	House wife	28.2
	Student	8.4
	Others	2.1

Table 2: Diabetic history of the participants (n=393)

History	Number	Percentage (%)
First person diagnosed DM	General practitioner	79.9
	Ophthalmologist	5.9
	Nurse	5.9
	Others	8.3
Duration of diabetes (years)	1-5	42.2
	6-10	25.7
	11-15	15.8
	16-20	6.6
	>20	9.7
Last time of retinal examination	Never	19.1
	<one year	12.0
	1-5 years	54.5
	Don't know	14.5

Table 3: Factors associated with diabetes's knowledge among type 2 diabetic patients.

Factors	Knowledge score (0-10)			p-value	
	Median	IQR	Mean rank		
Age (years)	20-39 (n=155)	7	5-9	200.2	0.103**
	40-59 (n=163)	7	4-9	205.3	
	≥60 (n=75)	6	3-8	172.4	
Gender	Male (n=204)	7	4-9	203.6	0.228*
	Female (n=189)	6	4.5-8	189.9	
Specialty	Governmental employee (n=156)	7	4-9	205.6	0.492**
	Retired (n=72)	7	4-9	98.3	
	Unemployed (n=13)	6	2.5-8.5	167.6	
	House wife (n=111)	6	4-8	185.8	
	Student (n=33)	6	5-8	191.3	
	Others (n=8)	8	6.25-9	244.9	
Duration of diabetes (years)	1-5 (n=166)	6	4-8	176.4	0.016**
	6-10 (n=101)	7	5-9	213.9	
	11-15 (n=62)	8	4-9	214.0	
	16-20 (n=26)	6	4-8	180.7	
	>20 (n=38)	8	5-9	225.4	

* Mann-Whitney test, IQR: Inter-quartile range ** Kruskal-Wallis test

Table 4: Attitude of diabetic patients toward modifications required for the management of DM.

Attitude	Very important	Slightly important	Not important	Do not know
Eating healthy diet	341 (86.8)	44 (11.2)	4 (1.0)	4 (1.0)
Practicing regular exercise	294 (74.8)	75 (19.1)	13 (3.3)	11 (2.8)
Regular blood check ups	314 (79.7)	58 (14.8)	14 (3.6)	7 (1.8)
Maintaining an ideal body weight	288 (73.3)	68 (17.3)	17 (4.3)	20 (5.1)
Taking medications regularly	352 (89.6)	30 (7.6)	5 (1.3)	6 (1.5)
Routine eye examinations	268 (68.2)	65 (16.5)	31 (7.9)	29 (7.4)
Having enough information about diabetes therapy	233 (59.3)	88 (22.4)	17 (4.3)	55 (14.0)
Routine medical check ups	297 (75.6)	57 (14.5)	17 (4.3)	22 (5.6)

Table 5: Practices of diabetic patients in the management of diabetes mellitus.

Practice	Yes	No	Do not know
Self-measurement of blood glucose at home	304 (77.4)	60 (15.3)	29 (7.4)
Following dietary modifications to control DM	221 (56.2)	127 (32.3)	44 (11.2)
Practicing regular physical exercise	134 (34.1)	196 (49.9)	63 (16.0)

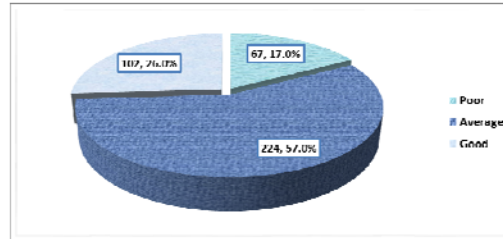


Figure 1: Distribution of study subjects according to the level of knowledge regarding DM

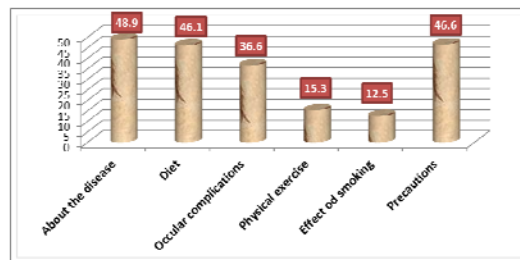


Figure 2: Information that type 2 diabetic patients would like to get from clinicians.

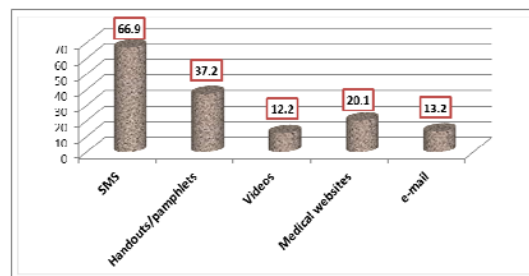


Figure 3: The best method that type 2 diabetic patients would like to get information.

2 METHODOLOGY

Study was conducted at primary care centers (n=10), outpatient clinics of King Khalid and Salman Abdulaziz University hospitals at Alkharj city, KSA from (Sept. 1st) to (Nov. 30) 2013.

This cross section study enrolled type 2 diabetic patients over 20 years old, who attended the outpatient clinics at selected primary care centers & king khalid and university hospitals throughout the study period. We excluded females with gestational diabetes.

Total Saudi population in AlKharj city according to 2010 census data was 275562. Thus the total number of Saudi diabetic patients registered in Alkharj city was estimated to be about 66135, This figure was estimated based on findings of Al-Nozha, et al (2004), who reported that prevalence of diabetes among Saudi population was about 24% .(Al-Nozha MM et al., 2004)

Sample size of the current study was calculated assuming that 60% of diabetic patients have an average basic knowledge and practice of diabetes and its self-management.(Saleh F et al., 2012) At 95% confidence interval and 5% worst acceptable limit, the estimated sample size was 367 using Epi-Info version 7. The number was increased to 400 to compensate for drop outs.

Two primary health care centers out of 10 were randomly selected by simple random technique. At the study sites (i.e., two primary care centers, outpatients clinics of King Khalid and Salman bin Abdulaziz university hospitals), during regular day hours from 8.00 am-4.00 pm, all eligible diabetic patients during the study period were asked to voluntary participate in the study till the sample size was reached.

A modified questionnaire (Mashige Kp et al, 2009) was used to collect data. Permission was obtained from the corresponding author through an e-mail to use, modify & translate the questionnaire to Arabic language.

The questionnaire composed of three sections; sociodemographic data, patient's (knowledge, attitude & practice of DM) and lastly retinal complications. To overcome language barriers, the questionnaire was translated-retranslated from English to Arabic by a qualified bilingual translator. The Arabic version was used for data collection. The questionnaires were pilot tested among twenty diabetic patients who were not part of the study population before the data collection. Its validity was ascertained by three consultants in the fields of Family Medicine, Internal Medicine and Endocrinology. Test-retest reliability was applied and an average correlation coefficient of 0.91 has been obtained. All queries from the pilot study were addressed to before the study was carried out.

The questionnaires were distributed by the researchers team to the participants and collected after finished. Illiterate participants were assisted by verbal interviews& their answers were recorded accordingly.

Prior to start study, written permission was obtained from the directors of the selected primary care centers, department heads of Internal Medicine in King Khalid and Salman bin Abdulziz University hospital. Verbal consent to participate in this study was obtained from all participants.

Data entry and analysis was performed using SPSS version 20 software. Descriptive statistics in the form of frequency and percentage for categorical data and in the form of measures of central tendency (median and mean rank) and measures of dispersion (inter-quartile range "IQR") for continuous variables. Analytic statistics were computed Kolomongrove-Smironove (K-S test) test was performed for knowledge score to test its normal distribution. The data was abnormally distributed as evidenced by significant K-S test. Therefore, non-parametric statistical tests were applied. Mann Whitney statistical test was utilized for comparison of two groups and Kruskal-Wallis test for comparison of more than two groups. Differences were considered as statistically significant when the p-value ≤ 0.05 .

Poor knowledge was considered if the score was ($< \text{Mean} - 1 \text{ SD}$); average knowledge and practice was considered with a score arranged between ($\text{Mean} \pm 1 \text{ SD}$) whereas good knowledge and practice was considered with a score of ($> \text{Mean} + 1 \text{ SD}$). (Priyanka Raj CK & Angadi MM, 2010)

3 DISCUSSION

As we know diabetes is a chronic disease that need continuous & comprehensive assessment by the treating physician & need good compliance to medication with life style modification from patient side . health education has a very important part for diabetic patient.

In the present study, it is observed that the more than half of respondents had average basic (57%) and almost a quarter (26% had good knowledge regarding diabetes mellitus(DM) and its self-management. This is could be attributed to the fact that there is an easy access to education in the medical institutions.

Another study was published in Singapore to assess the knowledge of the community regarding their knowledge about diabetes &it showed that they have a sufficient knowledge about diabetes mellitus .(Wee HL et al., 2002)Also another study was done in in a semi-urban Omani population to assess the patients level of knowledge about diabetes & the result showed that they have suboptimal knowledge .(Al-Shafae AM et al., 2008)While in Pakistan another study was conducted & the results estimate that 12%, 35%, and 53% of the patients had good, average and poor, respectively knowledge of the symptoms, treatments, and complications of diabetes. Another study done in Bangladesh estimated that 16%, 66%, and 18% of participants had good, average, and poor basic knowledge of the disease .(Saleh F et al., 2012)

A high proportion (79.9%) of diabetic patients in this study had their initial diagnosis done by general primary physician .the same findings have been reported by Mashige et al in South Africa.(Mashige Kp et al, 2009) This result shows that the patients prefer to receive their knowledge & consultation from the treating doctor. Only 5 % of patients receive their knowledge regarding the disease from optometrist . The role of optometrist screening of diabetic retinopathy was explained by the National Service Framework in Britain and the Strategy Implementation plan in Australia.(Layland B., 2001,Verma L et al., 2003) while in other countries like south Africa they have important role in screening , education & management. (Mehta M et al, 2007).

According to American diabetic Association all diabetic type 2 patient should be screened annually for diabetic retinopathy . (ADA, 2014) although almost two thirds (66.2%) of respondents know the importance of regular ocular examination by ophthalmologist, a significant percentage (73.6 %) of subjects reported that they didn't regularly do eye examinations annually (either nil or last exam more than one year) .Unfortunately, this is a very high percentage that might affect their eyes according to the fact that regular eye examination annually has a very important role in preventing visual impairment done by diabetic retinopathy.(Steele C & Steel D., 2003, Bloomgarden ZT, 2007)

Uncontrolled Diabetes and undiagnosed diabetic retinopathy can cause blindness. (Klig JE., 2008, Shrestha S et al., 2007)There is a high prevalence of glaucoma in diabetic patients. Also, have a high prevalence of cataracts. (Robman L &Taylor H., 2003). According to the previous facts , the patients should be educated about the disease complications & importance of self-control of the disease .

Many respondents preferred awareness in the form of SMS and hand outs. This suggest the need for educational and awareness programmes that reinforces the need for regular ocular examinations and complications, particularly ocular, of the disease.

4 CONCLUSION

In this study, type 2 diabetic subjects in AIKharj city had a significant knowledge of DM and its management. However, there was a clear gap between their knowledge and practice regarding ocular complications as from one side, most of them were aware of the impact of DM on the eye and from the other side, only a small proportion of them examined by ophthalmologist their eye yearly.

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**The development and assessment of the effectiveness of computer assisted instruction
program on continuous renal replacement therapy for nursing students,
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ABSTRACT

Computer assisted instruction (CAI) is one instructional method that is incorporated into overall teaching strategies. The effectiveness of computer assisted instruction program on continuous renal replacement therapy for nursing students was examined using a two groups, pretest-posttest, and experimental design. Sixty fourth year nursing students volunteered to participate in this study and were randomly assigned to one of two groups: the control group (n=30), who were not exposed to CAI program and the experimental group (n=30), who were exposed to the CAI program. The research tools are consisted of: the learning plan, knowledge test and the Questionnaire for Satisfaction (QS).

The results of the study are as follows: 1) Student's knowledge score after completing the participatory learning program on continuous renal replacement therapy was higher than before ($p < .05$). 2) Student's satisfaction score after completing the participatory learning program on continuous renal replacement therapy was high levels. The students said that the advantages of this CAI program are 1) students can learn the content as per his capacity and can repeat the task if not understand by himself. 2) immediate feedback motivates students and give direction and if answer of students is wrong then it will help him to correct his mistake. 3) CAI Program has flexibility in terms of time, place and pace.

This study revealed that a participatory learning program can improve students' knowledge. Moreover, students are satisfied on computer assisted instruction program on continuous renal replacement therapy. Thus, it could be utilized for nursing education.

Keywords: Computer assisted instruction, continuous renal replacement therapy, nursing students

1. INTRODUCTION

The twenty-first (21st) century, the impact of the ICTs (Information and Communications Technologies) on nursing education is widely recognized (1). There are many advantages to using computer technology in nursing learning (2). Computer assisted Instruction (CAI) provides flexibility, and both collaboration and communication between students; it allows computer literacy skills to be developed; it promotes active learning, the critical thinking, social skills and self-direction learning (3). In addition, it accommodates different styles of learning and reduces instructional time (4). CAI has also generated knowledge, motivation, enthusiasm and satisfaction among nursing students (5-9). Several Studies usually report high levels of students' satisfaction with e-learning and students feel very motivated to learn by using CAI (10, 11). On the other hand, the barriers which can lead to failure of the online learning process such as loss of social interaction, provision of technical and proficiency in certain essential skills for computer use (12).

Continuous renal replacement therapy (CRRT) is a basic competence in intensive and critical care nursing. Thus, undergraduate students must complete to study about continuous renal replacement therapy in undergraduate program. The contents are including criteria for initiation of CRRT, modes of CRRT, vascular access, circuit anticoagulation during CRRT, nursing intervention for patient with CRRT. It is difficult to understand and difficult to use for nursing students. Thus,

computer assisted instruction program on continuous renal replacement therapy for nursing students might help nursing students to understand and develop nursing skills to take care of the patient with continuous renal replacement therapy.

This paper studied on a randomized controlled trial conducted to compare a self-directed CAI program, with conventional face-to-face classroom teaching on continuous renal replacement therapy for nursing students.

2. METHOD

2.1 Aim

The purpose of the study were 1) to compare the effects of a self-directed CAI program with conventional face-to-face classroom teaching on the knowledge of continuous renal replacement therapy and 2) to measure student satisfaction on the CAI program. The hypotheses were:

1) There would be no difference between the knowledge test scores of nursing students taught continuous renal replacement therapy using CAI program when compared with those taught using conventional methods.

2) Student's satisfaction score after completing the participatory learning program on continuous renal replacement therapy was high levels.

2.2 Participants

Sixty fourth year nursing students volunteered to participate in this study and were randomly assigned to one of two groups: the control group (n=30), who were not exposed to CAI program and using conventional face-to-face classroom teaching and the experimental group (n=30), who were studied the CAI program by self-directed learning.

Participation was voluntary and students were informed that the assessments were formative and that results would not contribute to their grades or affect their academic progress. Ethical approval was obtained from the faculty of nursing, Chiang Mai University ethics committee prior to recruitment and each participant was issued with a unique code that was used on all written data to ensure anonymity.

2.3 Design

The study employed a randomized controlled design. After recruitment, participants were sequentially allocated a number which became their unique code. A computerized random number generator was then used to assign participants to the intervention (CAI program,) or control (conventional teaching method) group using these codes. Data were collected between October 2013 and December 2013. Baseline data were collected from all participants immediately prior to the teaching intervention. The knowledge test was repeated immediately following the teaching session for control group and after completing to study CAI program for the experimental group. The student's satisfactions were collected from the experimental group immediately following after completing to study CAI program.

2.4 Teaching interventions

Two teaching methods were compared. Both methods were of 120 min duration. Up-to-date literature were drawn on to ensure that content was relevant and reflected current knowledge of CRRT. All contents and teaching resources were subjected to expert review and were piloted prior to the main study.

2.4.1 Conventional face-to-face lecture

Participants in the control group (n= 30) were taught in an on campus class room by lecturer. The learning plan was used which contained basic anatomy and physiology of the kidney and acute renal failure, criteria for initiation of CRRT, principles of dialysis, modes of CRRT, vascular access, circuit anticoagulation during CRRT, complication of CRRT, nursing intervention for patient with CRRT. Any questions about the subject matter which arose during the session were answered by the lecturer.

2.4.2. The CAI program

Participants in the experimental group (n= 30) worked independently through a self-directed CAI program via an individual computer terminal in an on-campus computer room. The program was purposefully developed for the study with the assistance of a learning technologist and had been tested during the pilot study. The theoretical content was identical to that of the conventional teaching session and interactive activities; animated multimedia, high quality photographs and video were also included to stimulate interest and promote learner engagement. The nursing intervention for patient with CRRT demonstration video was embedded within the module and could be viewed by participants as required. After a brief orientation to navigational features, participants were instructed to work through the CAI program independently for the duration of the session

2.5. Instruments

2.5.1 The learning plan

All contents in the learning plan are consisted of basic anatomy and physiology of the kidney and acute renal failure, criteria for initiation of CRRT, principles of dialysis, modes of CRRT, vascular access, circuit anticoagulation during CRRT, complication of CRRT, and nursing intervention for patient with CRRT.

2.5.2 The knowledge test

Baseline knowledge and knowledge gain was measured using a purposefully developed paper and pencil multiple-choice test that consisted of 20 questions. Each had four responses from which the participants were required to choose one correct answer. Tests were positively marked with one mark awarded for each correct response, yielding a total maximum score of 20. Test–retest reliability was assessed using a group of third year nursing students (n= 10) who were not involved in the main study. The item difficulty of the knowledge test (P = .51) and item discrimination of the knowledge test (R = .55), respectively.

2.5.3 The Questionnaire for Satisfaction (QS).

The Questionnaires for Satisfaction (QS) are composed of closed questions and open ended questions.

3. Analysis

Data analysis was carried out by using the SPSS (version 16) statistical software package. Statistical tests of a non-parametric statistic were employed and a conventional level of significance of 0.05 was used to detect differences. The Wilcoxon signed ranks test was used to compare scores from the knowledge test achieved by the students at different points in the study. In addition, The Mann–Whitney U-test was used to check for significant differences in the knowledge test scores between the control group and the intervention group.

4. RESULT

4.1 The knowledge test

Table 1: The comparison of the knowledge test scores at the baseline.

Teaching Method	Mean	SD	P-Value
Conventional face-to-face lecture	10.70	2.03	.18
CAI program	9.83	1.99	

Table 2: The comparison of the knowledge test scores of control group (n =30)

Study groups	Mean	SD	P-Value
Baseline knowledge scores	10.70	2.03	.000
Knowledge scores after completed conventional face-to-face lecture	13.97	1.94	

Table 3: The comparison of the knowledge test scores of experimental group (n = 30)

Study groups	Mean	SD	P-Value
Baseline knowledge scores	9.83	1.99	.000
Knowledge scores after completed CAI program	14.95	1.35	

Table 4: The comparison of the knowledge test scores after completing the both teaching method

Teaching Method	Mean	SD	P-Value
Conventional face-to-face lecture	13.97	1.94	.29
CAI Program	14.95	1.35	

4.2 The student's satisfaction on CAI program

More than 95% of students' respondents agreed or strongly agreed that the CAI program presented the information clearly, that they learned a valuable contents in the class, and they expressed satisfaction on CAI program. The students said that the advantages of this CAI program are 1) students can learn the content as per his capacity and can repeat the task if not understand by himself. 2) Immediate feedback motivates students and gives direction and if answer of students is wrong then it will help them to correct the mistake. 3) CAI Program has flexibility in terms of time, place and pace.

5. DISCUSSION

The goal of this study was to compare the effects of a self-directed CAI program with conventional face-to-face classroom teaching on the knowledge of continuous renal replacement therapy. The findings support, there would be no difference between the knowledge test scores of nursing students using CAI program when compared with those taught using conventional methods. Both teaching methods resulted in knowledge gains. The knowledge scores of both groups also revealed improvements when compared with baseline scores. This finding is similar to those from earlier studies reported in the nursing literature that indicated both teaching methods resulted in knowledge gains, especially at the immediate follow-up (10, 12).

6. LIMITATION

The findings from this study must be interpreted with caution due to small sample size. The future research is recommended with a larger sample to investigate the effect CAI program on knowledge retention and clinical skills.

7. CONCLUSION

There are no differences between the knowledge test scores of nursing students using CAI program when compared with conventional teaching methods. Moreover, a participatory learning CAI program can improve students' knowledge. In addition, the advantages of CAI program are 1) students repeat the task if not understand by themselves. 2) Immediate feedback motivates students and 3) CAI Program has flexibility in terms of time, place and pace. Thus, it could be utilized for nursing education.

8. ACKNOWLEDGEMENT

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9. CONFLICT OF INTEREST: None declared.

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Malaria Risk Areas along the Thailand Border

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ABSTRACT

This study aims to review the malaria burden in Thailand, to analyse the high risk areas along the Thai-Cambodian border, and to study the relationship between malaria morbidity rates and environmental and climate factors.

Malaria cases in Thailand between the years 2007 and 2012 were reported by year, region, and province. Malaria high risk areas along the Thai-Cambodian border including the Buriram and Surin provinces were analysed by Potential Surface Analysis using the Geographic Information System. The relationship between morbidity rates and environmental and climate factors was analysed using multiple regression analysis.

Malaria cases in Thailand for the reported years 2007, 2008, 2009, 2010, 2011, and 2012 had morbidity rates of 49.08, 45.72, 36.61, 40.25, 33.01, and 25.20 per 100,000 populations, and mortality rates of 0.06, 0.06, 0.03, 0.05, 0.017, and 0.027 per 100,000 populations for each year respectively. Most of the cases were found along the Thai borders including the borders with Myanmar, Malaysia, and Cambodia. Along the Thai-Cambodian border there were 846 reported cases of malaria with 80.50% from Surin province and 19.50% from Buriram province. The majority of cases were found in male patients, from the age group 31-40 years old, and among agricultural people. The high risk areas spanned 3,014.79 kilometres. The morbidity rates were significantly associated with the following environmental factors: forested land (Adjusted $R^2 = 0.261$), population density (Adjusted $R^2 = 0.170$), anopheles adult density (Adjusted $R^2 = 0.111$), as well as with the following climate factor: annual relative humidity (Adjusted $R^2 = 0.057$).

This study shows that malaria is still a problem along the Thai-Cambodia border, and the PSA-GIS analysis was able to identify high malaria risk areas which can assist in future planning for malaria prevention and control.

Keywords: Malaria Risk Area, Thailand Borderline, Potential Surface Analysis, Geographic Information System

1 INTRODUCTION

Malaria is a serious public health problem around the world, especially in Africa and Asia in tropical and subtropical regions because the high rainfall, warm temperatures, and stagnant waters provide an ideal environment for mosquito larvae. In 2013, the world-wide burden of malaria, as reported by World Health Organization, totalled 207,000,000 cases with 627,000 deaths. Malaria is a mosquito-borne infectious disease of humans and other animals caused by parasitic protozoans of the genus *Plasmodium*. Commonly five species of *Plasmodium* can infect and be transmitted by humans. The vast majority of cases or deaths are caused by *P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae* and *P. knowlesi*. This serious problem is one target for the millennium development goals to decrease mortality and morbidity around the world [1].

In Thailand, malaria is still a major problem in border areas especially along the Thai-Myanmar, Malaysia, Laos PDR, and Cambodian borders. Morbidity and mortality rates are reported yearly by the bureau of Epidemiology, Ministry of Public Health, Thailand [2,3,4,5,6]. The problem of malaria in border areas persists primarily due to uncontrolled migration from neighbouring countries, particularly from Myanmar and Cambodia with their political difficulties. The border areas are densely covered by forests, in which the breeding places of the predominant malaria vectors, *Anopheles dirus* and *An. minimus*, are found. Malaria control measures are hampered by the remoteness of these areas [1,6]. This problem still needs addressing in order to improve and

eradicate malaria, therefore the identification of high malaria risk areas is necessary for future planning.

2 MATERIALS AND METHODS

This study aims to (1) review the burden of malaria in Thailand from 2007 through 2012, (2) analyse the high malaria risk areas along the Thai-Cambodian border including the Buriram and Surin provinces by potential surface analysis (PSA) using Geographic Information Systems (GIS), (3) and study the relationship between malaria morbidity rates and environmental and climate factors.

2.1 Study design and Data Collection

Descriptive and analytical studies were performed utilizing collected data including:

- Malaria cases and deaths in Thailand from 2007 through 2012, were collected from the bureau of the Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand. Malaria cases along the Thai-Cambodia border from 2008 through 2012 were collected from Surin Provincial Public Health and Buriram Provincial Public Health, Ministry of Public Health, Thailand. Data of malaria cases and deaths were used to calculate morbidity and mortality rates.
- Geographic data of Buriram and Surin provinces were collected from the administrative organization of Buriram and Surin provinces, Thailand.
- Satellite data of Buriram and Surin provinces were collected from the Geo-Informatics and Space Technology Development Agency (Public Organization) of Thailand.

2.2 Potential Surface Analysis using Geographic Information System (PSA-GIS)

For performing PSA-GIS in our pilot project we selected the study site as the Thai-Cambodian border, therefore we focused on the Buriram and Surin provinces, which are located in the north-eastern region of Thailand, situated along the Thai-Cambodian border and cover an area of 18,446.9 km² (7,122.7 sq mi). Buriram province is divided into 23 districts (10,322.9 km² (3,985.7 sq mi)), and Surin province into 17 districts (8,124 km² (3,137 sq mi)).

Data on six factors including environmental factors (population density, land use [agriculture areas, number of houses, water reservoirs, forest areas], and anopheles adult density in the villages with reported cases) and climate factors (average annual rainfall, average annual temperature, and average annual relative humidity) were collected and characterized. These factors were analysed by rating values from the relevant research which divided them into three levels from 1 (low risk) to 3 (high risk). The weighting values were ranked according to expertise from (1) Faculty of Public health, Vongchavalitkul University, (2) Institute of Medicine, Suranaree University, (3) the Communicable Diseases Control Department and Public Health office in Buriram and Surin provinces, Thailand, with a level of importance from 0 (not important) to 6 (extremely important). The potential malaria risk for each area were able to be calculated by using the equation as follows [8],

$$S=(R_1 \times W_1)+(R_2 \times W_2)+\dots+(R_n \times W_n)$$

When

S = the potential risks in the area.

R = the value of each factor in the areas of overlap.

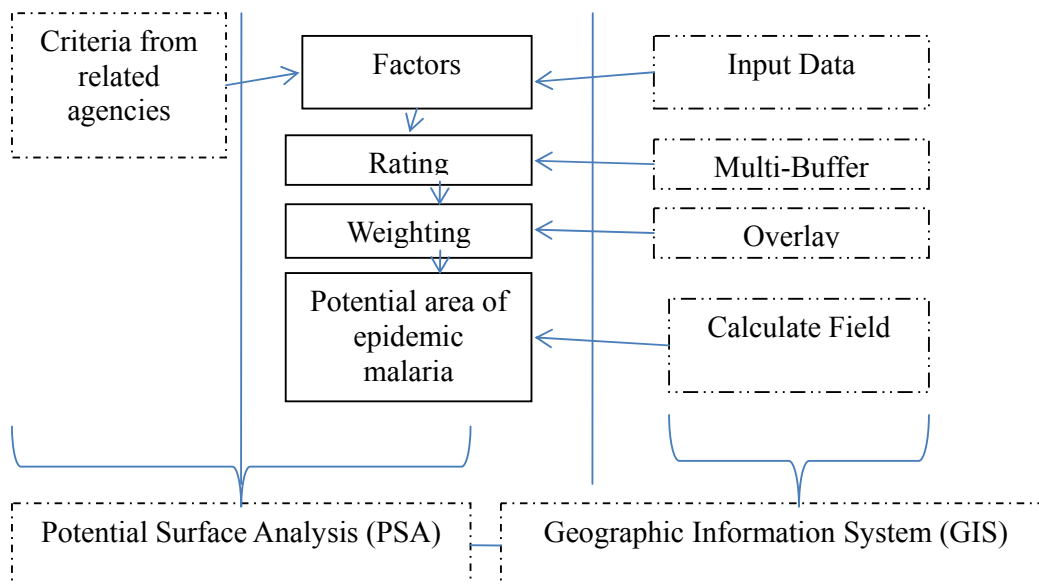
W = the weight of each factor used in the average.

N = number of factors used in the analysis.

From the above calculation, values of S (the potential risks in the area) could be separated into three ranges by using standard deviations (S.D.). (Table 1)

Level	Calculation Method	Meaning/Interpretation
1	> Mean + S.D.	Low Risk
2	Mean-S.D. to Mean + S.D	Moderate Risk
3	< Mean + S.D.	High Risk

The conceptual framework of potential surface analysis using geographic information system (PSA-GIS) is shown below



2.3 The relationship between the malaria morbidity rates and environmental factors

The relationship between the malaria morbidity rates along the Thai-Cambodian border and environmental factors was analysed by using multiple linear regression analysis with the following variables: the dependent variable of the malaria morbidity rate (Y) and independent variables including: anopheles adult density (X₁), forest areas (X₂), water reservoirs (X₃), agriculture areas (X₄), population density (X₅), and number of houses (X₆). The reliability value was considered as percentage at 95% (p <0.05).

2.4 The relationship between malaria morbidity rates and climate factors

The relationship between the malaria morbidity rates along the Thai-Cambodian border and climate factors was analysed using multiple linear regression analysis with the following variables: the dependent variable of the malaria morbidity rate (Y) and independent variables including: annual rainfall (X₁), number of rainy days (X₂), annual relative humidity (X₃), maximum temperature (X₄), minimum temperature (X₅), and average annual temperature (X₆). The reliability value was considered as a percentage at 95% (p <0.05).

3 RESULTS

3.1 Malaria in Thailand

Malaria cases in Thailand in the years 2007, 2008, 2009, 2010, 2011, and 2012, were reported by the bureau of Epidemiology, Department of Disease Control, Ministry of Public Health, Thailand, with morbidity rates of 49.08, 45.72, 36.61, 40.25, 33.01, and 25.20 per 100,000 population, and the mortality rates of 0.06, 0.06, 0.03, 0.05, 0.017, and 0.027 per 100,000 population (Thai population was 64,456,695 in the year 2012) (Figure 1). Malaria cases and deaths were found frequently in the southern and northern regions (Figure 2). The top ten leading rates from the years 2007, 2008, 2009, 2010, 2011, and 2012, are reported in figure 3, with most of the provinces found along the Thai border with Myanmar, Malaysia, and Cambodia.

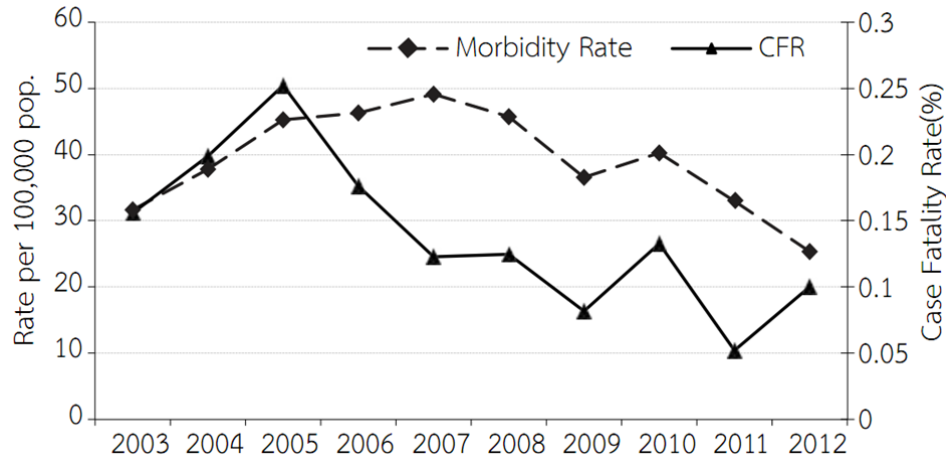


Figure 1 Reported case of malaria per 100,000 population and case fatality rate, by year, Thailand, 2003 and 2012

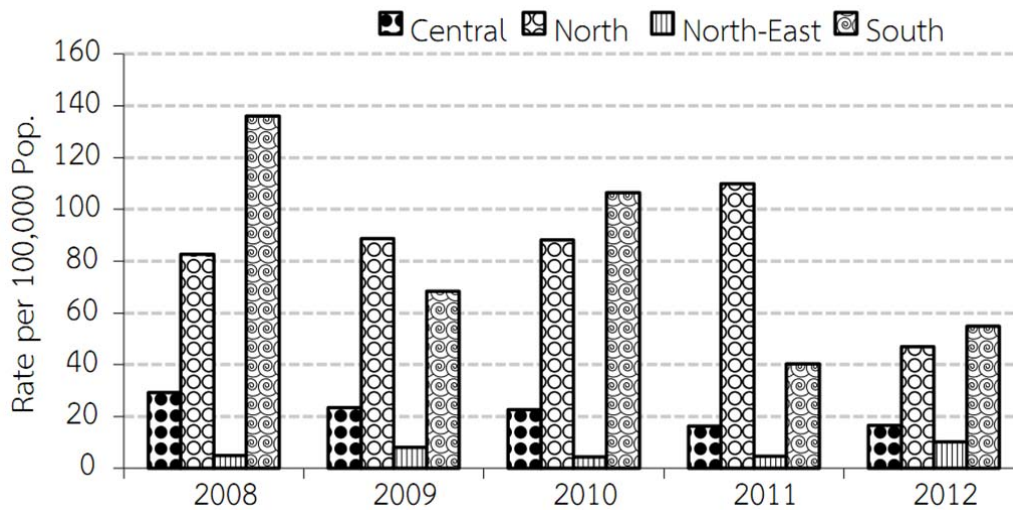


Figure 2 Reported case of malaria per 100,000 populations, by Region, Thailand, 2008 and 2012

Along the Thai-Cambodia border between 2008 and 2012 the majority of malaria cases were caused by *Plasmodium vivax* at 45.36% (Table 1). Of 846 malaria cases 80.50% were from Surin province and 19.50% from Buriram province. The majority of cases were found in male patients, in the age group 31-40 years old, and among agricultural people (Table 2).

Table 1 Types of malaria cases in Thai-Cambodia border included Buriram and Surin province by species

Type of Malaria species	Number of cases	% of infection
<i>Plasmodium vivax</i>	384	45.36
<i>Plasmodium falciparum</i>	344	40.66
mixed infection	73	8.66
not identified	45	5.32
Total	846	100

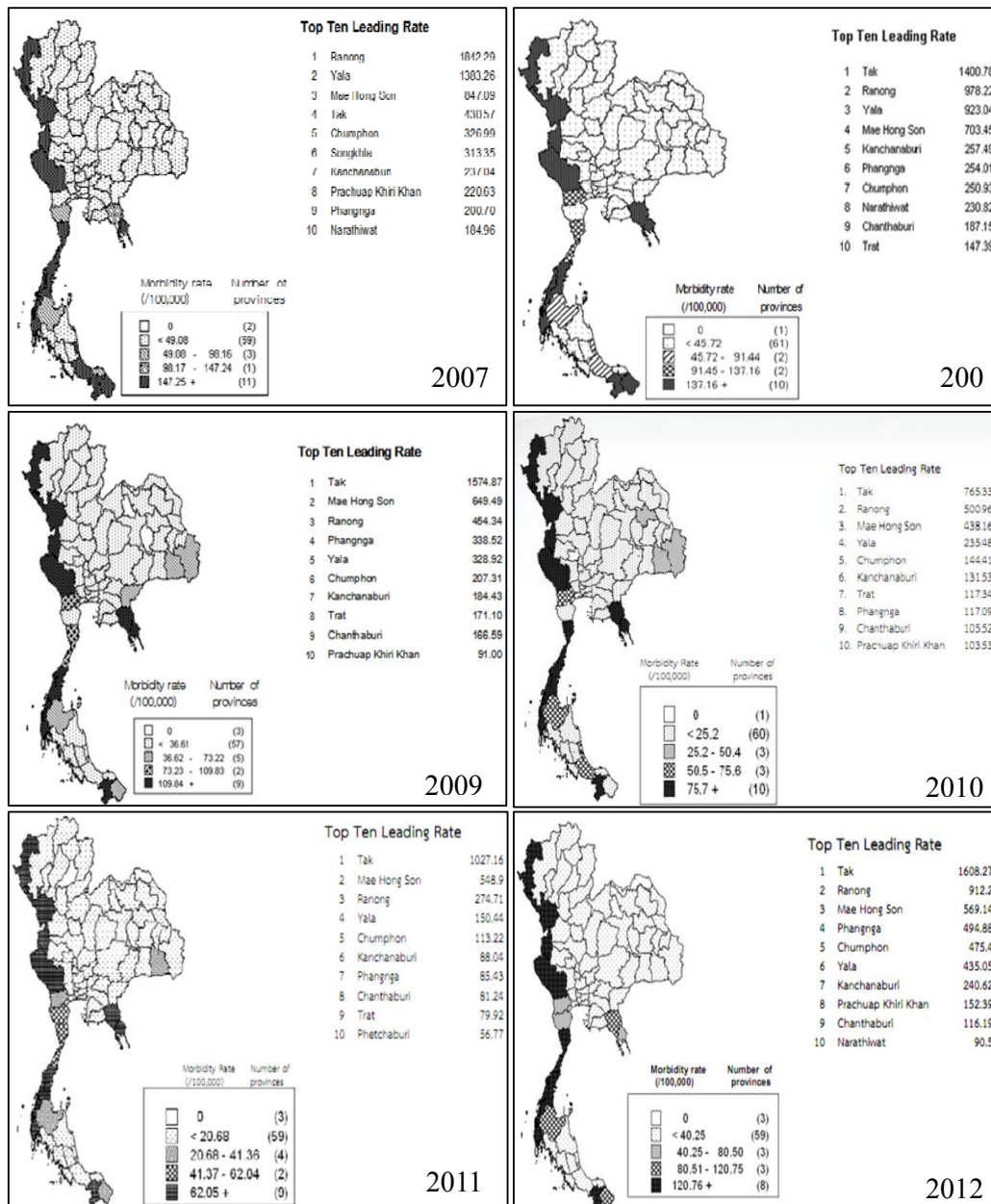


Figure 3 Reported case of malaria per 100,000 populations by province, Thailand, 2007 and 2012

Table 2 Distribution of malaria cases along the Thai-Cambodian border including the Buriram and Surin provinces by demographic data

Characteristics	Number of cases	% of infection
Sex		
male	769	90.9
female	77	9.1
Age		
1-10	16	1.84
11-20	83	9.83
21-30	184	21.8
31-40	225	26.61
41-50	207	24.46
51-60	88	10.44
>60	42	5.02
Occupation		
Agriculture	501	59.26
Soldier	90	10.64
Student	55	6.45
Employee	55	6.45
Governmental officer	43	5.12
others	35	4.09
unknown	30	3.58
Monk	15	1.74
Housewife	14	1.64
Self-employed	9	1.02
Province		
Surin	681	80.5
Buriram	165	19.5
Total	846	100

3.2 Potential Surface Analysis using Geographic Information System (PSA-GIS)

According to weighting and rating of malaria epidemic factors using overlay technique we were able to identify high risk areas covering 3,014.79 km² (16.34%) including 4 districts: the Nangrong and Nondaeng districts of Buriram province (1,640.95 km²), and the Sangka and Buached districts of Surin province (1,373.84 km²). Moderate risk areas covered 8,672.55 km² (75.6%) including Buriram province with 6,641.93 km² (64.34%), and Surin province with 2,031 km² (25%). Low risk areas covered 2,819.65 km² (15.29%) included Buriram province with 2030 km² (19.67%), and Surin province with 789.65 km² (9.72%). (Figure 4)

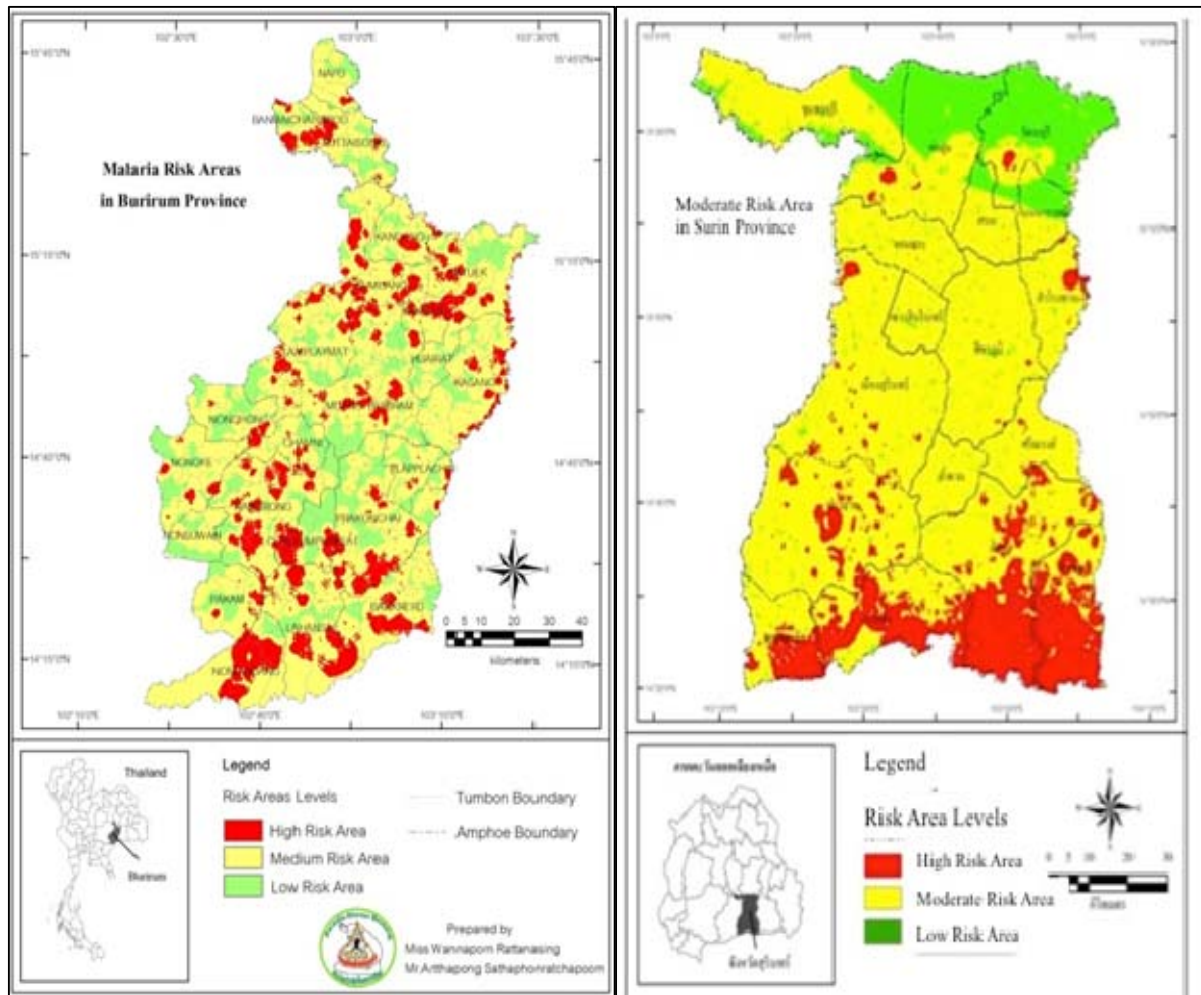


Figure 4 Risk area mapping of malaria epidemic in Buriram (left) and Surin (right) provinces

3.3 The relationship between the malaria morbidity rate and environmental factors

The relationship between the malaria morbidity rate and environmental factors was analysed and the factors of forest land use, population density, and anopheles adult density were found to be significantly related to the morbidity rate by percentages of 12.3(Adjusted $R^2 = 0.261$), 17.0(Adjusted $R^2 = 0.170$), and 11.1(Adjusted $R^2 = 0.111$), respectively. The factors of water reservoirs, agriculture areas, and number of houses were not found to be associated with the morbidity rate (Table 3).

3.4 The relationship between the malaria morbidity rate and climate factors

The results of relationship analysis between the factors (X) with the morbidity rate (Y) are show in Table 2. A single climate factor was found to be significantly associated to malaria morbidity. This was the average annual relative humidity with a percentage of 5.7 (Adjusted $R^2 = 0.057$) (Table 3).

Table 3 The relationship between the risk of malaria epidemic and environmental and climate factors.

Factor	R ²	Sig.
Land used		
Agriculture area	1.001	0.06
Forest areas	0.261	0.03*
Water reservoirs	0.651	0.06
Houses	1.000	0.09
Anopheles adult density	0.111	0.03*
Population density	0.170	0.03*
Annual rainfall	0.110	0.06
number of rainy day	0.111	0.07
Average annual temperature	0.210	0.06
maximum temperature	0.210	0.07
minimum temperature	0.200	0.06
Annual relative humidity	0.057	0.03*

4 DISCUSSION

Malaria is still a problem in Thailand. In addition to showing the morbidity and mortality rates from malaria in 2007, 2008, 2009, 2010, 2011, and 2012, our figures showed that malaria was found most frequently in the southern and northern regions of Thailand. The top ten leading malaria case rates were reported, with most of the provinces found located along the Thai border with Myanmar, Malasia, and Cambodia. The border areas are densely covered by forests, in which the breeding places of the predominant malaria vectors, *Anopheles dirus* and *An. minimus*, are found. Malaria control measures are hampered by the remoteness of these areas [2,3,4,5,6].

Along the Thai-Cambodian border the Surin and Buriram provinces had more frequent malaria infections than other provinces in the north-eastern part of Thailand. Of the 846 malaria cases reported in these provinces, 80.50% were in Surin province and 19.50% were in Buriram province. This is a serious problem requiring prevention and control measures because both provinces are areas for travellers, especially Buriram which has a sports complex for the international car circuit and a popular football club.

We used the PSA-GIS to analyse and map the high risk areas for malaria along the Thai border. PSA-GIS is a high efficiency tool and has been used for the study of risk areas for other known infectious diseases [7,8,9], therefore our pilot project was set up to use it in the Surin and Buriram provinces. PSA-GIS results also identified 3,014.79 kilometers as a high risk area for malaria, consisting of Buriram province (1,640.95 km²), and Surin province (1,373.84 km²). The distribution of malaria cases in both provinces was different. In Buriram province malaria was

found to be widely dispersed over all areas, while in Surin province malaria was clustered along the Thai-Cambodian border. These results may be useful for decision making, and for selecting the proper campaigns for prevention and control in each province.

The relationship between malaria morbidity and environmental and climate factors was found to show increased morbidity with forested areas, population density, anopheles adult density, and average annual relative humidity. Due to the world experiencing climate change it is possible that these factors may support increasing numbers of the insect vectors and allow malaria to spread more easily [9]. These associations may prove useful for future prediction of malaria epidemics in Surin and Buriram province as well as planning control measures.

5 CONCLUSIONS

In conclusion, malaria is more frequently found in the border areas of Thailand, and the application of PSA-GIS can be used to assess the areas of high malaria risk along the Thai-Cambodian border. Therefore this study may prove useful for the organization of prevention and control measures for malaria in Thailand.

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