

**EAST ASIAN
MEDICAL
STUDENTS
ASSOCIATIONS**

2019

Diabetes and Obesity

The Unrecognized Burden

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TABLE of Contents

Foreword by Organizing Chairperson	1
Theme Overview	2
Types of Academic Competitions	3
Name Lists of Final Round Competition	4
Top 3 Scientific Paper Abstract	9
1 st Place – AMSA Australia	10
2 nd Place – AMSA Indonesia	12
3 rd Place – AMSA Taiwan	14
Top 3 Scientific Poster Abstract	15
1 st Place – AMSA Hong Kong	16
2 nd Place – AMSA Thailand	18
3 rd Place – AMSA Australia	19
Top 3 White Paper & Video Abstract	21
1 st Place – AMSA Hong Kong	22
2 nd Place – AMSA Singapore	23
3 rd Place – AMSA Indonesia	25
Top 3 Public Poster Abstract	26
1 st Place – AMSA India	27
2 nd Place – AMSA Singapore	29
3 rd Place – AMSA Indonesia	31

Foreword by Organizing Chairperson

Dear People of Tomorrow,

As you may know, AMSA-Thailand successfully hold the 32nd East Asian Medical Students Conference 2019 with its core theme, Diabetes and Obesity - The Unrecognized Burden. As the Co-Chairperson, I, and the members of the organizing committee, proudly announced that over 300 medical students from all over many chapters joined and competed in our academic competitions, cultural events and social programs. I believe that both the organizing committee and the delegates received one-of-a-kind experience that would be beneficial in multiple areas of their proficiencies.

One of the key highlights of the AMSA conferences is the academic competition. The EAMSC 2019 offers 4 unique different types of competition that aims to cover all of the aspects of the core theme of the conference. The Scientific Paper and The Scientific Poster are the cumulative of hundreds of hours of hard-work and creativity which they believe that the results will not only contribute to the benefit of their studies, but also towards the society in a large scale. The public posters are for those who believe that public understandings are essential to combat obesity in the current era. The white paper represents the wants and needs of the public, presented via a proposal, wanting to be carried by the governments and legislators of the people.

With overwhelming interest of medical students throughout our region, we received many academic submissions a lot more than what we expected to receive. Although only specific number of prizes and reward could be awarded, the Organizing Committee believes that, those unawarded submissions, shall also be recognized. Therefore, we and J-AMSA (Journal of Asian Medical Students Association) cooperate to publish all of the academic submissions, as both to create an avenue for people interested in biomedicine and medicine whom are not yet expertized to medical subjects and medicine, and



to provide scientific literature to everyone regardless of their age, expertise and region, this is, with the hope to emphasize that all the students have the potential to create an impact to the scientific community through research and publications.

I thank you everyone who is involved regarding to this booklet, namely the Editors and Advisors of J-AMSA, AMSA-International, My Co-Chairperson and the Organizing Committee of EAMSC 2019, AMSA-Thailand, the medical students who authored the research and publications which are contained in this booklet, all along with my friends and my family.

As Philip Zimbardo once said, “Academic success depends on research and publications”, I believe that the research and publications you are now going to encounter throughout this booklet shall be beneficial to both you and the future of science.

Thanathip Suenghataiphorn

Thanathip Suenghataiphorn
Class of 2021, Faculty of Medicine, Siriraj
Hospital
Co-Chairperson of the Organizing Committee,
The 32nd EAMSC 2019
Bangkok, Thailand

THEME OVERVIEW

DIABETES & OBESITY – THE UNRECOGNIZED BURDEN

Diabetes and obesity represent an underestimated threat to the health of population worldwide. During the past few decades, we have witnessed an epidemic of type two diabetes and obesity. Currently, at least 300 million adults are obese and 422 million adults are living with diabetes. Moreover, the prevalence is expected to increase worldwide, particularly in low-income and middle-income countries; which imposes a serious health and economic concerns in every region.

There is a strong association between diabetes and obesity since obesity is one of the most notable risk factor of type two diabetes. Additionally, both diabetes and obesity give rise to serious premature illnesses and deaths in many countries and also impose financial burdens to the society.

As health practitioners, we are confronted with multi-layered treatment issues and complications involved in the care of diabetes and obesity. To meet the challenge, new approaches in management and prevention of obesity, diabetes and their associated complications are urgently needed. This conference will serve as a platform to create awareness amongst medical students, exchange potential solutions and, hopefully, make an impact on the future healthcare system.

Types of Academic Competitions

1. Scientific Paper Competition

Scientific paper should contain introduction, purpose, outcomes, discussions and recommendations about the topic. Studies should present a significant new contribution in the biomedical, clinical and/or community fields. Top 8 studies will get 10 minutes for presentation during EAMSC 2019.

2. Scientific Poster Competition

Scientific poster should contain introduction, purpose, outcomes, discussions and recommendations about the topic. Studies should present a significant new contribution in the biomedical, clinical and/or community fields. Top 8 studies will get 10 minutes for poster presentation during EAMSC 2019. The other posters will be exhibited in the exhibition hall.

3. White Paper & Video Competition

White papers are in-depth reports that presents a problem and provides a solution. In this competition, we expect that the white papers present a public health policy changes, either local, national or supranational, with regard to the general population.

The White Paper & Video Campaign must be related to the theme and aims to raise awareness of diabetes and obesity in medical field and/or community. The top 6 of video trailers (determined by popular vote and the judges) will have the chance to present in the final round.

4. Public Poster Competition

The Public Poster Campaign must highlight the effects of ONE of the diabetes and obesity problems to raise the awareness in medical field and community. Top 30 posters will get 3 minutes for presentation during EAMSC 2019.

Lists of Final Round Competitors

1. Scientific Paper Competition top 8 final round

Place	Name of Project	Chapter	Authors
First	Bariatric surgery versus non-surgical interventions for Type 2 Diabetes in obese patients with BMI $\geq$ 35kg/m ² : A Systematic Review	Australia	I. LEE, S. XIAO, M. Y. CHONG, M. CHEN
Second	Childhood Obesity as a Predictor of Diabetes Mellitus Type 2 in Adults: A Systematic Review and Meta-Analysis	Indonesia	Marco Raditya, Fabiola Cathleen, Daniell Edward, Kristian Kurniawan
Third	Evaluation of Glycemic Variability (GV) after Treatment Modification from Premixed Insulin to Glucagon-Like Peptide-1 Receptor Agonist (GLP-1 RA) plus Basal Insulin among Subjects of Uncontrolled Type 2 Diabetes Mellitus (T2DM)	Taiwan	HSIAO I ANN, YU SYUAN WANG, NI JYUN KUO
Final Round	Prevalence of obesity and dysglycemia in 5 th year medical student of College of Medicine, Rangsit University,Thailand.	Thailand	Narissara Techavachara, Kamonnop Sahasoonthron, Suphalerk Wijaranayan, Pongthip Arunthamakun
Final Round	The prevalence of underweight, overweight, obesity and associated risk factors among school-going adolescents in Ulaanbaatar	Mongolia	Oyundari G , Shuree Ch , Purevsuren Ts , Solongo Ts , Bolortuya G ,Mandukhai G
Final Round	The medical and socio-economic burden of ophthalmic complications of diabetes mellitus in Hong Kong	Hong Kong	Poon Stephanie , Yu Samson , Seng Claudia , Li Rachael , Hui Jasmine , Lam Isaac , Fong Carol , Fung Nicholas Siu-Kei , Lee Chi Ho , Shih Kendrick Co
Final Round	Prospective cohort study evaluating effectiveness of novel and traditional diabetes treatment measures	Singapore	Elliot Chong Yeung ; Lim Kia Teng ; Teo Yao Hao ; Nicholas Teo Zhi-Rong ; Nicole-Ann Lim Shuen ; Roselle Mae De Guzman Pineda ; Lee Kun Woo ; Seah Hwee Ling, Sherry ; Christoph Chong Sheng ; Yeo Teng Yao ; Lim Kia Hui ; Linsey Gani ; Tan Jun Hui, Eberta ; Tay Tunn Lin ; Aung Soe Tin
Final Round	Assessment of Risk of Type 2 Diabetes Mellitus in Undergraduate Medical Students	India	Vidith Phillips, Unnati Bhatnagar, Suprita James, Manlovepreet Singh Toor

2. Scientific Poster top 8 final round

Place	Name of Project	Chapter	Authors
First	Gender-specific association between excessive daytime sleepiness and glycemic control in patients with type 2 diabetes	Hong Kong	Jasmine Hui Yat Ning, Lam Isaac Yan
Second	Meditation intervention for weight reduction in individuals with obesity or overweight: A systematic review and meta-analysis of randomized-controlled trials	Thailand	Karan Srisurapanont ; Chollada Mahakkanukrauh ; Purilarp Daoaroonkiet ; Jirachaya Choovuthayakorn; Natapong Kosachunhanun MD
Third	Diabetes Down Under: Using AUSDRISK to combat Obesity and Type 2 Diabetes Mellitus. A Systematic Review	Australia	S. XIAO, H. Z. LIM, M. Y. CHONG, I. LEE, Y. XU, A. NG, J. WONG
Final Round	PERCEIVED BARRIER OF HEALTHY LIFESTYLE AMONG HIGH SCHOOL STUDENTS IN SURABAYA, EAST JAVA, INDONESIA: A STUDY BETWEEN OVERWEIGHT-OBESE AND NON OVERWEIGHT-OBESE STUDENTS	Indonesia	Kevin Luke, Ivan Angelo Albright, Tiffany Konstantin, and Muhammad Jaf'ar Shodiq
Final Round	Assessment of Dietary Risk Factors Associated with Childhood Obesity in Asia: A Systematic Review and Meta-analysis of Observational Studies	Indonesia	Ko Abel Ardana Kusuma, Johan Cahyadirga, Ariel Valentino Soetedjo, Christine Lieana
Final Round	Assessment of dietary habits and knowledge gaps in patients with type II diabetes	Singapore	Wang Yuxing, Teo Wei Ling Rachel, Yeoh Hsin Yee Clarice, Lim Li He Shaun
Final Round	Study to evaluate feet at risk in patients with Diabetes Mellitus	India	Pariniti Khillan, Brinda Soni, Josh Kumar, Mohd. Arqam Nasir Dr. Sanjay Pandit , Assistant Professor
Final Round	SLEEP BEHAVIORAL CHARACTERISTICS AND RISK OF OBSTRUCTIVE SLEEP APNEA AMONG MONGOLIAN OBESE SUBJECTS	Mongolia	Purevsuren Tsetsegmaa, Solongo Tsengelmaa, Bolortuya Ganbat, Shuree Chimedregzen, Rychindorj Erkhembayar

3. White Paper & Video Competition top 6 final round

Place	Name of Project	Chapter	Authors
First	Combating a rising incidence of young-onset type 2 diabetes in Hong Kong.	Hong Kong	Siet, Hoi Yan , Wong, Emilie Sheau Cherng , Chung, Audrey , Chung, Colin , Hwang, Sunny , Tsui, Serena
Second	Surpassing The Hospital, Reaching the Community	Singapore	Ainsley Ryan Lee Yan Bin, Clare Cheong Wei Zhen, Gwyneth Kong, Ong Soon Yang Bernard, Peng Gen Yi
Third	Multisectoral Changes As Prevention In Diabetes, Obesity, and its Complication	Indonesia	Nadia Afiyani, Amira Nabila, Nur Azzahra Permata
Final Round	Diabetes and obesity; A Silent Killer Disease	Thailand	Kantapon Kleebua, Pichamon Suksiri, Chananya Patumwan, Mutthana Puksungkane
Final Round	A Multi-Sectoral Approach for the Management of Diabetes in the Philippines	Philippines	Lea Elora A. Conda , Gianica Reena S. Monteagudo , Maria Teresa O. Dela Cruz , Roxanne B. Coronel , Nicole Jeanica Vistas Lim , Dominic Martin Antonio , Zandy Tolentino , Era Grace Abdulhamid , Erin Jay G. Feliciano , Marie Angelique Gabrielle Villa , Mary Rose Dionisio
Final Round	8. Diabetes and Handmade Beverages	Taiwan	Yu-Ting, Huang; Ting-Yun, Kuo; Hsueh-Ming, Kuo

4. Public Poster Competition top 18 final round

Place	Name of Project	Chapter	Authors
First	Treat Your Body With Care	India	Govind Singh Kharinta Madhav Goel Mitali Srivastava Nikita Goyal
Second & Special Prize from Diabetes Association of Thailand	Youth Diabetes: A Growing Stigma	Singapore	Tricia Tan Hui Ling Vasundhara Lakshmi Kandarpa Aubrey Ng Ding Rui Poon Wynne Hsing Zachariah Ow
Third	Prevent Diabetic foot or get amputated	Indonesia	Agnes Debora Sianturi Ave Maria Desak Gede Yuliana Eka Pratiwi Shantidewi
Final Round	Telehealth	Singapore	Clare Cheong Wei Zhen , Gwyneth Kong , Nicole-Ann Lim Shuen
Final Round	Obesity is More than Just Being Fat	Indonesia	Emanuel Hananto , Andreas Dexter G. , Bernadus Bernardino B. , Andra Danika
Final Round	Diabetic Foot Ulcer: Sugar Kills Your Foot	Indonesia	Devina Afraditya Paveta, Thania Lathifatunnisa Putri Agusti, Shalsabila Refithania Yanata
Final Round	Childhood Obesity - Complex but Conquerable	India	Saundarya Monga , Shikha Khairwal and Sapna
Final Round	DIA-BEAT-IT	Philippines	Reyes, Michelle Nhat Ly T., Sabaten, Rocelle Diane S.
Final Round	Intergenerational Influence of Diabetes	Singapore	Yeoh Hsin Yee Clarice, Ainsley Ryan Lee Yan Bin, Teo Wei Ling Rachel, Wang Yuxing, Aubrey Ng Ding Rui, Peng Gen Yi
Final Round	Potential role of processed food and glycemic index in childhood	India	Aditi Anand, Chetali Sharma, Tanisha Gupta, Tanisha Pruthi
Final Round	Every step counts. Everyone cares	Taiwan	Cheng Oi Wa, Chen Yi Hsuan, Khong Lee Kar
Final Round	Prevent Diabetes Early	Singapore	Audrey Koh Su-Min; Bjorn Kaijun Betzler; Ho Yeung Jek; Yap Shi Jed; Koh Yu Rui; Tan Hon Qin Marcus; Yap Shi Jed
Final Round	Diabetes will follow you till death	Korea	Dong Ki Kim, Chan Su Park, Ji Won Kang, Min Jung Ko, Min Ju Cho, Da Hye Kim, Jong Won Lee, Min Ki Hong, Son Sang Hyuk

4. Public Poster Competition top 18 final round (Continued)

Place	Name of Project	Chapter	Authors
Final Round	Save Your Sight Fight Diabetes	Thailand	Krittayanee Itthidecharon, Chiraphat Boonnag, Sirinut Siritikul, Apichat Aeampuck
Final Round	A guava a day, makes a healthy day	Taiwan	Ying Wei, Chen , Hung Yu, Chen
Final Round	Thai women are sweet	Thailand	Kantapon Kleepbua, Sathida Kamyod, Supakarn Montri, Wantanee Srimontree
Final Round	Waist circumference	Mongolia	Solongo Tsengelmaa , Purevsuren Tsetsegmaa
Final Round	Diabetic foot complication	Mongolia	Solongo Tsengelmaa , Purevsuren Tsetsegmaa

Top 3

SCIENTIFIC PAPER COMPETITION Abstract

Bariatric surgery versus non-surgical interventions for Type 2 Diabetes in obese patients with BMI > 35kg/m²: A Systematic Review

AMSA AUSTRALIA

I. LEE, S. XIAO, M. Y. CHONG, M. CHEN
Monash University, Melbourne University

BACKGROUND: With 63% of Australian adults being either overweight or obese and the epidemic continues to grow, concerns regarding higher rates of impaired glucose tolerance, metabolic syndrome and Type 2 Diabetes Mellitus (T2DM) abound. Presently, bariatric surgery in T2DM patients is only recommended with a BMI ≥ 40 kg/m². It is also only covered by the nation's universally-funded health insurance (Medicare) if the patient has a BMI > 35 kg/m² with one or more obesity-related comorbid conditions.

OBJECTIVES: This systematic review investigates the effectiveness of bariatric surgery as treatment of T2DM in patients with co-morbid obesity, with the aim to evaluate its potential applications within the Australian context.

METHODS: We performed a comprehensive search of databases including Ovid MEDLINE, PubMed, Embase and Cochrane Central Register of Controlled Trials from database inception to 20th November 2018. Randomized controlled trials (RCTs) that compared surgical to medical interventions in diabetic patients were selected for inclusion.

RESULTS: 11 RCTs comprising of 872 patients in total (surgical group n = 520, medical group n = 352) were included for analysis. All studies showed that bariatric surgery, regardless of type of procedure, led to higher remission rates of T2DM and larger improvements in HbA1c and fasting blood glucose (FBG). In the surgical arm, remission rates ranged from 17% - 73%, over follow-up of 6 months to 5 years. 4 studies demonstrated that non-surgical interventions achieved 0% remission rate, despite seeing improvements in glycaemic control. 8 out of 11 RCTs had a study population with mean baseline BMI > 35 kg/m², and no correlation was found between mean baseline BMI and effectiveness of bariatric surgery.

CONCLUSIONS: Surgical interventions are more effective than lifestyle-medical interventions in inducing remission of T2DM, as well as lowering HbA1c and FBG levels in patients of varying BMI, at follow-up periods of up to 5 years. For bariatric surgery to be considered for use in the Australian

population, further studies have to be conducted to ascertain the long-term efficacy and safety of these procedures, along with cost-effectiveness.

Childhood Obesity as a Predictor of Diabetes Mellitus Type 2 in Adults: A Systematic Review and Meta-Analysis

AMSA INDONESIA

*Marco Raditya, Fabiola Cathleen, Daniell Edward, Kristian Kurniawan

*marco.raditya@gmail.com

Introduction: DM type 2 is now on the troubling rise to become a global emergency. It is now the top 10 leading causes of deaths worldwide and WHO estimated 422 million adults worldwide are diabetic. DALY generated by diabetic complications has also increased from 49.7 million (1990) to 64.1 million (2015). Escalation in DM type 2 prevalence despite government-enforced programs like SDGs suggests its ineffectiveness, necessitating the discovery of a novel risk factor in DM type 2, such as the relationship between childhood obesity and adult-onset diabetes.

Objectives: This review is conducted to conclude the link between childhood obesity and adulthood obesity type 2. Results are hoped to increase public awareness, be implemented into the pre-existing practical evidence-based guideline of diabetes screening and prevention, and to achieve WHO's Sustainable Development Goals by 2030.

Materials and method: This review was conducted based on PRISMA Statements' flow diagram and checklist to improve quality of reporting. Cohort studies were chosen for its long term follow-up. For bias and quality assessment, Newcastle-Ottawa Scale for Cohort was used for included studies and Cochrane Handbook was used towards this review. Analysis was depicted in forest plot and funnel plot using RevMan 5.3 Software for Mac.

Results: From 8 databases and additional searches, total 237 records with 73,533 participants were retrieved, and final 5 studies were included in meta-analysis. The most common bias from NOS were inadequacy of follow-up. Analysis through forest plot show statistically significant association of childhood obesity to adulthood diabetes (OR: 3.89; 95% CI 2.97-5.09; I^2 :0%; p-value<0.00001). Funnel plot assessment is symmetrical.

Discussion: Based on forest plot, individuals with childhood obesity is 3.89 times more likely to have adult-onset diabetes. Studies suggest that childhood obesity cause early insulin resistance and early adiposity

rebound, which promotes adulthood obesity, a diabetic risk factor. Review limitation includes few included studies, missing obesity universal definition, and questionable study results validity.

Conclusion: In conclusion, childhood obesity can be used as a predictor for adulthood diabetes. Early diabetes screening and prevention guidelines should include childhood obesity as plausible risk factor.

Keywords: Childhood obesity, Adult diabetes mellitus type 2, Meta-analysis

Third Place: AMSA Taiwan

Evaluation of Glycemic Variability (GV) after Treatment Modification from Premixed Insulin to Glucagon-Like Peptide-1 Receptor Agonist (GLP-1 RA) plus Basal Insulin among Subjects of Uncontrolled Type 2 Diabetes Mellitus (T2DM)

AMSA TAIWAN

HSIAO I ANN, YU SYUAN WANG, NI JYUN KUO

This abstract is not available for J-AMSA.

Top 3

SCIENTIFIC POSTER COMPETITION Abstract

First Place: AMSA Hong Kong

Gender-specific association between excessive daytime sleepiness and glycemic control in patients with type 2 diabetes

AMSA HONG KONG

Jasmine Hui Yat Ning, Lam Isaac Yan

The Chinese University of Hong Kong, Hong Kong

Corresponding Regional Chairperson: Charlotte Wun

Background: Abnormal sleep duration was reported to be associated with poorer glycemic control. However, the correlation between excessive daytime sleepiness (EDS) and glycemic control in patients with type 2 diabetes (T2DM) in Hong Kong is under-explored. We hypothesize that ESS scores, an evaluation tool for EDS, are positively associated with glycemic indices. Gender differences may also affect the association between EDS and glycemic control.

Method: A validated version of the Epworth Sleepiness Scale (ESS) was administered at the Prince of Wales Hospital from June to November 2018. EDS is defined by an ESS score above 10. Patients with T2DM aged ≥ 18 years, could consent and complete the sleep questionnaire were recruited. Covariates such as age, BMI and duration of diabetes were considered.

Results: 95 eligible patients were included in this analysis. Mean age was 60.2 [standard deviation (SD) 14.0] years, and mean disease duration of diabetes was 10.26 (SD 8.9) years. Forty-seven percentage were men. There was a significant linear association between ESS scores and HbA_{1c} (0.07 ± 0.03 , $p=0.028$), but an insignificant linear association was observed between ESS scores and FPG (0.013 ± 0.058 $p=0.824$). Gender was observed to modulate the association between EDS and HbA_{1c} when adjusted for covariates ($p=0.002$). Females with EDS had higher HbA_{1c} levels than males with EDS (9.80 ± 0.69 , $p=0.010$ for females; 7.45 ± 0.42 , $p=0.010$ for males). However, there was no significant effect of gender on FPG (7.08 ± 1.31 , $p=0.326$ for females; 7.13 ± 0.87 , $p=0.326$ for males).

Conclusion: In patients with type 2 diabetes, ESS score is positively associated with HbA_{1c} but not FPG with gender difference.

Link to Scientific Poster :

<https://drive.google.com/open?id=0B6x8miQn9XR3X2RsdDBILVYyUEVPZ2JUMk9lVEZLR1JCSjhn>

Second Place: AMSA Thailand

Meditation intervention for weight reduction in individuals with obesity or overweight: A systematic review and meta-analysis of randomized-controlled trials

AMSA THAILAND

Karan Srisurapanont¹; Chollada Mahakkanukrauh¹; Purilarp Daoaroonkiet¹; Jirachaya Choovuthayakorn¹; Natapong Kosachunhanun, MD²

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This abstract is not available for J-AMSA.

Third Place: AMSA Australia

**Diabetes Down Under: Using AUSDRISK to combat
Obesity and Type 2 Diabetes Mellitus
A Systematic Review**

AMSA AUSTRALIA

S. XIAO, H. Z. LIM, M. Y. CHONG, I. LEE, Y. XU, A. NG, J. WONG

Monash University: Australia

Background: Globally, Type 2 Diabetes Mellitus (T2DM) represents the largest disease burden arising from chronic illness and the incidence is rapidly increasing. Complications of T2DM include ischaemic heart disease, cerebrovascular events, autonomic neuropathy, diabetic retinopathy and nephropathy. To address this, the focus of management has been shifted from treatment to prevention, mainly by addressing the modifiable lifestyle risk factors of T2DM such as obesity. The Australian Type 2 Diabetes Risk Assessment Tool (AUSDRISK) is a 10-item questionnaire developed by the Australian Government to stratify individuals into low, medium and high-risk of developing T2DM. This primary health prevention strategy allows subsequent targeted interventions to reduce the incidence of T2DM.

Objectives: This systematic review investigates the validity of AUSDRISK as a screening tool for T2DM, identifies its strengths and limitations, and develops recommendations for future research directions.

Methods: A comprehensive literature search for relevant articles was conducted on The Cochrane library, MEDLINE, Embase, PubMed and Scopus databases. Initial search identified 125 studies, which were screened for duplicates and subjected to our inclusion and exclusion criteria. 6 final studies were selected, comprising of 1 cohort study, 1 cost-effective analysis and 4 cross-sectional studies.

Key Findings: AUSDRISK is comparable in its ability to identify high-risk individuals when compared against traditional blood glucose tests. Different cut-off scores should be used depending on baseline demographic information of the community being screened. It is most sensitive, specific and cost-effective when high-risk individuals are followed up with blood glucose tests, especially but not limited to HbA1c.

Recommendations: Follow-up interventions should be arranged for high-risk individuals identified with AUSDRISK, focussing on lifestyle modification programs.

Link to Scientific Poster :

<https://drive.google.com/open?id=0B6x8miQn9XR3WmpPR0ltYUpXSkhQNzNoYkdVOWJ2bFEzMUDF>

Diabetes Down Under: using AUSDRISK to combat obesity and Type 2 Diabetes Mellitus. A Systematic Review

Shuang XIAO (Joyce), Isaac LEE, Yanning XU (Elisabeth), Allysia NG, Jeffrey WONG
Monash University

INTRODUCTION

The incidence of Type 2 Diabetes Mellitus (T2DM) continues to increase globally, from 362 million in 2013 to a projected 592 million by 2035. In Australia, it is estimated that prevalence will increase to 2.35 million by 2035 (Guanaisya et al., 2014). T2DM confers a two-to-three-fold increase in the risk of coronary heart disease and strokes (Sewar et al., 2010), contributing to 55% of Australian deaths in 2015 (Australian Institute of Health and Welfare [AIHW], 2017). Annual expenditure on diabetes in Australia currently amounts to \$14 billion (Lee et al., 2013), thus prompting the development of preventative measures to mitigate future disease burden.

It is known that obesity and the resulting impaired glucose tolerance increase the risk of developing T2DM, whereas lifestyle modifications such as diet and exercise can halt its progression (Tuomilehto et al., 2001). In July 2008, the Australian Type 2 Diabetes Risk Assessment Tool (AUDSRISK) was launched by the Council of Australian Governments in the programme 'Reducing the Risk of Type 2 Diabetes'. It was developed to identify and target high-risk populations (Malo et al., 2015). This 10-item screening questionnaire is based on contemporary Australian demographics, recognising that, in 2014–2015, 53% of Australian adults were either overweight or obese (AIHW, 2017).



Figure 1. AUSDRISK outcome showing high-risk patient

Despite the high rates of obesity in Australia, prevalence of T2DM remains paradoxically low at 5% of the population (Australian Bureau of Statistics, 2015). This could be due to the amalgamation of modifiable and non-modifiable risk factors for developing T2DM, which is reflected in the AUSDRISK tool. It is hypothesised that the use of this screening tool has prompted action on the modifiable risk factors (physical inactivity, waist circumference and current smoking), resulting in the stark discordance between rates of obesity and diabetes.

- There are currently no systematic reviews on the effectiveness of AUDSRISK, thus our study aims to:
- 1) Provide the most updated review on the validity of AUDSRISK as a screening tool for T2DM
 - 2) Identify its strengths and limitations
 - 3) Develop recommendations for future research and interventions.
- Our study will then serve as a useful reference to countries that are looking to implement the AUDSRISK tool for T2DM screening.

METHODOLOGY

Search strategy

A comprehensive literature search was conducted on The Cochrane library, MEDLINE, Embase, PubMed and Scopus databases. Keywords used included "AUDRISK", "effectiveness" and "screening". The full search strategy is available in the appendix. Results were limited to the full text being available in English, for human subjects and within the last 10 years (2008 to 2018).

Screening

Titles and abstracts were screened for inclusions in a full text evaluation if selection criteria were met. Full texts were then assessed for eligibility in the systematic review. In addition, we also conducted a manual search for published texts and policy reviews pertaining to AUSDRISK.

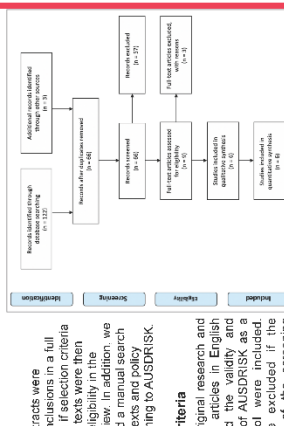


Figure 2 showing the article selection process

Selection Criteria

All relevant original research and peer-reviewed articles in English that evaluated the validity and effectiveness of AUDRISK as a screening tool were included. Articles were excluded if the effectiveness of the screening tools were not assessed and appropriately discussed.

METHODOLOGY

Critical appraisal

All included studies were non-randomised trials. Studies which satisfied the criteria for inclusion in qualitative synthesis were critically appraised using the ROBINS tool (The risk of bias in non-randomised studies - of interventions assessment tool) by two independent researchers. Degree of bias were graded and subsequently represented as bar chart (Figure 3).

Data extraction and analysis

Due to significant heterogeneity among the selected studies, meta-analysis was not performed. A narrative synthesis of the relevant findings was conducted.

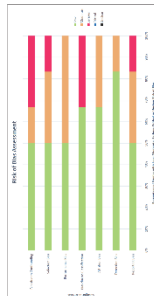


Figure 3. Risk of bias in included studies, based on Cochrane ROBINS-I bias

RESULTS

Author (publication year)	Study design	Sample size	Focus of study	Major findings
Chen et al., (2010)	Prospective cohort study	6000 (>25)	Development and validation of AUSDRISK components in estimating 5 year risk of developing T2DM for entry into prevention programs	- Baseline characteristics of AUSDRISK which demonstrated large odds ratio value for incident T2DM are age, sex, ethnicity, parental history of T2DM, past history of hyperglycaemia, use of antihypertensives, smoking, physical inactivity and BMI - These characteristics are used in the construction of AUSDRISK screening tool
Maio et al., (2015)	Cross sectional Study	1189 (40-74)	Evaluating the use of AUSDRISK to implement lifestyle interventions	- AUSDRISK scores is associated with ↑ BMI, fasting blood glucose and metabolic syndrome - AUSDRISK is useful in predicting people with impaired glucose tolerance and undiagnosed T2DM - AUSDRISK should be used in combination with serum glucose tests (SGT) to determine entry into Lifestyle Modification Programmes
Lee et al., (2017)	Cohort Study	4884 (2-40)	Cost-effectiveness between AUSDRISK and random blood glucose tests as a population screening tool	- AUSDRISK with follow-up blood glucose test (BGT) is a more cost-effective screening tool than population wide BGT alone - BGT is most cost effective and convenient follow-up test that requires a fast blood sample - Screening is cheap, noninvasive and applicable in multiple community settings (e.g. pharmacies, doctor's waiting room, community events)
Kilkenny et al., (2014)	Cross sectional Study	5,483 (20-75+)	Comparing the effectiveness of AUSDRISK and random blood glucose test (RBG) in identifying high risk patients in community pharmacies	- AUSDRISK ≥12 is comparable to RBG in identify high-risk individuals in the community setting - This outcome supports opportunistic health checks using AUSDRISK in the general population.
Agular et al., (2015)	Cross sectional Study	209 (18-65)	Correlation between AUSDRISK components and characteristics of Australian men at high-risk of T2DM	- The study outcome demonstrated positive correlation between the parameters of AUSDRISK and Australian men at high risk of T2DM - This supports the use of AUSDRISK to identify men at high risk of T2DM
Irkin et al., (2016)	Cross-sectional Study	97 (18-64)	Effect of AUSDRISK in improving self-awareness and eliciting behavioural change	- AUSDRISK ↑ self-awareness amongst high-risk individuals, leading to an ↑ in motivation to make lifestyle and behavioural changes - This is imperative to the prevention of T2DM by evoking changes to modify preventable risk factors.

Table 1. Tabulated summary of the six studies included in the systematic review

KEY FINDINGS

3 Australian studies were selected and analysed to evaluate the effectiveness of AUSDRISK as a screening tool of T2DM. Key findings and study characteristics were summarised in Table 1. Overall:

Currently, the cut-off score of 12 is used nationwide in Australia to maximise the uptake and application of AUDRISK without compromising its effectiveness in identifying at-risk individuals.

AUSDRISK is comparable in its ability to identify high risk individuals against conventional blood glucose tests.

DISCUSSION

Implication of study

Several studies have validated AUSDRISK as an effective screening tool for T2DM. Our group found that AUSDRISK is comparable to blood glucose tests in effectively identifying high-risk individuals (Kilkenney et al., 2014). These blood test includes FBG, HbA1c, IFG, CGT, HbA1c. Sensitivity and specificity are highest when AUSDRISK is used by HA1c and this is the most cost-effective population screening approach (Lee et al., 2017). This approach allows early detection of high-risk individuals and thus prevention of this chronic illness.

While there is established cardiovascular risk calculators, the AUSDRISK can also be used to identify high-risk individuals. The AUSDRISK score is associated with the correlation between individuals at high risk of T2DM and cardiovascular risk factors such as hyperlipidaemia and hypertension.

Limitation of study

A limitation that our group faced is the lack of prospective cohort studies that examine the ability of AUDRISK in predicting the 5-year risk of developing T2DM for persons whose score ≥ 12 . Most studies identified are cross-sectional studies. Cohort studies should be carried out in the future to further validate AUDRISK.

In a previous survey conducted by Wong et al. in 2011, only 23% of the GPs in Australia were aware of AUSDRISK 2 years after its launch. While its uptake by GPs may have varied over the years, the emphasis moving forward ought to be continuing GP education and promoting awareness to achieve its intended health lifestyle changes (table 5). AUSDRISK does not include specific interventions or lifestyle changes tailored to each risk-group. Further studies are required to determine effectiveness of lifestyle interventions and follow-up programmes for different risk-groups identified by the AUSDRISK tool.

Future application

AUDRISK can be employed in community settings such as pharmacies, doctors' waiting rooms and community events. Pharmacies have the ability to reach out to a larger proportion of our population compared to GPs (Lee et al., 2017), hence they should be encouraged to promote screening using the AUDRISK tool.

To adopt AUDRISK internationally, more studies needs to be conducted to validate its use in populations with different baseline traits. This is because AUDRISK is designed based on the risk factors prevalent in the Australian population (Chen et al., 2010).

CONCLUSION

The AUDSRK tool is a relatively inexpensive and rapid screening tool which effectively stratifies patients into different risk groups for T2DM. Nonetheless, patients identified as high-risk should still be followed up with blood glucose tests and doctor's appointments to maximise screening and cost-effectiveness. To maximise its outreach, efforts should be made to promote the use of AUDSRK in community settings such as local pharmacies and community events. Ongoing education of GPs and other healthcare professionals is also needed to improve the usage of AUDSRK.

When adopting AUDSRK in other countries, further research is required to demonstrate the prevalence of similar risk factors as those included in AUDSRK.

REFERENCES



Please scan the QR code on your digital device to access the full list of references and appendix.



Top 3

WHITE PAPER & VIDEO COMPETITION

Abstract

First Place: AMSA Hong Kong

Combating a rising incidence of young-onset type 2 diabetes in Hong Kong: Current picture and future directions

AMSA HONG KONG

Siet, Hoi Yan¹, Wong, Emilie Sheau Cherng¹, Chung, Audrey², Chung, Colin², Hwang, Sunny², Tsui, Serena²

¹Hong Kong - Directors of Public Health, ²Hong Kong - Public Health Officers

Over the recent years, the Department of Health (DH) under the Hong Kong government has demonstrated progressive efforts to curb the prevalence of diabetes by launching several community-based campaigns and publishing the “Hong Kong Reference Framework for Diabetes Care for Adults in Primary Care Settings”. In spite of the age of patients with diabetes in Hong Kong becoming increasingly younger, most of the DH’s policies are still targeted towards people with the age of >40 years. Given that the median age of diabetic patients has decreased from 57 to 50 under less than 30 years, preventing the occurrence of young onset type 2 diabetes is now a matter of urgency. Low socioeconomic status, genetic factors, and diabetogens in the environment all accumulate towards diabetes and obesity, eventually resulting in dire health complications and exacerbated social stratification. The current policy proposed by the government, predominantly the “Eat Smart at School” campaign, is however, limited as it is only applicable towards primary schools, does not show 100% compliance, and is less known to the public. Furthermore, in contrast to many other nations, Hong Kong lacks a direct approach towards diabetes and obesity as seen from the absence of health care subsidies, restriction on marketing, and sugar tax. Thus, amending the current policies and urging the implementation of new action plans are necessary. Increasing the accessibility of health care subsidies as well as extending the applicability of school-based policies to secondary education will better accommodate the needs of younger patients while a holistic taxational approach will affect the entire population by reducing the overall consumption of sugar. Hence, this paper will be stressing on the significance of cooperation between different societal sectors as a mean of effectively eliminating the deep-rooted factors leading to Hong Kong’s diabetes endemic.

Link for Video Trailer : <https://drive.google.com/file/d/1kkVSBnNaC-elDlhMqXsS2n7WHNl5KzZS/view?fbclid=IwAR3-pyyWNK3YEhODblcLfoNZxeObwsODguC4Fnw1Y-rOMOW6OpFFioTBr9c>

Second Place: AMSA Singapore

SURPASSING THE HOSPITAL, REACHING THE COMMUNITY

AMSA SINGAPORE

Ainsley Ryan Lee Yan Bin¹, Clare Cheong Wei Zhen¹, Gwyneth Kong¹, Ong Soon Yang Bernard¹,
Peng Gen Yi¹, Tai E Shyong²

¹Medical student ²Professor,

NATIONAL UNIVERSITY OF SINGAPORE YONG LOO LIN SCHOOL OF MEDICINE

Diabetes Mellitus (DM) and obesity are major health issues in Singapore today. 1 in 9 Singaporeans had DM in 2017 and 11% of the population was obese in 2010. These diseases may lead to severe complications which engenders economic costs.

While screening and treatment are robust, from a system's perspective, there is room for improvement in follow-up, to better engage patients in their care. Three obstacles – poor retention of information, miscommunication with healthcare professionals and inertia in enacting lifestyle changes – stand in the way of better health outcomes, from the patient's perspective.

Both prevention and management for different demographics are targeted by our solutions. ***“Surpassing the Hospital, Reaching the Community”*** is the philosophy our solutions adopt, and ***‘SEE’***: 1) Social support, 2) Early intervention and 3) patient Empowerment are principles our solutions utilise. In healthcare institutions, a reinvented consultation process encourages participation and empowers patients; and patients are supported socially within the community by neighbours, family and the workplace to make health-promoting adjustments.

To ensure the feasibility, effectiveness and impact of our recommendations, we conducted extensive literature reviews and primary research at local hospital, where we observed a pilot patient empowerment programme.

To measure the success of our solutions, we propose gathering feedback from the parties involved and recommend the use of three quantifiable indicators: the social returns on investment, the frequency of readmission, and the frequency at which acute medical intervention is required.

In conclusion, we offer recommendations for future areas for expansion in depth and scope.

Link for Video Trailer :

https://drive.google.com/file/d/1ILEPGQp1xXq12DMGHrOfmIiO69zZhBb/view?fbclid=IwAR3UDpn1NQj836DGaLoTsmbejaNn_36HLwac2KW-3Yd6f2AlT6Bnfxl3cI

Third Place: AMSA Indonesia

MULTISECTORAL CHANGES AS PREVENTION IN DIABETES, OBESITY, AND ITS COMPLICATION

AMSA INDONESIA

Nadia Afiyani¹, Amira Nabila¹, Nur Azzahra Permata¹

¹ Diponegoro University

There have been numbers of reported issues according the urgency of noncommunicable disease (NCD) with 71% deaths globally are caused by it, making NCD a world-wide urgency. The purpose of this white paper is to address the importance of preventive and control measure in noncommunicable disease with a cost-effective way by multisectoral approaches. This white paper draws upon mostly the prevention of risk factor of obesity and diabetes mellitus of unhealthy diet and lifestyle and the control of complications caused by these diseases. Corresponds to the solutions in the WHO NCD Global Action Plan 2013-2020 in preventing and controlling NCDs with multisectoral approaches to release its burden globally. Thus, the interventions given will be focused on prevention and control of obesity and diabetes in the form of conducting an accessible early screening by providing free annual pass detection on birthdays, shifting the environment to support healthy lifestyle by changing habits and applying taxes to sweetened beverages, and also conducting a public campaign to raise awareness in physical activity by education of nutritional intake on the packaging of fast-food restaurant chains' product.

Key findings: Multisectoral, noncommunicable disease, early diagnose, healthy lifestyle

Link for Video Trailer : https://drive.google.com/file/d/1Ax2WD0Wdnb8ItuYeU_FS3NRBM1ZYJEM-/view?fbclid=IwAR3Nk0atk3eRu7NjnLkvsP9Do-9Kdp7GzIQhX1seKn2SJLw4P54mAUYi0og

Top 3

PUBLIC POSTER COMPETITION Abstract

First Place: AMSA India

TREAT YOUR BODY WITH CARE

AMSA INDIA

Govind Singh Kharinta, Madhav Goel, Mitali Srivastava, Nikita Goyal

Depression and obesity have raised serious health concerns among population. Although they have traditionally been compartmentalized as separate physical and emotional health conditions, evidence suggests interactions between them, implying that successful treatment should ideally target both. While obesity is still being addressed at large, depression goes unnoticed due to fear of public ignominy and is thus not given the centre stage.

Studies have shown that depressed adolescents have 70% increased risk of being obese and adolescents which are obese have 40% increased risk of being depressed. In another study, patients having depression medications had 46.2% overall rate of obesity.

Worldwide a trend that can be observed is, with increasing working hours, unhealthy eating habits, sedentary lifestyle and decreasing interaction among family and friends leads to increased prevalence of obesity and depression. This all led to further complications like insomnia, hypertension, cancer, osteoarthritis, loss of interest in daily routine activities and may even suicide if left untreated.

This poster urges the public to take a step towards a healthier lifestyle adopting the TREAT methodology. Not only does this prevents the disease but also helps to cure the person suffering from it....

Care to cure, care to prevent.

Link to Public Poster :

<https://drive.google.com/open?id=0B6x8miQn9XR3XzRuc01iTXhfNkpxQnlLUjExVVhHM2IyRlFN>

TREAT YOUR BODY WITH CARE

Take it away from depression and obesity

- Take out time for family & freinds
- Realise need of counselling & medication
- Eat Healthy Food
- Avoid abuse of drugs and Alcohol
- Train and Loose Excess Body Fat



**Adolescents which
are depressed had 70%
increased risk of
being obese.**

**Obese adolescents had
40% increased risk
of being depressed**

**CARE TO CURE
CARE TO PREVENT**

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4902254/>
<https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

Second Place & Special Prize from Diabetes Association of Thailand : AMSA Singapore

Youth Diabetesity : A Growing Stigma

AMSA SINGAPORE

Tricia Tan Hui Ling, Vasundhara Lakshmi Kandarpa, Aubrey Ng Ding Rui, Poon Wynne Hsing

The epidemic of childhood obesity has catalysed the development of Type II diabetes in older children and youth – approximately half a million from this demographic is afflicted with Type II diabetes. Even among Singaporean youth, “diabetesity” is increasingly common, as indicated by data in the SGH and the National Health Survey 2010. A crucial, under-recognized burden is the social stigma of youth diabetesity.

Various authors have asserted that the “blame-oriented model” predominates, where “diabetesity” is construed as a strictly personal failure to make healthy lifestyle choices. This paradigm is damaging as it discourages the confrontation and resolution of systemic and societal factors perpetuating the epidemic of diabetesity.

Our project, “DOMO”, provides a novel, three-pronged approach to resolve this. A Domo Journey employs a community-centred approach to motivate a healthy lifestyle, inculcating such habits in youth - particularly those with diabetesity. An integrated application, “DOMO” supports this process, enabling telemedicine through live health updates and also education on the systemic factors perpetuating diabetesity. A separate “Diabetesity Simulation” gamifies the education by enabling individuals to attempt to resolve the condition of diabetesity based on the socio-ecological model. It is our hope that this project will sustainably mitigate diabetesity stigmatization

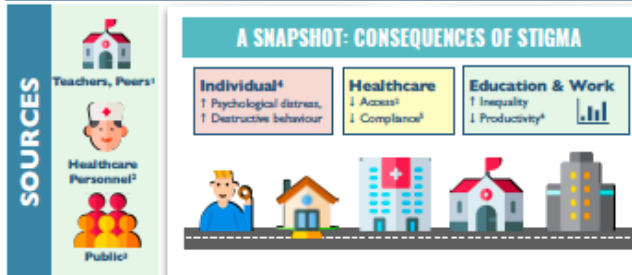
Link to Public Poster :

<https://drive.google.com/open?id=0B6x8miQn9XR3QUQxQmZLTy1qVFZwX2FvSFVMNVNobWZYSU1v>

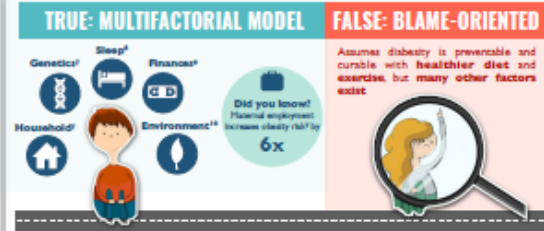
YOUTH DIABESITY: A GROWING STIGMA

NATIONAL UNIVERSITY OF SINGAPORE
Aubrey, Tricia, Vasundhara, Wynne, Zachariah,

HOW BAD IS WEIGHT/DIABETES STIGMA, REALLY?

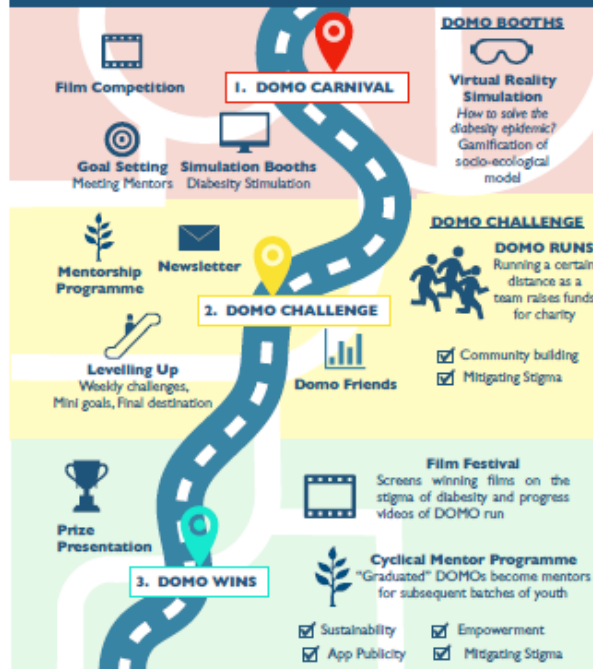


MYTH OR MAGIC?



DOMO - GR3ATER TOGETHER

1. YOUR DOMO JOURNEY STARTS HERE

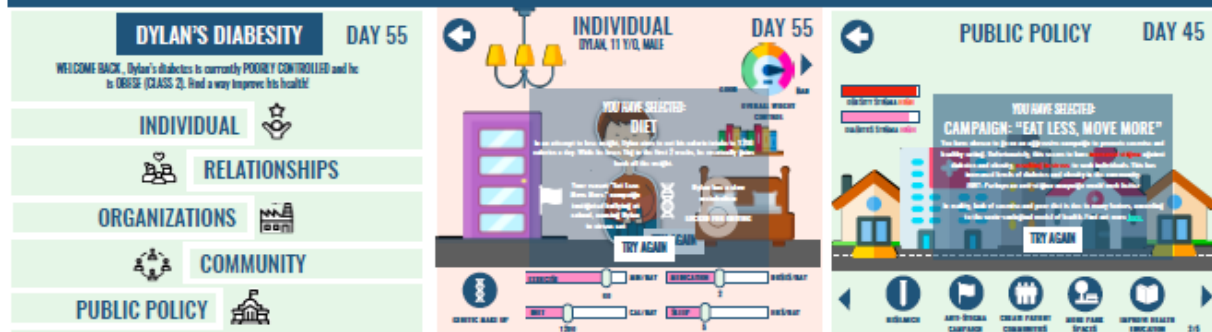


2. DOMO APP - HEALING HEALTH & HEART

DOMO is an integrated app for the public and youth who are diabetic and/or obese. For affected youth, integrated health tracking allows for telemedicine by medical professionals.



3. DIABESITY SIMULATION - HOW CAN I STOP STIGMA?



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Third Place: AMSA Indonesia

PREVENT DIABETIC FOOT OR GET AMPUTATED

AMSA INDONESIA

Agnes Debora Sianturi, Ave Maria, Desak Gede Yuliana Eka Pratiwi, Shantidewi
AMSA-Universitas Brawijaya

Diabetic foot is one of the complications of diabetes, besides another long-term complication that affect significantly on quality of life. Diabetic foot can lead to lower limb amputation. According to WHO, lower limb amputation rates are 10-20 times higher among people with diabetic foot. Diabetes is on the rise, no longer a disease of predominantly rich nations, the prevalence of diabetes is steadily increasing everywhere, most markedly in the world's middle-income countries.

The ability to identify the signs and symptoms of diabetic foot ulcer is essential to reduce the morbidity the disease may cause to diabetic patients. In patients with at-risk lower limbs should be careful to changes such as tingling sensation, limited joint morbidity, skin color alteration, warmth, and shiny skin. The important caution signs that are often neglected due to decreasing sensation are pre-ulcerative signs especially predisposing ulcer that do not heal.

Diabetic foot is one of the most preventable complication of diabetes. Some preventive recommendation are: keeping the feet clean; daily checking of the feet, because diabetic people may be less aware of pain in their feet; not smoking to prevent vascular complication; and the main prevention is to maintain safe blood glucose level.

Link to Public Poster :

<https://drive.google.com/open?id=0B6x8miQn9XR3aJmMGtXaDN0SlR2WnBoZlpnSUftMW1fNl9z>

PREVENT DIABETIC FOOT OR GET AMPUTATED



diabetic foot is one of the complication of diabetes

lower limb amputation rates are

10 to 20 times higher

among people with diabetes



HOW TO RECOGNIZE?

lighter and shiny skin



tingling and limited joint mobility



unhealed ulcer



HOW TO PREVENT?



maintain blood glucose level



keep the feet clean and check them daily



don't smoke

PROTECT YOUR FEET FROM DIABETIC FOOT



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2019

Diabetes and Obesity

The Unrecognized Burden