Asia-Oceania Conference on Obesity 2023

The Many Faces of Obesity

Programme Book

4-6 August 2023 (Fri – Sun)
Hong Kong Convention & Exhibition Centre

www.aoco2023hk.org
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Every patient has a different starting point
and help make her bones stronger

For your patients with very low T-score (e.g., less than -3.0) or with other serious risk factors, start with EVENITY® (romosozumab) injection to help build and protect her bones.1

For your patients with history of fragility fracture or low T-score (e.g., less than -2.5) with other risk factors, start with PROLIA® (denosumab) injection to help strengthen her bones.2,3

<3.0 T-score

< -2.5 T-score

1 T-score of hip fracture was based on Z-test of 264 patients (20.4%) in EXPRESS; 2 Patient with a recent fracture was 32% (120 patients) in EXPRESS. 3 The incidence of vertebral fracture was observed in 10.9% (47 patients) of EXPRESS Study.

2 Patients with a history of fragility fracture or vertebral fracture may be at increased risk of future fragility fracture. 3 The incidence of vertebral fracture was observed in 10.9% (47 patients) of EXPRESS Study.

Reference: plywood.co.uk (September 2021) 1911-2021.2 Prolia® and EVENITY® are endocrine metabolic oral bones.

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Bring PROTECTION TO LIFE in CKD

The ONLY SGLT2i
Now Approved for Chronic Kidney Disease Treatment†.1

For broad range† of CKD patients, TREAT EARLY WITH FORXIGA NOW

INITIATE TREATMENT†

GFR ≥25

COMPLETED DAILY
NO INJECTION

Composite of CKD progression†, ESKD, and renal or CV death vs placebo (NNT=19 patients)

[H.R. 0.61; 95% CI, 0.51, 0.72; p<0.001]†

39%

All-cause mortality vs placebo

[H.R. 0.69; 95% CI, 0.53, 0.88; p=0.004]†

31%

Composite of CV death or hHF vs placebo

[H.R. 0.71; 95% CI, 0.55, 0.92; p=0.009]†

29%

Slowed eGFR deterioration

(Between-group change/year in mean eGFR (chronic slope): 1.9 ml/min/1.73 m² (FORXIGA/placebo)†

Consistent Efficacy†

Regardless of T2D status†, baseline eGFR ‡, CKD stage** and aetiology††,†‡

Simple and well tolerated

Consistent safety shown in patients with CKD, with or without T2D†‡.

Similar hypoglycaemia rates* and less frequent AKI-related SAEs vs placebo†‡

For more information, please visit www.forxiga.com

Further information is available on request:
AstraZeneca Hong Kong Limited
Unit 3-5, 17/F, 10 King Wah Road, North Point, Hong Kong
Tel: (852) 2420 7389
Fax: (852) 2422 6788
Diben® POWDER
Consistent with American and European nutritional recommendations for diabetics patients

- Slow release carbohydrate profile with fibre to help minimize blood glucose fluctuations
- Rich in MUFA with limited SFA to improve glycemic control and metabolic risk factors
- With high quality protein to meet the enhanced requirements of aging and to preserve muscle mass
- With antioxidants to counteract oxidative stress and inflammation. Support improving glycemic control and risk of complications

References:

* This product is not registered under the Pharmacy and Poisons Ordinance or the Chinese Medicine Ordinance. Any claim made for it has not been subject to evaluation for such registration. This product is not intended to diagnose, treat or prevent any disease.
A NEW GENERATION OF HERPES ZOSTER VACCINE
PREVENT SHINGLES
DON'T GIVE IT A CHANCE  

SHINGRIX
(ZOSTER VACCINE RECOMBINANT, ADJUVANTED)

ELIGIBLE GROUPS
18+ YEARS OLD AT INCREASED RISK
50+ YEARS OLD

THE ONLY RVZ WITH OVER 90% VACCINE EFFICACY*

The US CDC Recommends SHINGRIX
As The Preferred Vaccine For The Prevention Of SHINGLES

Indication: SHINGRIX is indicated for prevention of herpetic zoster (HZ) and post-herpetic neuralgia (PHN), in adults 50 years of age or older; and adults 18 years of age or older at increased risk of HZ. The use of Shingrix should be in accordance with official recommendations.

Safety Information: SHINGRIX is for intramuscular injection only, preferably in the deltoid muscle. The vaccine is given as a 2-dose series. The second dose can be administered as soon as 2 months after the first dose (and if necessary, anytime between 2-6 months). In adults aged 50 years or above, the most frequently reported adverse reactions include pain at the injection site, myalgia, fatigue and headache. Most of these reactions were not long-lasting. In adults 18 years of age or older who are immunocompromised or immuno-suppressed due to disease or therapy (referred to as immunocompromised (IC)), the safety profile was consistent with that observed in adults 50 years and above. There are limited data in adults aged 18-49 years at increased risk of HZ who are not IC.

Abbreviated Prescribing Information
None of the following material is a substitute for a complete product information on the following:

SHINGRIX® (ZOSTER VACCINE RECOMBINANT, ADJUVANTED)
Qualitative and Quantitative Composition: After reconstitution, 1 dose (0.5 mL) contains 10 mcg of glyco-aminyl glycopeptidyl phosphoryl peptide, 6 mcg of Thimerosal, 5 mcg of aluminum hydroxide, 10 mcg of aluminum phosphate, 50 mcg of aluminum hydroxide, 2 mL of sterile water for injection, and water for injection.

Contraindications: SHINGRIX is contraindicated in individuals with a history of severe allergic reactions following previous doses or a history of severe allergic reactions to any component of SHINGRIX. Shelley is not for administration to individuals with a history of life-threatening allergic reactions following previous doses or to individuals with a history of severe allergic reactions to any component of SHINGRIX.

Warnings and Precautions: Use in patients with immune dysfunction or impaired immune responses may be associated with a higher risk of vaccine failure. In the setting of immunosuppression, at the time of administration, the vaccine should be given in a separate area from other vaccines. Patients with immune dysfunction, including patients with atopy, should be monitored for any unusual clinical response following administration of SHINGRIX. Patients with immune dysfunction, including patients with atopy, should be monitored for any unusual clinical response following administration of SHINGRIX. Patients with immune dysfunction, including patients with atopy, should be monitored for any unusual clinical response following administration of SHINGRIX. Patients with immune dysfunction, including patients with atopy, should be monitored for any unusual clinical response following administration of SHINGRIX. Patients with immune dysfunction, including patients with atopy, should be monitored for any unusual clinical response following administration of SHINGRIX.

Labeled indications: 
- Prevention of shingles (HZ)
- Prevention of post-herpetic neuralgia (PHN)

References:

For adverse event reporting, please call 1-800-458-1878 (USA) or 1-800-458-1878 (Canada) or send an e-mail to us at AdverseEvents@gsk.com. Please refer to the full prescribing information prior to administration.

Discover the power of SHINGRIX at gskpro.com/en-hk
THE ONLY ORAL ANTI-OBESITY MEDICATION THAT CAN CONTROL CRAVINGS & HUNGER

Contrave® controls cravings & hunger

TARGETS more than one driver of eating

Significant weight loss from WEEK 4

Double-digit weight loss at 56 weeks

Prescribe Contrave® in conjunction with reduced-calorie diet and increased physical activity.

Contrave® Prolonged-Release Tablet – Abridged Product Information

Composition (active): Naltrexone hydrochloride 8mg & Bupropion hydrochloride 90mg per tablet. Indications: CONTRAVE is indicated, as an adjunct to a reduced-calorie diet and increased physical activity, for the management of weight in adult patients (18 years) with an initial Body Mass Index (BMI) of 30 kg/m² (obese) or 22.7 kg/m² to <30 kg/m² (overweight) in the presence of one or more weight-related co-morbidities (e.g., type 2 diabetes, dyslipidaemia, or controlled hypertension). Treatment with Contrave should be discontinued after 16 weeks if patients have not lost at least 5% of their initial body weight. Dosage and Administration: Swallow tablets whole with water, and preferably with food. Do not chew or swallow multiple tablets at once. Do not cut or break tablets. Tablets are not interchangeable with other tablets. Do not mix tablets with other medications. CONTRAVE should be taken once daily in the morning. Maximum daily dose: 1 tablet per day. Patients should not exceed 1 tablet per day. Contraindications: Hypersensitivity to bupropion, naltrexone or any of the excipients, uncontrolled hypertension, seizure disorder or a history of seizures, central nervous system tumor, acute alcohol or benzodiazepine withdrawal, history of bipolar disorder, use of concomitant treatment containing bupropion or naltrexone, current or previous diagnosis of bulimia or anorexia nervosa, patients currently dependent on chronic opioids or opiate agonists, or patients in acute opioid withdrawal, severe hepatic impairment, end-stage renal failure, and in concomitant administration with monoamine oxidase inhibitors (MAOI). At least 14 days should elapse between discontinuation of MAOI and initiation of treatment with CONTRAVE. Precautions: Safety and tolerability should be assessed at regular intervals. Suicidality should be monitored in post-marketing reports with CONTRAVE and patients should be supervised closely. There is a small increase in the risk of suicide. In patients requiring intermittent opiate treatment, CONTRAVE should be temporarily discontinued and lower doses of opioids may be used. A patient should not stop taking CONTRAVE and consult a doctor if experiencing any allergic symptoms during treatment. Use with caution in those with controlled hypertension, active coronary artery disease or history of cerebrovascular disease, predisposing factors that increase risk of seizure, reduced renal clearance, underlying liver disease, history of mania, patients aged greater than 65 and concurrent use with SSRIs or SNRIs. Caution in performing activities requiring mental alertness e.g. driving and operating machinery. Drug Interactions: Contraindicated in use with MAOI, chronic opioid use or opiate agonist therapy. CONTRAVE may increase the availability of other medicines metabolised by CYP2D6 substrate. Medicines metabolised by the CYP2D6 isozyme may interact with CONTRAVE. Use with caution with drugs that lower the seizure threshold and dopaminergic drugs, levodopa or amantadine, inhibitors or inducers of UGT1A2 and 2B7, digoxin and drugs that inhibit metabolism. Avoid or minimize the use of alcohol. Adverse Reactions: Nausea, constipation, vomiting, dizziness, headache, dry mouth, anxiety, insomnia, tremor, dysgeusia, lethargy, somnolence, tinnitus, vertigo, palpitations, hot flush, hypertension, abdominal pain, hyperhidrosis, alopecia, rash, pruritus, feeling jittery, irritability.

Welcome Message

Dear Friends and Colleagues,

On behalf of the Hong Kong Obesity Society (HKOS), we wish to extend our warmest welcome to you to the Asia-Oceania Conference on Obesity 2023 (AOCO 2023) and to Hong Kong! It is our honour to host AOCO 2023 under the support of the Asia-Oceania Association for the Study of Obesity.

This year’s AOCO is an extraordinary meeting for us, as it is the first physical AOCO since the Covid epidemic and the first international obesity conference held in Hong Kong. Reverberating with the theme of this year’s AOCO, “The Many Faces of Obesity”, the organizing committee has brought together researchers, scientists, clinicians, surgeons, dietitians, physiotherapists, psychologists and other healthcare professionals from across the international community to exchange ideas, acquire new knowledge and be inspired on obesity-related subjects.

AOCO 2023 will be featuring plenary sessions, focused symposia, sponsored lectures, oral presentations, poster presentations and networking sessions that will undoubtedly enrich knowledge and stimulate thinking. Leading companies in the industry will be showcasing their latest technologies and products, so remember to take this opportunity to visit their booths.

Hong Kong is a metropolitan and information hub customized with vibrant lifestyle, beautiful scenery, and mixed cultures from the east and west. From the traditional Chinese and Asian culture to the modern westernized design, Hong Kong has plenty of excitement to offer you and your companion.

We hope AOCO will be a rewarding conference for you and Hong Kong will bring you an unforgettable experience. Welcome once again and we hope that you have an enjoyable 3 days with us!

Dr. Michele Mae Ann YUEN
Chair, Organizing Committee
AOCO 2023 Conference

Dr. Tsun Miu TSUI
President
Hong Kong Obesity Society
About Hong Kong Obesity Society

Hong Kong Obesity Society (HKOS) is a non-profit organization that was established in April 2016 with the aims of raising awareness of obesity, serving as a platform to connect doctors and allied health professionals involved in the management of obesity and obesity-related disorders, and serving as a bridge between the local and international professional communities in the field of obesity medicine. The vision of HKOS is to bring together experts from different fields, including healthcare professionals in different specialties, researchers, policymakers, and industry leaders, to collaborate for addressing the obesity epidemic.

During our years of establishment, we have organized many conferences for the local professionals, including our annual symposiums, sponsored lectures, and collaborative talks. We have also organized many activities aimed for the public including diabesity campaigns involving a local pop star, sports events, and public education through talks and sharing in the media. HKOS has supported local research projects through our research fund and has been in open dialogue with the local government to discuss issues related to obesity.

HKOS council is made up of endocrinologists, surgeons, family medicine specialist, respiriologist, cardiologist, nephrologist, pediatrician, hematologist, physiotherapist and dietitian, with various functional committees to steer different aspects of our efforts to combat obesity.
Organizing Committee & International Advisory Board

Organizing Committee

Chair
Dr. Michele Mae Ann YUEN

Vice-Chairs
Dr. Tsun Miu TSUI
Dr. Joanna Yuet Ling TUNG

Scientific Committee Co-chairs
Dr. Wing Sun CHOW
Dr. Desmond Yat Hin YAP

Secretary
Dr. Tellus Man Yuk NG

Committee Members
Dr. Patrick Man Pan CHAN
Dr. Pura Ching Shui CHENG
Dr. Sarah Wing Yiu POON
Dr. Catherine Pui Ka SZE
Dr. Terence Chi Chun TAM
Dr. Kevin Ka Fai WONG
Faculty

Dr. Rina Augustina (Indonesia)
A/Prof. Geeta Appannah (Malaysia)
Prof. Louise Baur (Australia)
A/Prof. Jacques Vincent Behmoaras (Singapore)
Dr. Elaine Q Borazon (Taiwan)
Dr. Jasper Fuk Woo Chan (Hong Kong)
Prof. Juliana Chung Ngor Chan (Hong Kong)
Dr. Norman Nor Chan (Hong Kong)
Dr. Patrick Man Pan Chan (Hong Kong)
Dr. Pura Ching Shui Cheng (Hong Kong)
Dr. Pik To Cheung (Hong Kong)
Dr. Francis Chun Chung Chow (Hong Kong)
Dr. Wing Sun Chow (Hong Kong)
Dr. Hai Hua Chuang (Taiwan)
Dr. Patrick Ho Yu Chung (Hong Kong)
Dr. Thi Ngoc Diep Do (Vietnam)
Dr. Mia C Fojas (Philippines)
A/Prof. Anthony Goff (Singapore)
Prof. Leonie Kaye Heilbronn (Australia)
Dr. Kevin Ki Wai Ho (Hong Kong)
Dr. Patrick Ip (Hong Kong)
Prof. Chang Hee Jung (South Korea)
Prof. Lee Kaplan (United States)
Prof. Leonard Kyoung Kon Kim (South Korea)
Prof. Kazunori Kasama (Japan)
Dr. Herbert Wang Chun Kwok (Hong Kong)
Dr. Bing Lam (Hong Kong)
Dr. Dennis Chin Tou Lam (Hong Kong)
Ms. Sylvia See Way Lam (Hong Kong)
Dr. David CW Lau (Canada)
Dr. Gregory Siu Kee Lau (Hong Kong)
Dr. Kevin Tao Kwang Lee (Australia)
Dr. Paul Chi Ho Lee (Hong Kong)
Dr. Phong Ching Lee (Singapore)
Prof. Wei Jei Lee (Taiwan)
Dr. Lettie Chuk Kwan Leung (Hong Kong)
Dr. Jasper Wen Yuan Lin (Taiwan)

Dr. Shirley Yuk Wah Liu (Hong Kong)
Prof. Louis Chung Kai Low (Hong Kong)
Dr. Chia Wen Lu (Taiwan)
Dr. David Tak Wai Lui (Hong Kong)
Prof. Andrea On Yan Luk (Hong Kong)
Dr. Loey Lung Yi Mak (Hong Kong)
Prof. Masamitsu Nakazato (Hong Kong)
Dr. Mahendra Narwaria (India)
Dr. Jack Kit Chung Ng (Hong Kong)
Dr. Tellus Man Yuk Ng (Hong Kong)
Prof. Mohd Ismail Noor (Malaysia)
Dr. Yasuo Oguri (Japan)
Prof. Brian Oldfield (Australia)
Dr. Banshi Saboo (India)
A/Prof. Asim Shabbir (Singapore)
Dr. Mohd Razif Shahril (Singapore)
Prof. John Speakman (United Kingdom)
Prof. Greg Seong Bae Suh (South Korea)
Dr. Catherine Pui Ka Sze (Hong Kong)
Dr. Terence Chi Chun Tam (Hong Kong)
Dr. Kwang Wei Tham (Singapore)
Dr. Cindy Sin Yui Tsui (Hong Kong)
Dr. Tsun Miu Tsui (Hong Kong)
Dr. Joanna Yuet Ling Tung (Hong Kong)
Dr. Kayo Waki (Japan)
Dr. Emmanuel Chun Ka Wong (Hong Kong)
Prof. Kenneth Kak Yuen Wong (Hong Kong)
Dr. Kevin Ka Fai Wong (Hong Kong)
Prof. Aimin Xu (Hong Kong)
Dr. Wah Yang (China)
Dr. Desmond Yat Hin Yap (Hong Kong)
Prof. Koutaro Yokote (Japan)
Dr. Michele Mae Ann Yuen (Hong Kong)
Prof. Phil Zeitler (United States)
Prof. Cheng Zhan (China)

The list is arranged in surname alphabetical order.
Floor Plan and Exhibition

Exhibitors (by alphabetical order) | Booth No.
--- | ---
Abbott Laboratories Limited | 4
AstraZeneca Hong Kong Limited | 5
Eurodrug Laboratories Limited | 7
Hong Kong Obesity Society | 12
InBody Company Limited | 11
iNova Pharmaceuticals (Hong Kong) Limited | 6
Medtronic Hong Kong Medical Limited | 2
Novartis Pharmaceuticals (HK) Limited | 10
Novo Nordisk Hong Kong Limited | 3
Takeda Pharmaceutical Company Limited | 8
The HomeCare Medical Limited | 9
Zuellig Pharma Limited | 1
# Accreditations

CME and CDE points have been accredited by the following colleges and programme for local delegates.

*(as of 3 August 2023)*

<table>
<thead>
<tr>
<th>Colleges</th>
<th>Max. for Whole</th>
<th>5 Aug</th>
<th>6 Aug</th>
<th>Category/ Remarks</th>
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<tr>
<td>CME</td>
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<td>The Hong Kong College of Anaesthesiologists</td>
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<td>6.5</td>
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<tr>
<td>Hong Kong College of Community Medicine</td>
<td>10</td>
<td>6</td>
<td>6</td>
<td>PP-PP</td>
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<td>CDE</td>
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<tr>
<td>Hong Kong Dietitians Association</td>
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<td>2 core + 3 non-core CDE points</td>
<td>3 core + 2 non-core CDE points</td>
<td>-</td>
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*The final accreditations will be at the discretion of individual college / association.*

Participants are required to sign-up the attendance sheet which will be displayed next to the registration counter.
Conference Information

Date
Upon arrival, please approach the Registration Desk to collect your name badge. The Registration Desk will be operated at the following location and hours:

<table>
<thead>
<tr>
<th>Date</th>
<th>Registration Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>4 August 2023 (Fri)</td>
<td>18:00 – 20:00</td>
<td>WELCOME RECEPTION VENUE</td>
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<tr>
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<td></td>
<td>Divino Patio</td>
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<td></td>
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<td>Shop 11, 1/F, Causeway Centre, 28 Harbour Road, Wanchai</td>
</tr>
<tr>
<td>5 August 2023 (Sat)</td>
<td>08:00 – 18:00</td>
<td>CONFERENCE VENUE</td>
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<td>6 August 2023 (Sun)</td>
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<td>Outside Room S228</td>
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<td>Level 2, HKCEC (Old Wing)</td>
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Speakers Preview Room

<table>
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<tr>
<th>Date from 5-6 August 2023</th>
<th>Opening Time</th>
<th>Location</th>
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<tbody>
<tr>
<td>5-6 August 2023</td>
<td>08:00 – 18:00</td>
<td>Room S229, Level 2, HKCEC</td>
</tr>
</tbody>
</table>

Speakers and oral presenters are requested to bring their PowerPoint presentation files to the Speakers Ready Room at least 3 hours before their session starts.

Welcome Reception
All delegates are welcomed to the Welcome Reception

**Date & Time:** 4 August 2023, 18:30 – 20:00

**Venue:** Divino Patio
(Address: Shop 11, 1/F, Causeway Centre, No. 28 Harbour Road, Wanchai – Location Map)

**Dress Code:** Smart Casual

Conference Dinner (Harbour Cruise)

**Date & Time:** 5 August 2023, 19:00 – 22:00

**Assembly Time & Point:** 18:15 sharp, Room S228, HKCEC (Staff will escort delegates to the embarkation point.)

**Dress Code:** Smart Casual

**Dinner Fee:** HK$780 / USD100 per person (on first-come-first-served basis as seats are limited)

*Admission by Ticket.

Exhibition
The exhibition is located at the foyer of Room S221 on 5-6 August 2023.

Coffee / tea
Coffee / tea and refreshments will be served at the foyer area of Room S221 at the designated times.

Lunch Symposium
Lunch will be provided during the lunch symposium at the foyer area of Room S221 on 5-6 August 2023. Seat is available on first-come-first-served basis.
Conference Information

Identification Badges
All participants will receive an identification badge upon registration. Name badges are required at all times for identification purposes and admission to the conference sessions and social events.

Language
The official language of the Conference is English.

Professional Accreditation
Should Hong Kong delegates wish to obtain CME points, please signify your attendance at the service desk located at the Registration Area.

Certificate of Attendance
Evaluation will be sent to all attendees after the Conference, on or before 11 August 2023. E-Certificate of attendance will be sent by email to those who filled out the Evaluation. If you do not receive the email by 11 August 2023, please check your junk mailbox or contact us at info@aoco2023hk.org.

Important Disclaimer
Every effort has been made to ensure that the conference programme is accurate at the time of printing. However, organizers reserve the right to change the programme as circumstances may require.

Useful Contacts

<table>
<thead>
<tr>
<th>Conference Hotline (4-6 August)</th>
<th>2852 2333 (dial +852 first for international call)</th>
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### Programme-at-a-glance

#### 4 August 2023 (Friday)

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<td>13:30-15:00</td>
<td>HKOS Consensus Statement Expert Meeting</td>
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<td>15:00-17:30</td>
<td>AOASO Council Meeting</td>
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<td>18:00-20:00</td>
<td><strong>Welcome Reception</strong></td>
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#### 5 August 2023 (Saturday)

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<td>Plenary Lecture 1</td>
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<tr>
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<th>Reviewing Obesity Guidelines and policies in Asia (Guidance in Obesity Care in Asia)</th>
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<tr>
<td>Symposium 10</td>
<td>Basic Science (II) - Appetite Control</td>
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<td>In the World of Food: Systems and Policies Impacting Obesity</td>
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## Scientific Programme

### 4 August 2023 (Friday)

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**Scientific Programme**

### 5 August 2023 (Saturday)

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**Opening Ceremony**

**Plenary Lecture 1**
Chairperson: Prof. Leonard Kyoung Kon Kim

**Symposium 1**
Treating Obesity
Chairpersons: Dr. Kwang Wei Tham, Dr. Wah Yang

**Symposium 2**
Basic Science (I) - Adipocytes
Chairperson: Prof. Masamitsu Nakazato

**Symposium 3**
Complications of Obesity (I) - From the Heart to the Liver and to the Kidneys
Chairperson: Dr. Desmond Yat Hin Yap

**Symposium 4**
AOASO President: Country Update
Chairperson: Prof. Leonard Kyoung Kon Kim

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**Pharmacotherapy in Obesity - Asian Perspective**
Dr. Jasper Wen Yuan Lin (Taiwan)

**Accessibility to Metabolic and Bariatric Surgery: Hurdles and Solutions**
A/Prof. Asim Shabbir (Singapore)

**Development of Bariatric Surgery and Metabolic Surgery in Hong Kong**
Dr. Shirley Yuk Wah Liu (Hong Kong)

**Pharmacotherapy in Obesity - Asian Perspective**
Dr. Jasper Wen Yuan Lin (Taiwan)

**Coloring White Adipose Tissue to Combat Obesity and its Metabolic Complications**
Prof. Aimin Xu (Hong Kong)

**Manipulating Macrophage Senescence during Obesity and Ageing**
A/Prof. Jacques Vincent Behmoaras (Singapore)

**Clinical Update of GLP-1 RA on Obesity Management**
Dr. David CW Lau (Canada)

**Controlling Food Cravings in Obesity Management: The Way Forward**
Dr. Kevin Tao Kwang Lee (Australia)

**Lower BMI Criteria for Bariatric Surgery? — An Update on IFSO/ASMBES New Guideline on Bariatric Surgery**
Prof. Wei-Jei Lee (Taiwan)

**Approaches to Individualized Obesity Care**
Prof. Lee Kaplan (United States)

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**Lunch Symposium 2**
Sponsored by iNova
Dr. Kevin Tao Kwang Lee (Australia)

**Lunch Break / Poster Viewing**

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**Coffee Break / Poster Viewing**

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**AOASO President: Country Update**
Chairperson: Prof. Leonard Kyoung Kon Kim

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**AOASO Council Meeting**
Roundtable on Childhood Obesity

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**Welcome Reception**
DiVino Patio
Shop 11, 1/F, Causeway Centre, 28 Harbour Road, Wanchai, Hong Kong
### Scientific Programme

<table>
<thead>
<tr>
<th>Time</th>
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<tr>
<td>16:30-18:00</td>
<td>Symposium 5 - Complications of Obesity (II) - Obesity and Diabetes</td>
<td>Chairpersons: Dr. Francis Chun Chung Chow, Dr. Dennis Chun Tiu Lam</td>
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<tr>
<td>16:30-17:00</td>
<td>Weight Management in Context of Diabetes</td>
<td>Prof. Andrea On Yan Luk (Hong Kong)</td>
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<td>17:00-17:30</td>
<td>Surgery for Diabesity. What we Know and Don’t Know.</td>
<td>Dr. Kazunori Kasama (Japan)</td>
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<td>17:30-18:00</td>
<td>Diabesity and Osteoporosis</td>
<td>Dr. David Tak Wai Lui (Hong Kong)</td>
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### 6 August 2023 (Sunday)

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<td>Plenary Lecture 4</td>
<td>chairpersons: Dr. Pik To Cheung, Prof. Louis Chung Kai Low</td>
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<td>10:00-10:30</td>
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<tr>
<td>10:30-12:30</td>
<td>Symposium 8 - Paediatric Obesity</td>
<td>Chairpersons: Dr. Patrick Ho Yu Chung, Dr. Lettie Chuk Kwan Leung</td>
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<td>Symposia 9 - Reviewing Obesity Guidelines and Policies in Asia (Guidance in Obesity Care in Asia)</td>
<td>Chairpersons: Dr. Kwang Wei Thum, Dr. Michele Mae Ann Yuen</td>
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<td>Symposium 10 - Basic Science (II) - Appetite Control</td>
<td>Chairperson: Prof. Brian Oldfield</td>
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<td>Symposium 11 - In the World of Food: Systems and Policies Impacting Obesity</td>
<td>Chairperson: Prof. Ismail Noor</td>
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<td>10:30-11:00</td>
<td>Paediatric Obesity and Impact of COVID Pandemic on Child Growth and Fitness</td>
<td>Prof. Patrick Ip (Hong Kong)</td>
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<td>Should BMI still be Used in the Diagnosis of Obesity</td>
<td>Prof. Juliana Chung Ngor Chan (Hong Kong)</td>
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<td>11:00-11:30</td>
<td>Weight Management in Youth with Obesity - Beyond Nagging</td>
<td>Prof. Phil Zeitler (United States)</td>
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<td>Consensus on Obesity Care in SE Asia: Updates and Challenges</td>
<td>Dr. Mia C Fojas (Philippines)</td>
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<td>11:30-12:00</td>
<td>Surgical Treatment in Children with Obesity</td>
<td>Prof. Kenneth Kak Yuen Wong (Hong Kong)</td>
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<td>Obesity Guidelines and Policies in Mainland China</td>
<td>Dr. Wah Yang (China)</td>
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<td>The Role of Brainstem Catecholaminergic / NPY Neurons in Feeding Regulation</td>
<td>Prof. Cheng Zhan (China)</td>
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<td>12:00-13:30</td>
<td>Lunch Symposium 3</td>
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<td>Diabetes and Fatty Liver in Obesity</td>
<td>Dr. Paul Chi Ho Lee (Hong Kong)</td>
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<td>Weight Bias: Its Clinical Implication and Impact to Patients</td>
<td>Dr. Hai Hua Chuang (Taiwan)</td>
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<td>Transforming Diabetes Management: Cardiorenal Protection with SGLT2 Inhibitors</td>
<td>Dr. Wing Sun Chow (Hong Kong)</td>
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<td>Judge: Dr. Patrick Man Pan Chan</td>
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*Note: Times are in 24-hour format.*
### Scientific Programme

#### 13:30-14:30
**Plenary Lecture 5**
Chairperson: Prof. Brian Oldfield

- Impacts of Very Low Protein Diets on Body Weight Regulation
  - Prof. John Speakman (United Kingdom)

#### 14:30-16:00
**Symposium 12**
From the Lens of the Lived Experience and the Treating Physician
Chairperson: Dr. Mia C Fojas, A/Prof. Anthony Goff

**Symposium 13**
Nutrition and Physical Activity in Obesity
Chairperson: Ms. Sylvia See Way Lam

**Symposium 14**
Skin and Obesity
Chairperson: Dr. Catherine Pui Ka Sze

**Symposium 15**
New Technologies in Obesity
Chairperson: Dr. Wing Sun Chow

#### 14:30-15:00
1. Attitudes towards Obesity in Asia-Pac: Lessons from ACTION APAC and IO
   - Prof. Brian Oldfield (Australia)
2. Understanding Metabolic Heterogeneity in Precision Nutrition
   - Prof. Leonie Kaye Heilbronn (Australia)
3. Aesthetic Medicine Approach in Management of Patients with Obesity - Bridging Health and Aesthetic - Empowering Patients with Obesity
   - Dr. Pura Ching Shui Cheng (Hong Kong)
4. Digital Health Intervention for Diabetes
   - Dr. Kayo Waki (Japan)
5. CGM in Obesity
   - Dr. Banshi Saboo (India)

#### 15:00-15:30
1. Weight bias and Stigma: The Pervasive Hindrance in Obesity Care?
   - Dr. Kwang Wei Tham (Singapore)
2. Tailored Lifestyle Intervention in Overweight Adults - A Quasi Experimental Study
   - Dr. Chia Wen Lu (Taiwan)
3. Management of Skin Laxity after Weight Loss
   - Dr. Gregory Siu Kee Lau (Hong Kong)
4. Empowering Health through Digital Interventions for Obesity Prevention and Control in Asia Oceania
   - Dr. Mohd Razif Shahril (Malaysia)

#### 15:30-16:00
1. Combating Obesity in the Face of Limited Resources
   - Prof. Ismail Noor (Malaysia)
2. CGM in Obesity
   - Dr. Banshi Saboo (India)
3. Aesthetic Medicine Approach in Management of Patients with Obesity - Bridging Health and Aesthetic - Empowering Patients with Obesity
   - Dr. Pura Ching Shui Cheng (Hong Kong)

#### 16:00-16:30
**Closing Ceremony**

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*Oral Presentation 1:

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<tr>
<td>Ab. No. 3 - Synergic Effect of Silkworm Pupae Extract and Regular Exercise on Muscle Strength and Mass in Middle-aged and Older People with Relative Sarcopenia: A Randomized, Double-Blinded, Placebo-Controlled Trial</td>
<td>Prof. Sang Yeoup Lee (South Korea)</td>
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<td>Ab. No. 9 - Exploring the Relationship Between Obesity and Breast Cancer Treatment Outcomes</td>
<td>Dr. Chih-Yu Hsu (Taiwan)</td>
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<td>Ab. No. 15 - Body Mass Index Predicting the Efficacy of SGLT-2 Inhibitors and GLP-1 Receptor Agonists on Adverse Cardiovascular Events: A Meta-analysis Study</td>
<td>Dr. Minji Sohn (South Korea)</td>
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<td>Ab. No. 17 - Endothelial Leptin resistance Favors Inflammation through Hindering PD-L1 Expression</td>
<td>Mr. Yiu Ming Cheung (Hong Kong)</td>
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<tr>
<td>Ab. No. 18 - Qualified and Student Healthcare Professionals in Singapore Display Explicit Weight Bias: A Cross-sectional Web-based Survey</td>
<td>Dr. Anthony Goff (Singapore)</td>
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<td>Ab. No. 33 - Effectiveness of a 6-month Motivational Team Marathon Program to Improve Physical and Health outcomes in Adolescents with Obesity: A Randomised Controlled Trial.</td>
<td>Dr. Lettie Chuk Kwan Leung (Hong Kong)</td>
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<td>Ab. No. 21 - Effectiveness of a Novel Artificial Intelligence-assisted Weight Loss App on Improving Eating Behaviors: A Mixed-method Evaluation</td>
<td>Dr. Jocelyn Han Shi Chew (Singapore)</td>
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<td>Ab. No. 22 - Public Acceptance in Using Artificial Intelligence-assisted Weight Management Apps in High-Income Southeast Asian Adults with Overweight and Obesity: A Cross-sectional Study</td>
<td>Dr. Jocelyn Han Shi Chew (Singapore)</td>
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<td>Abs. No. 24 - Obesity Increases the Serum Exosomal ECM1 Protein Level that Enhances Breast Cancer Development Under Obesity Conditions</td>
<td>Dr. Anna Hiu-Yee Kwan (Hong Kong)</td>
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<td>Ab. No. 38 - Consumer Experience of the Retail Food Environment in the Philippines</td>
<td>Ms. Ma. Rica Sidney Magracia (Philippines)</td>
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Strategies to both manage and prevent obesity are vital. Obesity prevention requires a whole-system approach, with policies across all government and community sectors systematically taking health into account, avoiding harmful health impacts and decreasing inequity.

There is a role for obesity prevention in clinical settings. For example, in paediatric settings, clinicians can provide anticipatory guidance, as a form of primary prevention, to children, adolescents and their families, aiming to support healthy growth and weight-related behaviours (e.g. see http://pro.healthykids.nsw.gov.au/Resources). In early childhood there is evidence of the effectiveness of interventions in community health-care settings leading to improvements in breastfeeding and screen time, with some showing beneficial effects on child BMI at age 2 years.

Obstetric and mental health settings are other settings where routine, stigma-free, interventions to support healthy weight and avoidance of obesity-associated complications could be provided. In other adult clinical settings it may be more pragmatic for a focus on secondary prevention i.e. supporting people with overweight/obesity to avoid developing more severe obesity or obesity-associated complications. How can such support be feasibly provided to large numbers of patients in your region? What might be the role of digital health approaches?

The socioecological model of domains influencing obesity shows they are on a continuum, from (most downstream) individual and interpersonal (e.g. family, peers) through to organisational (e.g. health care, childcare, workplaces, schools), community (e.g. food, activity, environment), society (e.g. media, cultural norms) and (most upstream) public policy (local, national, regional levels). Prevention interventions can be classified according to the degree of agency required by the individual to make the behavioural changes that are the aim of the intervention. Those that simply provide information require the highest agency and rely on an individual/family choosing (and their ability to choose) to act on that information and change behaviour. The next steps are interventions that enable choice, guide choice through changing the default policy, guide choice through incentives, guide choice through disincentives, restrict choice, or eliminate choice (the lowest level of individual agency required).

Interventions that are focussed up-stream and which require low-agency are more likely to decrease health inequalities, and ultimately be more effective. Examples aimed at promoting healthy eating include modifying food prices, combinations of subsidies and taxes on unhealthy foods and beverages, and regulation of unhealthy food marketing directed towards children and youth. Ultimately, if obesity prevention is truly to be tackled, then political will, leadership, and coordination across the whole system (government departments, industry, NGOs) will be needed.
Abstracts

Symposium 1: Treating Obesity

Pharmacotherapy in Obesity - Asian Perspective
Dr. Jasper Wen Yuan Lin
President, Taiwan Medical Association for the Study of Obesity (TMASO)
China Medical University Hospital, Taiwan

In the Asian perspective, pharmacotherapy for obesity follows similar principles and medications as in other regions. However, there may be some variations and considerations specific to the Asian population. Here are a few aspects to consider:

(1) Traditional Medicine: Asian countries have rich traditions of herbal medicine and natural remedies. Some individuals may prefer traditional approaches for weight management.

(2) Regulatory Approval: The availability and regulatory status of specific medications may vary across Asian countries. It's important to refer to local guidelines and consult with healthcare professionals to understand the approved medications in your specific country.

(3) Cultural and Dietary Considerations: Dietary habits and cultural practices can influence the approach to obesity management. Traditional Asian diets are often rich in vegetables, rice, and fish, which can be healthy. However, the increasing adoption of Western diets with higher calorie, processed foods has contributed to rising obesity rates.

(4) Genetic and Metabolic Variations: Asians may have differences in genetic and metabolic factors that influence their response to medications. Some studies suggest variations in drug metabolism and efficacy among different ethnic groups. It highlights the importance of personalized medicine when using pharmacotherapy for obesity.

(5) BMI Cut-Offs: Research have found Asian populations may have an increased risk of obesity-related complications at lower BMI levels compared to Western populations. Therefore, healthcare professionals in Asia may consider lower BMI thresholds or additional risk factors when determining the appropriateness of pharmacotherapy for obesity. At least 5 medications have been approved for the treatment of obesity for Asian, including orlistat, phentermine, Naltrexone/bupropion ER, Phentermine/topiramate ER, Liraglutide 3.0 mg, and Semaglutide 2.4mg. Many other exciting novel mechanism action medications for the obesity treatment are currently been investigated which may bring many hopes for obesity patients.
Abstracts

Symposium 2: Basic Science (I) - Adipocytes

Control and Recruitment of Beige Fat and its Potential Impact on Body Weight
Dr. Yasuo Oguri
Kyoto University, Japan

Adipose tissue is a metabolic organ that changes its cellular size and composition in response to a variety of internal and external cues. Beige fat cells are an inducible form of thermogenic fat cells that are present within the white adipose tissue in a scattered manner. Biogenesis of these cells is induced by certain external cues, such as cold exposure and long-term treatment with PPARγ agonists. Enhanced biogenesis of beige fat cells is reported to have a positive impact on metabolic health. Hence, beige fat cells are a potential novel therapeutic target for the treatment of lifestyle diseases, such as obesity and type 2 diabetes.

Recent studies have reported that beige fat biogenesis involves de novo differentiation from adipocyte progenitor cells (APCs) and reinstatement of thermogenic capacity of mature white adipocytes. However, the developmental origin of beige fat and regulatory mechanisms controlling beige fat biogenesis remain unclear due to adipose tissue heterogeneity.

We have recently identified a unique subset of APCs using single-cell RNA sequencing, that possess cell-intrinsic plasticity giving rise to beige fat cells. This beige APC population is a proliferative stromal population, characterized by certain cell-surface markers, such as PDGFRα, Sca1, and CD81. Moreover, we revealed that high proliferative capacity of these cells is regulated by certain external cues, such as cold exposure.

In this symposium, I will present the regulatory mechanisms controlling beige fat cells and these cells potential impact on the body weight.
Abstracts

Symposium 2: Basic Science (I) - Adipocytes

Coloring White Adipose Tissue to Combat Obesity and its Metabolic Complications
Prof. Aimin Xu
The University of Hong Kong, Hong Kong

Activation of classical brown adipose tissues (BAT) and/or augmentation of browning (beiging) in white adipose tissue (WAT) have recently emerged as a potential therapeutic strategy to combat obesity and its related metabolic complications. However, how neurological and immunological signals communicate with each other to coordinate the activation of classical BAT and browning of WAT remains poorly understood. We found several adipokines secreted from adipocytes, including adiponectin, FGF21 and adipocyte-fatty acid binding protein (A-FABP) act in an autocrine/paracrine manner to participate in the adaptive thermogenesis in BAT and WAT by crosstalk with sympathetic nerve system and thyroid hormones. A-FABP enhances the activation of classical BAT by acting as a lipid-binding chaperone to transport free fatty acids released from WAT into BAT for fatty acid oxidation, and also by promoting the conversion of thyroid hormones from its inactive form T4 to active form T3 through induction of type-II iodothyronine deiodinase in BAT. On the other hand, FGF21 and adiponectin enhance the browning and thermogenesis of WAT by creating a favorable immunological environment required for the biogenesis of beige adipocytes. In response to chronic cold challenge, activated sympathetic nerves send the signals to mature adipocytes for production of FGF21, which in turn acts in an autocrine manner to stimulate secretion of the chemokine CCL11, thereby promoting biogenesis of beige adipocytes through recruitment of type-2 immune cells. On the other hand, sympathetic nerve signals can also act on lymph nodes to promote the release of IL3 for beiging of WAT. These findings suggest neurological and immunological systems crosstalk at multiple levels to coordinate cold-induced activation of classical BAT and browning of WAT, thereby maintaining energy homeostasis during cold stress through adaptive thermogenesis (Acknowledgement: Hong Kong RGC Area of Excellence Funding Scheme (AOE/M-707/18)).
Manipulating Macrophage Senescence during Obesity and Ageing
A/Prof. Jacques Vincent Behmoaras
Duke-NUS Medical School, Singapore

Ageing and obesity are a global concern that render individuals vulnerable to chronic morbidity through a common cellular program called senescence. Senescent cells become growth arrested and undergo changes in their morphology, producing a bioactive pro-inflammatory secretome. Recent evidence shows that tissue macrophages can share features of senescence, indicating their pathological involvement in age or obesity-related low-grade inflammation. For instance, in obese humans, selective killing of white adipose tissue macrophages with senolytics (i.e. drugs that can preferentially eliminate senescent cells) ameliorates tissue homeostasis. Here we hypothesize that natural nutritional compounds such as grape seed proanthocyanidin extract (GSPE) can have overall rejuvenating effects through reduction of macrophage senescence state (i.e. senomorphic effect). GSPE ameliorates systemic metabolism in old rats and reduces senescence-induced inflammatory state in a subset of classical monocytes derived from the peripheral blood of healthy middle-aged human volunteers. Mechanistically, GSPE chelates iron in primary human macrophages and reverses age-related hepatic iron accumulation in old rats while increasing liver insulin sensitivity and fatty acid oxidation. The senomorphic effect of GSPE on human classical monocytes is maintained weeks after oral treatment is stopped, suggesting long-term epigenetic modifications on cell activity. These findings suggest that targeting senescent cell state in macrophages through natural dietary compounds can be beneficial in age-related metabolic syndrome.
Abstracts

**Symposium 3: Complications of Obesity (I) - From the Heart to the Liver and to the Kidneys**

**Remote Monitoring for Cardiac Conditions in Patients with Obesity**
Dr. Emmanuel Chun Ka Wong  
*The University of Hong Kong, Hong Kong*

Smartphones and wearable devices are increasingly adopted by the general public, providing an opportunity for continuous monitoring of health parameters in obese patients who are at a higher risk for developing cardiac events. In this presentation, we will discuss our experience utilizing remote monitoring tools, such as dedicated smartphone applications and single-lead electrocardiograms, to manage heart failure with reduced ejection fraction and post-acute coronary syndrome care.
Abstracts

Symposium 3: Complications of Obesity (I) - From the Heart to the Liver and to the Kidneys

Updates in Non-alcoholic Fatty Liver Disease

Dr. Loey Lung Yi Mak
The University of Hong Kong, Hong Kong

Non-alcoholic fatty liver disease (NAFLD) is now the most common cause of chronic liver disease globally. NAFLD is regarded as the hepatic manifestation of metabolic syndrome, and recently there are debates regarding the change in nomenclature and diagnostic criteria of NAFLD into metabolic dysfunction-associated fatty liver disease (MAFLD), to highlight the strong contribution of components of metabolic syndrome in excessive hepatic deposition. Without any approved pharmacologic therapy, the only effective means for preventing disease progression in NAFLD is achieving weight reduction. Practical approaches for workup of patients with NAFLD will be reviewed. Updates in clinical practice guidelines, emerging interventions and novel drugs to combat NAFLD will be discussed.
Obesity and Chronic Kidney Disease: The Fatty Kidney
Dr. Jack Kit Chung Ng
The Chinese University of Hong Kong, Hong Kong

The global burden of chronic kidney disease (CKD) continues to increase in the past decade, which is likely to be driven by the epidemic of obesity and diabetes. There was a rising trend of obesity prevalence from early CKD patients to dialysis patients and kidney transplant recipients. Obesity may cause kidney damage directly by alteration of renal hemodynamics, activation of renin-angiotensin system and production of proinflammatory adipokines, or indirectly via its association with diabetes and hypertension. Obesity is associated with diverse adverse clinical outcomes in CKD patients, including progression of kidney disease, increased catheter malfunctions and complications in dialysis patients, and limitation of access to transplantation. However, assessment of adiposity in CKD patients is challenging given the evolving body composition as renal function declines. Traditional anthropometric measurements such as body mass index do not differentiate between fat and muscles mass. It is also evident that visceral adipose tissue, compared to subcutaneous adipose tissue, was more strongly associated with adverse cardiometabolic consequences. Interestingly, recent studies suggested that ectopic fat deposition in perinephric space and hilum predicts a faster decline of estimates glomerular filtration rate (eGFR).

This lecture will provide a concise overview of the epidemiology and pathogenesis of obesity in CKD patients, and discuss the challenges in evaluation and the clinical impact of altered body compositions in CKD patients.
Obesity is a prevalent, complex, chronic and relapsing disease that is expected to affect more than one billion adults globally by 2030. Obesity can lead to many comorbidities and reduce life expectancy. Adjunctive pharmacotherapy for obesity is recommended by current evidence-based clinical practice guidelines to achieve greater weight loss since lifestyle intervention (calorie-reduced diets and increased regular physical activity) only leads to a modest 3-5% body weight, which is difficult to sustain over the long-term. Liraglutide 3.0 mg is the first long-acting GLP-1 agonist approved for obesity management. Daily subcutaneous injections of liraglutide 3.0 mg lead to significantly greater and sustained weight loss and improvements in a variety of cardiometabolic risk factors in the SCALE (Satiety and Clinical Adiposity-Liraglutide Evidence in individuals with and without diabetes) clinical trial program. Semaglutide 2.4 mg is a once weekly GLP-1 receptor agonist that is associated with sustained and significantly greater weight loss than any other currently available prescription weight loss medications. The phase 3 Semaglutide Treatment Effect for People with obesity (STEP) program includes 15 phase 3 clinical trials investigating the efficacy and safety of high-dose 2.4 mg once-weekly injectable semaglutide among people with overweight and obesity, with or without diabetes, and obesity-related comorbidities such as osteoarthritis, prediabetes and heart failure with preserved ejection fraction. Importantly semaglutide 2.4 mg improves glycemic control and type 2 diabetes, cardiovascular and metabolic parameters, non-alcoholic steatohepatitis. Both liraglutide 3.0 mg and semaglutide 2.4 mg have been shown to be effective in adolescents with overweight/obesity and have been approved for weight treatment in the US for adolescents ages 12 years or older.

This lecture will update healthcare professionals on the mechanisms of action of GLP-1 in central regulation of appetite and energy homeostasis, the latest clinical evidence supporting the role of long-acting GLP-1 agonists in current and future obesity management, as well as the safety and potential limitations of GLP-1 agonists.

Legend: BL, baseline; BW, body weight; WM, weight management; IBT, intensive behavioural treatment; T2D, type 2 diabetes
Abstracts

Lunch Symposium 2 (Sponsored by iNova)

Controlling Food Cravings in Obesity Management: The Way Forward
Dr. Kevin Tao Kwang Lee
Monash University, Australia

Many patients feel that appetite suppression alone does not help long term as they do not eat out of hunger but rather out of stress or cravings. This is termed emotional eating or stress related eating.

The aetiology of this phenomenon is complex and will be discussed along with evidence based management strategies that can be implemented practically from medications to mindfulness based lifestyle and behavioural change.

Keep updated on current treatments for obesity and get clinical experience insights from our regional expert who will share effective strategies to manage your patients living with obesity. Topics that will be covered are:
- Molecular pathways in hunger and food cravings
- Current challenges with obesity management and role of food cravings in weight gain
- Role of HCP-patient collaboration in overcoming barriers to obesity
Abstracts

Plenary Lecture 2

Lower BMI Criteria for Bariatric Surgery? — An Update on IFSO/ASMBS New Guideline on Bariatric Surgery
Prof. Wei-Jei Lee
China Medical University Hsinchu Hospital, Taiwan

Recently, International Federation for Surgery of Obesity (IFSO) and American Society of Metabolic and Bariatric Surgery (ASMBS) both recommended that bariatric/metabolic surgery can be considered in obese patients with body mass index (BMI) > 30 Kg/m2 (> 27.5 Kg/m2 in Asian). Furthermore, China Society of Bariatric and Metabolic Surgery (CSMBS) recommended that metabolic surgery can be considered in selected diabetic patients with BMI more than > 25 Kg/m2. This is a major triumphed of bariatric/metabolic surgery after accumulation tons of evidence in the journey. However, BMI should not be the only indication of bariatric/metabolic surgery. Bariatric/metabolic surgery should be an individualized precision medicine according to the most update evidence to maximize the benefits of the patient and minimize the possible risks of the patient. The application of bariatric/metabolic surgery in low BMI patients should be a precision medicine conducted in the following points.

A) Precision Patient Selection: Asians tend to have central obesity associated metabolic diseases in low BMI and young age [8]. Young onset (age < 40 years old) T2D Asian had higher incidence of renal complication and end stage renal disease. It is why that young onset T2D Asian should consider metabolic surgery as a priority. Another important selection criteria is to use some predictors or predicting scoring system, such as the Age, BMI, C-peptide and Duration of T2D (ABCD) scoring system. The ABCD score is a simple scoring system, specifically developed for Asian populations to identify the best candidates for metabolic surgery. The ABCD score was found to be superior to the DiaRem score and individualized metabolic surgery (IMS) score for predicting diabetes remission for patients with lower BMI or less favorable beta-cell function. ABCD not only can be used for patient selection, but also for procedure choice of metabolic surgery. Patients who had ABCD score less than 5, might had a less T2D remission rate after sleeve gastrectomy than gastric bypass procedure.

B) Precision Procedure Choice: Among various bariatric/metabolic surgeries, laparoscopic sleeve gastrectomy (LSG) and gastric bypass are the two most common procedures used recently [8]. Although both procedures have similar effect on weight loss and diabetes outcome, emerging evidence suggests that gastric bypass may lead to more durable weight loss and glycemic control. Laparoscopic one anastomosis gastric bypass (OAGB) or single anastomosis gastric bypass (SAGB), originally referred to as mini gastric bypass, is a simplified gastric bypass procedure other than the standard Roux-en-Y gastric bypass (RYGB) procedure. Previous studies reported that OAGB had better effect regarding weight loss and T2DM remission than other commonly performed bariatric procedures, such as LSG and RYGB [13-17]. For LSG, a recent study reported a 35% T2D recurrence rate at 5 years after LSG, usually associated with weight regain and a longer duration of T2DM. OAGB had a lower recurrence rate than LSG.
Abstracts

Symposium 5: Complications of Obesity (II) - Obesity and Diabetes

Weight Management in Context of Diabetes
Prof. Andrea On Yan Luk
Vice President and Secretariat,
Hong Kong Association for the Study of Obesity (HKASO)
The Chinese University of Hong Kong, Hong Kong

We are at the dawn of a new era in medical management of obesity in people with diabetes. Pharmacotherapies that involve manipulation of actions of single to multiple gut hormone receptors have shown promise in recent phase 1 to phase 3 studies, with the potential to rival weight loss results from metabolic surgery. In this presentation, I will 1) summarise the current understanding of the physiological action of implicated gut hormones, focusing on their effects on gastrointestinal tract, brain and energy expenditure associated with weight change; 2) review results from completed phase 3 studies evaluating the clinical efficacy of glucagon-like peptide-1 (GLP-1) receptor agonists and dual glucose-dependent insulinotropic polypeptide (GIP) – GLP-1 receptor agonist on weight loss in people with diabetes; 3) review results from completed phase 1 and phase 2 studies of other dual and triple gut hormone receptor agonists / antagonists on weight change in people with or without diabetes.
Abstracts

Symposium 5: Complications of Obesity (II) - Obesity and Diabetes

Surgery for Diabesity. What we Know and Don’t Know.
Dr. Kazunori Kasama
Yotsuya Medical Cube, Japan

“Diabesity” is modern epidemic which indicates the coexistence of diabetes and obesity, Bariatric surgery has been performed for many years to achieve sustained weight loss in the morbidly obese population. As a secondary effect, a remarkable improvement in glycemic control is commonly achieved postoperatively. This has led to substantial interest in the use of bariatric procedures to treat type 2 diabetes mellitus.

Asia is in a bit different situation of diabesity from Western countries. Obesity ratio is not that high in comparison with Western countries, however we have many evidence from Asia regarding Randomized Controlled Trials (RCT) between surgical treatments and medical treatments for diabesity, its mechanism regarding diabetes remission independent of weight loss, long term data including improvement of life expectancy, effectiveness not only for diabetes but also for other metabolic comorbidities, prediction score for Asian, cost effectiveness and the recent guideline for Asian. As a matter of the fact, the number of bariatric and metabolic surgery in Asia jumped up more than 100 times more during these 20 years.

However, as the destiny of science, the more we learn, the more we realize we don't know. What we still searching for the answers regarding diabesity are the best procedure for Asian, procedures choice, indication for Low BMI Asian diabetes, elderly and childhood diabesity, new procedures, less invasive procedure for diabesity, comparison with new anti obesity drugs and so on.

The more we realize we don't know, the more we want to learn. That is the reason we still like to do the surgery for diabesity.
Diabetes and Osteoporosis

Dr. David Tak Wai Lui
The University of Hong Kong, Hong Kong

Diabetes describes the combined detrimental health effects of obesity and diabetes. It is an increasingly important global health issue. Osteoporosis is another prevalent condition, with fragility fractures being the dreaded complication. To understand the relationship between diabetes and osteoporosis, the effect of obesity and type 2 diabetes on bone health will be discussed respectively.

Obesity is defined by the World Health Organization as excessive fat accumulation that presents a health risk, and is diagnosed using body mass index (BMI). While the association between low BMI and increased fracture risk is well recognized, the relationship between high BMI and fracture risk is complex. Although a positive correlation exists between BMI and bone mineral density (BMD), the site-specific association between obesity and increased fracture risk illustrates the complex interplay between protective and adverse factors.

Fracture risk is elevated in patients with type 2 diabetes despite comparable or even higher BMD compared to people without diabetes. ‘Diabetic bone disease’ in this context is characterized by reduced bone remodelling and poor bone quality. Furthermore, several diabetes-specific risk factors contribute to the increased fracture risk, including duration of diabetes, diabetic complications and anti-diabetic treatments. Hence, the conventional fracture risk assessment tool, FRAX, may under estimate the fracture risk in type 2 diabetes. Several adjustments have been proposed to capture the excess diabetes-related fracture risks better.

Taken together, diabetes brings about adverse effects on bone health, in addition to the well-known myriad of cardiometabolic consequences. Hence, it is essential to address diabetes for optimal bone health. As for patients with diabetes and osteoporosis, limited available evidence suggests the generally similar anti-fracture efficacy of anti-osteoporosis treatments among patients with obesity and type 2 diabetes.
Abstracts

Symposium 6: Complications of Obesity (III) - The Airways and Obesity

Sleep Apnea Treatment Beyond Weight Loss
Dr. Lam Bing
Hong Kong Sanatorium & Hospital, Hong Kong

Sleep apnea is the commonest breathing disorder during sleep. Treatment is indicated for patients with moderate to severe sleep apnea. The treatment strategy should be based on the underlying causes, concomitant vascular risk factors and patients' preference. Continuous positive airway pressure (CPAP) therapy is the most effective treatment and should be the treatment of choice for majority of the patients. For those who could not tolerate or refuse to use CPAP, oral appliance which advance the jaw anteriorly can be used for those with significant receding chin. Positional therapy can be tried in those who have sleep apnea primarily when sleeping on their back. Upper airway surgery such as maxillary mandibular advancement can be offered to those with significant craniofacial structural abnormality. Hypoglossal nerve stimulation, by maintain lingual motor tone, is an alternative treatment in patients who cannot tolerate CPAP.
Abstracts

Symposium 6 Complications of Obesity (III) – The Airways and Obesity

Obesity and Respiratory Tract Infections
Dr. Jasper Fuk Woo Chan
The University of Hong Kong, Hong Kong

As evidenced by the pandemics caused by influenza viruses and coronaviruses in the past two decades, respiratory tract infections remain a global health threat. Obesity has been reported to be associated with an increased risk of development of respiratory tract infection and progression to severe disease. Multiple factors are likely involved in obesity-related susceptibility to respiratory tract infections, including physical impairment of respiratory mechanics, obesity-related comorbidities such as diabetes mellitus and cardiovascular diseases, alterations in host immune response to infections, and inappropriate antimicrobial use. Moreover, obesity may impair vaccine-induced immunity and render the individual inadequately protected against severe complications of respiratory tract infections. In this session, we will discuss about the relationship between obesity and respiratory tract infections with a focus on influenza and coronavirus disease 2019.
Abstracts

Symposium 6: Complications of Obesity (III) - The Airways and Obesity

When Asthma Meets Obesity
Dr. Herbert Wang Chun Kwok
The University of Hong Kong, Hong Kong

Both asthma and obesity are common medical conditions. Obesity-associated asthma has been reported as one of the clinical phenotypes that is more severe and refractory to conventional treatment.

Research Program (SARP) identified a group of severe asthma characterized by obesity, poorly controlled symptoms, and female predominance. Further studies subclassified obesity-associated asthma by age of asthma onset and airway responsiveness, T2 vs non-T2 inflammation, and allergic and non-allergic groups.

Patients with obesity-associated asthma appear to have a blunted response to traditional asthma therapies in select observational studies.

The relationship between obesity and asthma is complex and bidirectional. Obesity is associated with increased incidence of asthma that may be dose-dependent and higher risk of severe asthma and asthma-related hospitalizations. Studies have also shown that patients with asthma have a higher risk for developing obesity, which can be related to corticosteroid exposure from asthma treatment, atherogenic inflammation exacerbated by asthma-induced airway inflammation, or common upstream factors that affect both asthma and weight.

Various mediators have been proposed to explain the excess morbidity of obesity-associated asthma, including mechanical changes, systemic inflammation, airway microbiome sex hormones and arginine metabolism.

Despite lack of FDA-regulated medications specifically with an indication for obesity-associated asthma, owing to its higher likelihood of demonstrating T2-low inflammation, azithromycin and tezepelumab as add-on therapy could be considered with some evidence available in randomized trials. Pharmacologic intervention in obesity-associated asthma is an area of evolving research. On the other hand, weight loss has been consistently demonstrated to improve asthma control and severity.
Abstracts

Symposium 7: Complication of Obesity (IV) - Bones and Groans in Obesity

Obesity Related Knee Problem and the Management
Dr. Kevin Ki Wai Ho
The Chinese University of Hong Kong, Hong Kong

There is often an association between obesity and patients with knee pain. The abnormal physical load on the knees often presents with knee pain, stiffness, muscle weakness and the progression of osteoarthritis. Obesity not only proves problematic in the conservative treatment of knee pain but also significantly increases adverse surgical outcomes. Many of the obesity-related surgical complications are potentially avoidable, these include peri-prosthetic joint infections such as deep surgical site infection (SSI) or implant infection, delayed wound healing, unplanned intubation, and intensive care unit (ICU) admission, postoperative anaemia and cardiac complications, and length of hospital stay.

Optimal management of obesity before irreversible damage to the knee yields a better outcome than salvage operations. A multi-disciplinary approach is needed to tackle obesity-related knee problems.
Abstracts

Symposium 7: Complication of Obesity (IV) - Bones and Groans in Obesity

Pitfalls in Anesthesia for Individuals with Obesity
Dr. Cindy Sin Yui Tsui
The Chinese University of Hong Kong, Hong Kong

Individuals with obesity often require special care during anesthesia. Comorbidities are often systematic and affect nearly all organ systems with a higher risk of metabolic syndrome, heart disease, joint and bone problems, sleep apnea, mood problem, decreased mobility, shortened life span, and higher incidence of nerve injury under sedation. Despite the recent success in applying enhanced recovery after anesthesia (ERAS) elements in the care bundle, there are still a lot of uncertainties in the care of them. In the presentation, we would focus on the perioperative care and address on the commonly encountered issues in the care of individuals with obesity.
Youth-onset type 2 diabetes mellitus (YO-T2D) emerged in the United States during the 1990s and subsequently appeared with increasing prevalence globally, generally following increased prevalence of type 2 diabetes among adults in the population. The incidence of T2D in youth has continued to increase over the last 20 years, although it remains a rare disorder even in the United States. The pathophysiology of T2D in youth resembles that in adults: insulin resistance and progressive nonautoimmune β-cell injury. However, since 2004, clinical trials have consistently demonstrated that youth-onset T2D has several unique aspects, including an important association with pubertal development, a high-rate of regression to normal glycemia as pubertal changes wane, and a disease course characterized by rapid progression of β-cell failure in youth with persistent disease, leading to more rapid loss of glycemic control on oral therapy. Finally, growing evidence indicates that microvascular complications and risk markers for macrovascular complications are present at the time of diagnosis and progress rapidly. The underlying pathophysiology of type 2 diabetes in youth, as well as these unique characteristics need to be considered in the approach to management. This talk will review the findings of the trials that have helped to guide current approaches to screening and diagnosis of YO-T2D, the initial evaluation and subsequent therapy of dysglycemia, including a physiology-driven approach to use of metformin, insulin, and newer, recently approved, agents. Finally, the talk will address identification and management of complications and comorbidities.
Paediatric Obesity and Impact of COVID Pandemic on Child Growth and Fitness
Prof. Patrick Ip
*The University of Hong Kong, Hong Kong*

Obesity has become a major concern globally in the past decade. The COVID-19 pandemic has a significant negative impact on childhood obesity, leading to more Hong Kong children experiencing obesity related to unhealthy lifestyles and home confinement. A governmental survey revealed that the number of overweight or obese children in Hong Kong rose to 5%, 20%, and 24% for preschoolers, primary schoolers, and secondary schoolers, respectively. Our recent study showed that school closures during COVID pandemic have contributed to this trend, as children have had less physical activity and increased screen time, leading to a higher risk of obesity. To combat this critical issue, professionals should join hands to promote more healthy lifestyle, and modify electronic device use for children during this unprecedented time.

Although existing evidence indicates that childhood obesity rates have increased during the pandemic, information about individual BMI status change over time has been limited. Our data revealed that the obesity remission rate in children declined by 7.9% from 2019/20 to the 2020/21 academic year, which is a major concern as obesity is a dynamic process that involves the balance between new cases and remission from overweight or obesity. Data analysis demonstrated the detrimental impact of the COVID-19 pandemic on children’s BMI status, while children with pre-existing overweight/obesity are more at risk of gaining additional weight. School closures and home confinement, as an important measure for COVID-19 control, are likely to disrupt this balance. Most schools have reopened worldwide following the historic disruption caused by the pandemic, but healthy lifestyle of children is still to be further built up in coming years.
Abstracts

Symposium 8: Paediatric Obesity

Weight Management in Youth with Obesity – Beyond Nagging
Prof. Phil Zeitler
Children’s Hospital Colorado Clinical & Translational Research Center, United States

Excessive weight gain and obesity are increasingly common problems in youth worldwide, generally due to a combination of genetic predisposition to efficient energy storage and/or alterations in appetite, reduced energy expenditure, and increased caloric intake associated with access to high-caloric density foods and beverages. This excess adiposity is a risk factor for metabolic disturbances, such as diabetes, hypertension, dyslipidemia, hepatic steatosis, and reproductive alterations. Historically, excessive weight gain in individuals, particularly those in the pediatric population, has been addressed through lifestyle interventions to reduce calorie and carbohydrate intake, increase energy expenditure through physical activity, improve sleep, and address alterations in eating and appetite. While these are all critical to address as contributors to excessive weight gain, lifestyle interventions have generally met with limited success in youth. Significant changes were made to the American Academy of Pediatrics guidelines for the evaluation and management of obesity in 2023 that promote recognition of obesity as a chronic problem and encourage earlier use of more intensive interventions rather than relying solely on lifestyle changes that have been repeatedly shown to be ineffective in youth. The update to these guidelines and support for more aggressive interventions provide an opportunity to reconsider the clinical approach to management of excess adiposity in the primary and specialty settings. The rapidly expanding pharmacologic options for effective management of excess adiposity and the ongoing approval of these medications for use in youth, along with increasing understanding of their efficacy and side effects, provide an opportunity to take a personalized approach to consideration of which, if any, treatments may be optimal for a particular individual. This will require a change of perspective on the part of both families and providers regarding the relative risks and benefits of pharmacologic treatment versus leaving excess adiposity untreated in children, adolescents, and young adults.
Abstracts

Symposium 8: Paediatric Obesity

Surgical Treatment in Children with Obesity
Prof. Kenneth Kak Yuen Wong
The University of Hong Kong, Hong Kong

Childhood obesity is one of the biggest public health challenges worldwide. The age-standardized prevalence of obesity in children and adolescents has increased from 4% to 18% in the past 40 years. Indeed, this trend is not much different in Asia.

Since obesity is associated with various adverse health consequences throughout life, including type 2 diabetes (T2D), dyslipidemia, and cardiovascular diseases, prevention and early intervention before these complications occur represent the most reasonable and cost-effective approach. Surgical management has been shown to be the most effective way of achieving the best weight loss outcome. In this talk, I aim to present an overview of latest advances in the surgical management of obesity in children and adolescents.
Abstracts

Symposium 9: Reviewing Obesity Guidelines and Policies in Asia (Guidance in Obesity Care in Asia)

Should BMI still be Used in the Diagnosis of Obesity
Prof. Juliana Chung Ngor Chan
The Chinese University of Hong Kong, Hong Kong

Obesity is defined as excess body fat due to excess accumulation of adipose tissue. Adipose tissue is a key compartment of human body with multiple functions including but are not limited to energy storage, immune function, metabolism and heat generation. There are marked inter-ethnic and inter-individual differences in the amount and distribution of adipose tissues which are associated with different health states. Apart from gender differences, within the same individual, proportion and distribution of adipose tissue can change over age. Accurate measurement of body composition including fat requires special equipment often in research setting. In clinical practice, simple indexes such as body mass index (BMI, kg/m²) has been used for a long time to reflect obesity. Although there is a wealth of epidemiological data showing that high BMI was associated with multiple morbidities related to abnormal energy metabolism, cell growth and mechanical dynamics, the relationship between BMI with these health conditions is often J-shaped. Compared to waist circumference which reflects accumulation of visceral fat which is metabolically more active than subcutaneous fat, the relationship with disease state is more linear, especially if height is adjusted. Thus, while BMI remains a useful clinical marker in health assessment, given the marked inter-individual and intra-individual variations, the inclusion of other parameters such as age, sex, waist circumference, ethnicity, family history, blood pressure and lifestyle are important factors to be taken into consideration in order to stratify risk, empower behavioral change and inform decision-making.
Abstracts

Symposium 9: Reviewing Obesity Guidelines and Policies in Asia (Guidance in Obesity Care in Asia)

Consensus on Obesity Care in SE Asia: Updates and Challenges
Dr. Mia C Fojas
Immediate Past President and Council Member, Philippine Association for the Study of Overweight & Obesity (PASOO)
ManilaMed Medical Center Manila, Philippines

Globally, the prevalence of obesity has been rising. South and Southeast Asia are not spared from this pandemic. In the region, it is known that the Asian phenotype, predominantly TOFI (thin outside, fat inside), renders the population at a higher risk for developing a more atherogenic lipid profile, type 2 diabetes, insulin resistance, and other chronic illnesses.

A consensus guideline was a necessity to address this concern in the region. Obesity management is an evolving science around the world. Clear local guidelines or standards of care may not yet be established in some countries within the region.

The consensus panel consisted of 12 physicians with expertise in managing pediatric and adult obesity from Bangladesh, Brunei Darussalam, India, Indonesia, Malaysia, Philippines, Singapore, Sri Lanka, Thailand, and Vietnam and 2 experts from Australia who participated equally in the process as external advisors. A set of clinical questions were established that would help define optimal approaches to the following: identification and staging of obesity, obesity treatment (behavioral, psychological, pharmacologic, and surgical options), weight maintenance after weight loss, weight stigma and patient engagement. Forty two clinical recommendations were voted upon by the panel of 14 experts, with consensus determined as ≥80% agreement among panelists.

Some of the important aspects of the published consensus and how these were arrived at will be discussed.
Abstracts

Symposium 9: Reviewing Obesity Guidelines and Policies in Asia (Guidance in Obesity Care in Asia)

Obesity Guidelines and Policies in Mainland China
Dr. Wah Yang
The First Affiliated Hospital of Jinan University, China

This presentation provides a concise overview of obesity guidelines and policies in Mainland China. As obesity rates surge with economic growth and lifestyle changes, China faces a pressing health challenge. To combat this epidemic, the Chinese authorities and academic organizations have devised evidence-based guidelines and policies addressing various aspects of obesity.

The guidelines focus on nutrition, physical activity, and weight management, offering comprehensive strategies for healthcare professionals, policymakers, and the public. Emphasizing personalized approaches, these guidelines cater to diverse demographics, aiming to promote healthy behaviors effectively.

China's obesity policies target environmental and societal factors to create a supportive framework for healthier choices. Measures include food and nutrition labeling, promotion of physical activity in schools and workplaces, and urban planning to encourage active living.

Implementation challenges, such as regional disparities, limited public awareness, and industry resistance, are addressed. Early outcomes and impact assessments reveal promising results, highlighting the effectiveness of evidence-based guidelines and well-crafted policies in curbing obesity prevalence and improving public health indicators.

Overall, Mainland China's experience offers valuable insights for other countries seeking effective solutions to combat obesity and its associated health burdens. Collaboration among sectors and prioritizing population health remain key in tackling this global epidemic.
The molecular mechanisms of energy balance are coming to light by the recent robust progresses in the molecular biology and peptide chemistry. After our discovery of ghrelin, an orexigenic peptide produced in the stomach, we have thoroughly investigated its multifaced roles in energy homeostasis including glucose metabolism and adipogenesis (Cell Metab 2018). In 2018, liver-expressed antimicrobial peptide 2 (LEAP2), a 40-amino acid anti-microbial peptide produced in the liver, was identified to be an antagonistic peptide to competitively bind to the ghrelin receptor (also called GHSR). We demonstrated that LEAP2 administration to mice abolished ghrelin-induced food intake, blood glucose elevation, growth hormone release, and reduction in body temperature (J Endocrinol 2020). Ghrelin administration reduced LEAP2 biosynthesis in the liver. A single administration of glucose or fatty acid decreased ghrelin while increased LEAP2 both in vivo and in vitro. A single administration of LEAP2 did not abolish fasting-induced food intake in fasted C57BL/6 J mice or Ghsr-KO mice (Peptides 2022). Continuous LEAP2 administration to calorie-restricted C57BL/6 J mice and Ghsr-knockout mice induced body weight loss, hypoglycemia, and upregulation of Il-6 and Il-1β mRNAs in the liver. Vertical sleeve gastrectomy (VSG) decreased plasma ghrelin and LEAP2 in mice fed high-fat diet. We have found that plasma LEAP2 is positively correlated to waist circumference, body fat weight, HOMA-R, fasting blood glucose, and fatty liver index in subjects with type 2 diabetes. In patients with severe obesity who underwent VSG, plasma LEAP2 was decreased in accordance with the degrees of reductions in body weight, visceral fat area, and serum triglyceride (Obesity Facts 2023). The ghrelin-LEAP2 axis may regulate energy homeostasis via the stomach-liver-brain crosstalk. Researchers on novel peptides could open a new way for our better understanding of organ network and pathogenesis of metabolic disorders.
Glucose-sensing neurons regulate neuronal activity in response to glucose or its metabolite. According to glucostatic hypothesis proposed by Jean Mayer in 1953, feeding is regulated by neurons in the brain that sense glucose levels in the blood. Despite of subsequent discovery of glucose-sensing neurons through electrophysiological approaches by Oomura et al (Science 1964), the physiological role of glucose sensing in feeding or any related event remains unclear. I will discuss two types of glucose-sensing neurons: 1) a population that mediates carbohydrate consumption in animals – flies (Oh et al, Neuron 2021; Dus et al, Neuron 2015, Nature Neuroscience 2013) and mice (Kim et al, Nature Neuroscience 2019; Kim et al, manuscript under review, 2) a population that communicates with endocrine organs and regulates the release of insulin and glucagon in flies (Oh et al, Nature 2019). Its implication in mammals will be discussed. In addition to glucose-sensing neurons, we recently determined the identity of an interoceptive sensor in the gut that responds to the deprivation of essential amino acids, another key macronutrient (Kim and Kanai et al., Nature 2021). We have also embarked on a study to understand postprandial sensing of sodium in the gut and will discuss the mechanism by which deprived animals respond to ingested sodium (Kim et al, manuscript under review).
Abstracts

Symposium 10: Basic Science (II) - Appetite Control

The Role of Brainstem Catecholaminergic / NPY Neurons in Feeding Regulation
Prof. Cheng Zhan
University of Science and Technology of China, China

The neural control of feeding behavior is a complex and multifaceted process, involving interactions between multiple brain regions and neuronal populations. Both the hypothalamus and the brainstem contain critical neuronal populations that control feeding behavior. The nucleus of the solitary tract (NTS) in the brainstem is the first brain area of integration of gastrointestinal vagal afferents. While many studies have emphasized the importance of vagal afferents to the NTS in inducing satiation, little is known about whether and how the vagal-NTS pathway senses orexigenic signals and stimulates feeding. Our previous study discovered that a population of catecholaminergic NTS neurons coexpressing neuropeptide Y (NPY) receive vagal afferents and stimulate feeding. Interestingly, these brainstem orexigenic neurons may stimulate feeding behavior independent of the first-order orexigenic neurons (e.g., AgRP neurons) in the hypothalamic arcuate nucleus, and vice versa. We recently find that ablation of AgRP neurons in adult mice caused no apparent alterations in ad libitum feeding or body weight. Thus, we hypothesize that first-order orexigenic neurons in the brainstem and hypothalamus function independently and redundantly to maintain ad libitum feeding and body weight homeostasis. This redundancy may serve as a protective mechanism to ensure that disruptions to one orexigenic pathway do not impair feeding behavior or body weight homeostasis.
Abstracts

Symposium 11: In the World of Food: Systems and Policies Impacting Obesity

Food Systems, Dietary Quality and Obesity in Asia
Dr. Rina Agustina
Human Nutrition Research Center (HNRC) Indonesian Medical Education and Research Institute (IMERI), Indonesia

Asia faces a triple burden of malnutrition, with undernourishment, anemia, and a rapid increase in overweight-obesity and diet-related illnesses. Overweight and obesity rates have risen more rapidly among both adults and school-age children than in any other region, leading to higher healthcare costs, affecting all income groups, especially those with lower incomes, and females. This trend is due to modern lifestyles and globalization, which have altered Asian diets. Unhealthy diets replacing the traditional ones are becoming more prevalent in Asia. Fast food and online delivery have changed food systems and eating habits, leading to a decrease in fruit and vegetable consumption, reliance on refined white rice, and an increase in fats, sugars, salts, and processed foods. A rise in red meat consumption has also been observed, which has been linked to heart disease and other negative outcomes. Studies in Asia show that smaller amounts of meat intake are linked to lower all-cause mortality. However, socioeconomic factors may affect these findings, and the long-term effects of red meat consumption are still unknown.

Maintaining a healthy diet is influenced by various personal and external factors (food environment), including income, taste, preferences, culture, availability, prices, marketing, food safety, trade, and urbanization. Food insecurity is a significant issue in Asia, with over a billion people unable to maintain a healthy diet due to poverty and high food prices. The COVID-19 pandemic has highlighted the need for sustainable and robust food systems in the region. Unhealthy diets and current food production in Asia not only worsened the NCDs problem but also affect environmental problems such as greenhouse-gas emissions, biodiversity loss, and others, emphasizing the need for the transformation of the food system in Asia with a holistic approach that considers its interconnected elements. Investments are needed to improve accessibility to safe, nutritious food. Collaborative efforts between various groups in Asia are necessary for transformative changes in the food system. This can be achieved by improving accessibility to safe, nutritious food through sustainable farming, better food storage, and consumer-level taxes and subsidies. EAT-LANCET Commission recommends dietary changes for better human health outcomes including a healthy diet with appropriate calories and more variety of plant-based foods, and fewer animal-based foods, saturated fats, refined grains, processed foods, and added sugars. Policies and education promoting healthy foods can reduce negative impacts on public healthcare and integrated nutrition interventions, nutrition-sensitive welfare and agriculture, and innovation can improve access to healthy foods.
Abstracts

Symposium 11: In the World of Food: Systems and Policies Impacting Obesity

South East Asia Obesogenic Food Environment (SEAOFE) Study: Addressing the Double Burden of Malnutrition through Healthier Retail Food
Dr. Elaine Q Borazon
National Sun Yat-Sen University, Taiwan

The rising prevalence of obesity and diet-related non-communicable diseases in Southeast Asian (SEA) countries necessitates the promotion of access to healthy food. As these nations undergo a food retail transition driven by economic, demographic, and obesogenic factors, understanding the dynamics in their retail environments becomes crucial. The SEOFE study aims to improve understanding of the retail food environment (Phase 1), consumers' and retailers' perspectives on factors influencing their food retail-related decisions (Phases 2 & 3), as well as the existing national-level policies and actions influencing food retail (Phase 4) in Indonesia, Malaysia, Thailand, and the Philippines. Key findings for Phase 1 show the increasing trend in overweight and obesity rates across all countries, with females experiencing a higher prevalence than males. The study also identifies both modern and traditional types of food retailers in each country, facilitating comparisons and equivalences across the four nations. Malaysia has the highest food retail density among the study sites, followed by the Philippines, Indonesia, and Thailand. These findings guide the selection of the main study sites, with capital cities being identified as the primary focus. Key findings in Phase 2 suggest that staple food items hold significant importance in the diets and consumption patterns of the population in Southeast Asia. Moreover, freshness and food safety are the primary factors influencing food purchasing decisions across all countries. Phase 3 highlights the limited availability of healthy food options in the food retail industry due to low consumer demand, lack of consumer awareness, and the expensive cost of healthy food products. It underscores the importance of government support in promoting healthy food retail, addressing gender-related issues, and enhancing consumer awareness of healthier food choices. Phase 4 results will highlight the current policies and actions related to food retail aiming for nutrition and health-related outcomes, and perceptions of stakeholders towards opportunities and barriers to creating healthy food retail environment including policy recommendations. Overall, the findings of this study will provide evidence-based insights into the retail food environment, consumer preferences, and existing policies that can guide interventions and policy recommendations to improve access to affordable and healthy food options in Southeast Asian countries.
Updates on Sugar-sweetened Beverage (SSB) Tax and Obesity in Asia Oceania
A/Prof. Geeta Appannah
President, Malaysian Association for the Study of Obesity (MASO)
Universiti Putra Malaysia, Malaysia

Sugar-sweetened beverage (SSB) taxes are one of a major subject worldwide for their benefits to improve health, particularly of that obesity reduction. Apart from that, it has a potential as a cost-effective tool to produce significant economic and equity benefits due to the reduction in non-communicable diseases (NCD) caused by excessive SSB intakes. Most countries in the Asia Oceania region have applied SSB taxation in the form of excise taxes (except for India), which has a typical selection in coverage and levied on the manufactured or imported goods and services deemed to be unhealthy. Notwithstanding of the tax types, the population coverage of SSB taxes were found to be increasing in the Asia Oceania region in the past 10 years. Most of the SSB taxes in this region are applied to carbonated soft drinks followed by energy drinks and fruit juices. While SSB taxes have showed some promising evidence in the demand and consumption reductions, a few countries in the Asia Oceania have not implemented them. Lack of SSB tax legislations in these countries could be due to the large trade-offs between many existing tax policies, best practices and complex political and economy support for any introduction of a new taxation system to takes place. The implementation of SSB taxes has been associated with reduction in obesity rates and this was specifically observed when the intakes of SSB were excessive, with higher tax rates (>20%) and when the SSB taxation was implemented together with other obesity prevention policies. Having said that, a full dependence on the SSB taxes policy alone would not impart the full potential effect of changing behaviour and health improvements. Countries in the Asia-Oceania that have implemented SSB taxation should work on much more comprehensive multi-sectoral policies in order to pave a pathway towards healthy environment and lifestyle for their people.
Non-alcoholic fatty liver disease (NAFLD), or its new nomenclature, metabolic dysfunction-associated steatotic liver disease (MASLD), is highly prevalent among individuals with obesity, type 2 diabetes (T2D), or both. Of note, insulin resistance and metabolic dysfunction are major drivers of progression of fatty liver disease, including the development of steatohepatitis, liver fibrosis and hepatocellular carcinoma. It is recommended that all NAFLD patients should be evaluated for the presence of liver fibrosis using non-invasive scores such as Fibrosis-4 (Fib-4) index and further imaging techniques if indicated. Although no pharmacotherapy has been formally approved for the treatment of steatohepatitis, among T2D patients, several anti-diabetic agents have been demonstrated to possess beneficial effects in fatty liver disease. This talk will discuss the recent change in nomenclature of fatty liver disease, new NAFLD clinical guidelines, as well as the role of anti-diabetic agents in T2D patients with co-existing NAFLD, including the use of sodium glucose co-transporter 2 inhibitors (SGLT2i), a class with cardio-renal benefits beyond HbA1c lowering.
Abstracts

Lunch Symposium 4 (Sponsored by Eli Lilly)

Weight Bias: Its Clinical Implication and Impact to Patients Dr. Hai Hua Chuang
Chang-Gung Memorial Hospital, Taiwan

This presentation focuses on the pressing issue of weight bias within the healthcare setting. We delve into the pervasive negative attitudes and stereotypes that often lead to substandard care for individuals with obesity. By exploring the far-reaching consequences of weight bias, we aim to raise awareness about misdiagnosis, treatment disparities, and limited access to preventive care. Our presentation underscores the importance of addressing weight bias in healthcare to ensure equitable treatment for all patients, irrespective of body size. Through understanding and empathy, we seek to foster a healthcare environment that embraces patient diversity and prioritizes individualized, unbiased care practices. By challenging existing norms and promoting sensitivity among healthcare professionals, we can strive for a healthcare landscape that upholds the principles of compassion, respect, and inclusivity for all patients, thus enhancing overall health outcomes and patient well-being.
Abstracts

Lunch Symposium 5 (Sponsored by Boehringer Ingelheim)

Transforming Diabetes Management: Cardiorenal Protection with SGLT2 Inhibitors Dr. Wing Sun Chow
Queen Mary Hospital, Hong Kong

Epidemiological, clinical and basic research have illustrated the intimate interplay between metabolic disorders, cardiovascular disease (CVD) and kidney dysfunction, termed cardio-renal-metabolic (CRM) disease. Dysfunction of one of these systems confers increased risk of disorder in the other.

Sodium-glucose co-transporter 2 (SGLT2) inhibitors have been shown in cardiovascular outcome trials to have cardio-renal benefits in type 2 diabetes and heart failure population. Recent trials have demonstrated that their benefits are extended to other disease populations. The robust evidence of the cardiovascular and renal benefits of SGLT2 inhibitors has led to more emphatic recommendations on their use in diabetes treatment guidelines, prioritising the use of this drug class over other commonly used anti-hyperglycemic agents.

In this lecture, the latest clinical evidence, practical considerations and recent international guideline recommendations on the use of SGLT2 inhibitors will be discussed.
Abstracts

Plenary Lecture 5

Impacts of Very Low Protein Diets on Body Weight Regulation
Prof. John Speakman
University of Aberdeen, United Kingdom

Energy intake and expenditure appear to be closely co-ordinated and linked to sustained body fat storage. Hence when intake falls and body weight/fatness declines there are strong physiological and neuroendocrine forces that come into play to reverse the effect. These include elevated levels of NPY and AgRP and reduced levels of POMC in the hypothalamus. Together these stimulate hunger and food intake. This is the reason why calorie reduced diets are so difficult to maintain. We have found in mice that exposure to very low protein diets results in them losing lots of body weight and body fat without the reactive hunger signalling. This appears to be because low protein diets inhibit mTOR in the hypothalamus. However, exactly how reduced mTOR mediates its effects is uncertain and whether the impact is mediated equally by all the reduced amino acids, or whether certain amino acids exert disproportional effects is unknown. My talk will summarise our findings with respect to low protein diets and present unpublished data on these latter two aspects.
Abstracts

Symposium 12: From the Lens of the Lived Experience and the Treating Physician

Attitudes towards Obesity in Asia-Pac: Lessons from ACTION APAC and IO
Prof. Brian Oldfield
Past President, Asia Oceania Association for the Study of Obesity (AOASO)
Monash University, Australia

The Asia Pacific (APAC) region has 60% of world’s population and of these 40% are currently living with overweight and obesity. While these figures are alarming, they are likely to be considerably underestimated given the susceptibility of many Asian populations to the impact of comorbidities associated with obesity which sees them experience conditions such as Type 2 diabetes at lower levels of BMI than in non-Asian individuals.

It has been established in different studies at national and international levels that one of the barriers to effective care and management of people with obesity (PwO) lies in the misalignment between them and their health care professionals (HCPs) regarding perceptions, attitudes and behaviors on both sides of this clinical equation.

Given that 1) psychosocial and cultural beliefs as well as local infrastructure can influence these factors and that 2) APAC has unique cultural and environmental characteristics and a specific healthcare environment, it is likely that the ACTION (Awareness, Care & Treatment in Obesity Management) APAC study represents one of the most pivotal of these global attitudinal surveys to date.

Data will be presented that highlight perceptions, attitudes and behaviors and the nature of the alignment or discord between these issues as described in surveys of PwO and HCPs in the region.
Abstracts

Symposium 13: Nutrition and Physical Activity in Obesity

Understanding Metabolic Heterogeneity in Precision Nutrition
Prof. Leonie Kaye Heilbronn
President, Australian & New Zealand Obesity Society (ANZOS)
The University of Adelaide, Australia

There are various evidence-based dietary patterns available for selection; Mediterranean, DASH, low-carbohydrate, low-fat, among others. But which is the correct one to prescribe for the optimal health of the individual? And at what energy level, or time of day should that diet be prescribed? Studies in mice clearly show the optimal level of caloric restriction is time, strain, and sex specific. We recently conducted a study where more than 200 men and women with obesity were put on one of two nutritional interventions for six months. One diet was 30% caloric restriction (CR) and the other an energy matched intermittent fasting plus early time restricted eating (iTRE) approach. When we looked at everyone together, both diets were equivalent for body weight loss. But one of the diets was better than the other to improve glucose metabolism, insulin sensitivity and triglyceride levels. But this was not universal - some people did better on a CR diet, and some people did better on a fasting diet, regardless of the amount of weight lost. Integrating data from omics can provide a more comprehensive understanding of the metabolic heterogeneity in nutritional responses. Layering of other factors including genetics, sex, behaviours, disease progression, stage of life and even the microbiome is necessary to achieve nutritional precision in dietary prescriptions.
Abstracts

Symposium 13: Nutrition and Physical Activity in Obesity

Tailored Lifestyle Intervention in Overweight Adults – A Quasi Experimental Study
Dr. Chia Wen Lu
National Taiwan University, Taiwan

Obesity, a steadily increasing global concern, is linked to various chronic diseases, disabilities, and mortality. It arises from the chronic accumulation of excess body fat due to an imbalance between nutrient intake and energy expenditure. While weight loss medications are available, diet and exercise control remain the primary treatment approach for addressing obesity.

Previous studies have shown that diet and moderate-intensity resistance exercise are effective for weight loss, but they often require supervision and may not be easily accessible to the general population. To address this, wearable devices combined with self-management apps have demonstrated short-term weight loss benefits for young and middle-aged obese individuals. In light of this, I conducted a quasi-experimental study at a single medical center in northern Taiwan, enrolling overweight adults seeking medical attention for weight-related concern and diseases.

During the study, the experimental group received standard care along with a 24-week diet and exercise intervention utilizing wearable devices and self-management apps. Meanwhile, the control group received standard care along with face-to-face diet and exercise education. At the end of the intervention, the experimental group showed an average weight loss of 3 kilograms, and there was a statistically significant difference between the experimental and control groups. Although other body composition parameters (such as weight, waist circumference, and body fat percentage) and physical function indicators (like grip strength, walking speed, and muscle mass) exhibited slight differences between the two groups, the primary focus was on the significant improvements in BMI achieved through the tailored lifestyle intervention.

This study highlights the potential of personalized lifestyle interventions in the precision medicine era, surpassing standard one-size-fits-all approaches. By customizing interventions to individual phenotypes, we can achieve a better weight control and life quality.
Abstracts

Symposium 13: Nutrition and Physical Activity in Obesity

Combating Obesity in the Face of Limited Resources

Prof. Ismail Noor
Immediate Past President, Malaysian Association for the Study of Obesity (MASO)
Universiti Kebangsaan Malaysia, Malaysia

Obesity is an increasingly prevalent chronic disease associated with substantial risks of morbidity and mortality. The root causes of obesity are diverse and different in different individuals. Public health interventions have thus far failed to achieve significant decreases in population obesity prevalence. Obesity prevention paradigm is complicated because it is outside the health system. It requires a shift from fragmented approaches to policy and practice that will help reduce the drivers of unhealthy behaviours and maximise that promote healthy behaviours. These range from things like taxes on sugar-sweetened drinks; advertising and marketing restrictions on unhealthy foods; removing subsidies from harmful products. There is also a need to confront powerful commercial interests on the over-supply of cheap calories and inappropriate/unethical marketing of ultra-processed, calories dense foods. Efficient resource allocation is a challenge within any health-care system. An important part of tackling this challenge is knowledge of the value of health itself together with the more easily measured costs and benefits of health interventions, such as medical expenses and changes in productivity. Many organisations implementing prevention activities tend to favour behaviour change programs focusing on risk factors such as poor nutrition and inadequate physical activity levels, to address overweight/obesity. This presentation attempt to highlight examples of evidence-based actions that have potential for combating obesity in some AOASO member countries. Policies and actions will require considerable political commitment, investment of resources and participation of a wide variety of sectors and stakeholders. At the 75th. World Health Assembly in 2022, member states adopted new recommendations for the prevention and management of obesity and endorsed the WHO Acceleration Plan to Stop Obesity. If Government cannot rise to this challenge, the chances of making real progress in combating obesity seem slim.
Abstracts

Symposium 14: Skin and Obesity

**Aesthetic Medicine Approach in Management of Patients with Obesity - Bridging Health and Aesthetic - Empowering Patients with Obesity.**

Dr. Pura Ching Sui Cheng  
*Private Practice, Hong Kong*

In this powerful and inclusive presentation, we explore the Aesthetic Medicine Approach in managing patients with obesity, where the focus lies on bridging the gap between health and beauty to empower individuals facing this challenge. We delve into the transformative potential of aesthetic medicine, lifting the spirits and enhancing the lives of patients from all walks of life.

The presenter, an experienced physician practicing aesthetic medicine, shares her vision of empowering individuals to lead their best lives through aesthetic medicine. With a patient-centered approach, evidence-based treatments are tailored to individual needs, instilling hope and motivation on the journey to transformation.

The presentation addresses the skin and facial shape concerns commonly faced by patients with obesity, emphasizing the emotional impact these challenges can have. By harnessing the power of aesthetic injectables, facial features are subtly reshaped, resulting in renewed confidence and determination.

Furthermore, the distressing body shape concerns experienced by patients are recognized, with an emphasis on crafting a narrative of self-discovery and empowerment. Evidence-based treatments are utilized to sculpt contours and create lasting change that goes beyond the physical.

Additionally, the sensitive sexual concerns faced by patients with obesity are approached with empathy and support. Innovative treatments are offered, allowing patients to rediscover their passion for life.

This empowering presentation is a call to action for all attendees, urging them to be part of a movement that uplifts and enriches the lives of patients. By collaborating and offering innovative solutions, we can all play a significant role in empowering individuals to embrace their unique beauty and journey with confidence and strength.

As the presentation concludes, the audience is invited to join the transformative expedition, embracing the power of aesthetic medicine in shaping a future of boundless potential and empowerment for all. Together, we can bridge the gap between health and aesthetic, creating a world where every individual can unlock their beauty within and shine brightly. Let us unite in our vision to empower patients with obesity and inspire positive change in the world of medicine.
Management of Skin Laxity after Weight Loss  
Dr. Gregory Siu Kee Lau  
*Private Practice, Hong Kong*

Patients after weight loss post unique challenges to the plastic and reconstructive surgeon. Once the excess body weight has been removed by medical or surgical means, the aftermath is usually a deformed body contour. The patients have both aesthetic issues (such as loose skin flaps, inability to find suitable clothing) and functional issues (such as intertrigo and, that must be addressed in order to maintain a reasonable quality of life.

Through body contouring surgical techniques, excess skin, residual fat and loose fascia can be tackled. The techniques are extensions and modifications from aesthetic body contouring surgery with fine nuances. The author attempts showcase the key points in creating a satisfying body contour with aesthetic and functional improvements.
Abstracts

Symposium 15: New Technologies in Obesity

Digital Health Intervention for Diabetes
Dr. Kayo Waki
The University of Tokyo, Japan

We have developed an information network to build a system that virtually collects daily health data, obtained and managed in separate places and times, and virtually integrates them to support self-management of lifestyle-related diseases. Our ultimate goal is to provide digital therapeutics that prevent progression of these diseases by promoting behavior change and healthier lifestyles. At first, we developed a real-time, partially-automated interactive system to interpret patients’ data—biological information, exercise, and diet content calculated from a message sent by patients—and respond with appropriate actionable findings, helping the patients achieve diabetes self-management. Based on the findings from clinical studies conducted using the system, we developed a new system called StepAdd that focuses on increasing physical activity. StepAdd, based on Social Cognitive Theory, assists patients to set step goals, define the actions needed to achieve the goals, and identify barriers to behavioral change. We conducted a pilot study of StepAdd, and found that daily step counts increased dramatically with high statistical significance. Based on the promising results of the StepAdd pilot study, in 2023 we started a randomized controlled trial to test StepAdd’s effectiveness, with the goal of obtaining PMDA approval of the software as a medical device. We are also proceeding with the development of other applications that incorporate different concepts and contribute to new interventions. We are working on research to develop treatment guidance that is close to the daily life of patients, without restrictions on place and time, by utilizing IoT / ICT. The goal is to enable guidance and medical care that are not restricted by where you are and the date or time, and do not require face-to-face conversations. We are trying to provide access to medical service beyond space and time.
Empowering Health through Digital Interventions for Obesity Prevention and Control in Asia Oceania

A/Prof. Mohd Razif Shahril
Secretary, Malaysian Association for the Study of Obesity (MASO)
Universiti Kebangsaan Malaysia, Malaysia

Background:
Obesity has emerged as a significant public health concern in the Asia-Oceania region, with an alarming increase in prevalence and associated health risks. Addressing this complex issue requires innovative and scalable interventions that empower individuals to make sustainable lifestyle changes. Digital interventions have shown immense potential in tackling obesity-related challenges by leveraging technology to deliver personalized and interactive solutions.

Purpose:
To provide a comprehensive review of the current landscape of digital interventions and their effectiveness for adult obesity prevention and control in the Asia-Oceania region.

Methods:
Drawing upon a systematic literature search, studies published from 2018 to 2023 that have implemented digital interventions targeting obesity across diverse adult populations and settings in Asia-Oceania were identified and analysed using scientific databases (Scopus, Web of Science and PubMed). PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines and framework were used for this evidence-based systematic review.

Results:
A total of 13,340 records were identified through initial database searching, however, 12 articles were included in the final stage following specified inclusion and exclusion criteria. Mobile apps (n=10) are the most prominent digital intervention used among adults in Asia-Oceania for obesity prevention and control. Half of the mobile apps’ interventions were paired with usual support care, personalized coaching, or wearable device. The remaining two studies used telephone calls and text messages (n=1), and a virtual reality exercise using a sensor attached to an indoor bicycle (n=1). The majority (66%) of the digital interventions showed promising changes in body weight when compared to the control group. This systematic literature review highlights the importance of incorporating evidence-based strategies, such as behaviour change techniques, self-monitoring, self-motivation, goal setting, gamification, social support, and personalized feedback, within digital interventions to enhance their effectiveness.

Conclusion:
Overall, this systematic literature review provides a comprehensive overview of digital interventions for obesity prevention and control in the Asia-Oceania region, offering valuable insights for researchers, practitioners, and policymakers. By leveraging the power of digital technologies, these interventions hold the potential to revolutionize obesity management, promote healthier lifestyles, and contribute to the overall improvement of public health in the region.
Synergic Effect of Silkworm Pupae Extract and Regular Exercise on Muscle Strength and Mass in Middle-aged and Older People with Relative Sarcopenia: A Randomized, Double-blinded, Placebo-controlled Trial

Jung In Choi1, Ye Ri Lee3, Yu Jin Jeong1, Young Hye Cho1, Prof. Sang Yeoup Lee1,2,3
1Department of Family Medicine, Biomedical Research Institute, Pusan National University Yangsan Hospital, Yangsan, South Korea, 2Department of Medical Education, Pusan National University School of Medicine, Yangsan, South Korea, 3Integrated Research Institute for Natural Ingredients and Functional Foods, Yangsan, South Korea

Introduction: As the elderly population grows, sarcopenia is becoming a major concern. The literature reported that the consumption of silkworms and by-products, including pupae, had the effect of increasing muscle mass in mice. No studies have investigated the efficacy of silkworm pupae on muscle mass and strength in humans. Therefore, we conducted a randomized, double-blind, placebo-controlled trial to evaluate the efficacy and safety of silkworm pupae extract on muscle strength and muscle mass in humans.

Methods: A randomized, double-blind, placebo-controlled trial was conducted in adults aged >50 y with body mass index (BMI) ranging from 18.5 to 30.0 kg/m² and with relatively low skeletal muscle mass (<110% of the standard lean mass). Fifty-four participants were randomly assigned into 2 groups and received either 1,200 mg of silkworm pupae product or a placebo per day for 12 wk. All participants were given a three-weekly medium-intensity muscular endurance exercise program during the trial period. Changes in peak torque (TQ) at 60°/s of knee extension/flexion were evaluated as the primary efficacy endpoint. Appendicular skeletal mass index (ASMI), skeletal muscle mass index (SMI), body composition, handgrip strength, creatinine, creatinine kinase (CK), and the Euro-QoL-5D (EQ-5D) score were the secondary efficacy endpoint. Reports of adverse events were collected throughout the study. Blood tests and physical performance profiles were assessed at baseline and 12 weeks after treatment.

Results: Silkworm pupae product supplementation, in combination with regular resistance exercise, over 12 weeks did not cause any increase in knee strength than did the placebo in both intention-to-treat (ITT) analysis and per-protocol (PP) analyses. However, the combined intervention enhanced right-hand grip strength by 2.21 kg (95% CI: 0.32, 4.11 kg; P = 0.023) and left-hand grip strength by 2.31 kg (95% CI: 0.82, 3.80 kg; P = 0.003) than did the placebo by ITT analysis. Also, the same was observed in the PP analysis (right, 2.06 kg (0.15, 3.98), P = 0.035; left, 2.21 kg (0.60, 3.82), P = 0.015). No differences were observed in muscle mass, biomarkers, and EQ-5D scores between the groups. None of the participants experienced adverse events.

Conclusion: Silkworm pupae product, in combination with regular resistance exercise, may enhance synergically hand grip strength in middle-aged and older people with relative sarcopenia.

1. Conflict of Interest: None Disclosed
2. Funding: No Funding to report.

Keywords: Silkworm pupae, resistance exercise, hand grip, muscle strength, fitness sarcopenia
Exploring the Relationship between Obesity and Breast Cancer Treatment Outcomes

Dr. Chih-Yu Hsu1,2, Dr. Hsiang-Sheng Wang3, Dr. Tse-Ching Chen3, Dr. Hsi-Hua Chuang4,5,6
1Genesis Clinic, Taipei, Taiwan, 2Graduate Institute of Clinical Medical Sciences, Chang-Gung University, Taoyuan, Taiwan, 3Department of Pathology, Chang-Gung Memorial Hospital, Taoyuan, Taiwan, 4Department of Family Medicine, Chang-Gung Memorial Hospital, Taoyuan, Taiwan, 5College of Medicine, Chang-Gung University, Taoyuan, Taiwan, 6Department of Industrial Engineering and Management, National Taipei University of Technology, Taipei, Taiwan

Background: Obesity has been recognized as a significant risk factor for breast cancer. However, the associations between body mass index (BMI), breast cancer subtypes, and the treatment outcome are not yet clear.

Purpose: This retrospective cohort study aimed to explore the interplay between weight status, menopausal status, cancer characteristics (such as tumor size, metastasis, stage, grade, and invasion), cancer subtypes (including hormone receptor positive Luminal type and HER2 receptor positive but hormone receptor negative HER2 type), treatment modalities (including chemotherapy, targeted therapy, surgical excision, and hormone therapy), and disease prognosis in breast cancer patients treated in single-system institutes.

Methods: The data were retrieved from Chang Gung Research Database between 2005 and 2020. Patients were categorized into four weight groups: underweight, normal, overweight, and obesity. Kaplan-Meier curves assessed overall survival (OS) and progression-free survival (PFS), while chi-square and student t-tests analyzed the correlation between demographics and BMI. The Cox proportional hazards regression model identified independent risk factors.

Results: Among breast cancer patients with obesity, larger tumor size, older age, and higher ratio of Luminal subtype were observed. In Luminal subtype, Kaplan-Meier curves revealed that group with obesity had better 3-year and 5-year PFS (P = 0.027 and P = 0.019). Nevertheless, in HER2 subtype, the group with obesity showed worse outcomes at the 5-year and 10-year OS (P = 0.018 and P = 0.004). After adjusting for age, tumor stage, and grade, the multivariate Cox proportional hazards regression model confirmed that BMI was an independent risk factor for progression in Luminal subtype breast cancer with obesity within 3-year (HR: 0.75), 5-year (HR: 0.86), and 10-year (HR: 0.82) intervals, and a risk factor for OS in HER2 subtype breast cancer with obesity at the 10-year follow-up (HR: 1.92). The hazard ratio of OS in Luminal subtype breast cancer showed no significant difference across weight status. In terms of breast cancer as main cause of death, the normal weight group (Luminal 56% and HER2 59%) had a higher percentage compared to the group with obesity (Luminal 34% and HER2 43%). Higher non-cancer-related death ratio were found in both subtypes’ patients with obesity.

Conclusion: Post-menopausal women with obesity had higher ratio of luminal subtype breast cancer. Although hormone therapy was effective in reducing progression rate, overall survival benefit might be eliminated due to obesity-related comorbidities. Hence, body weight management is crucial for these patients, and more prospective investigation is required.

Table 1

<table>
<thead>
<tr>
<th>Breast Cancer Subtype</th>
<th>Weight Group</th>
<th>1-Year OS</th>
<th>3-Year OS</th>
<th>5-Year OS</th>
<th>10-Year OS</th>
</tr>
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<tr>
<td>Luminal</td>
<td>Underweight</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td></td>
<td>Normal</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>Overweight</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>Obesity</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>HER2</td>
<td>Underweight</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>Normal</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>Overweight</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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<td>Obesity</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
<td>1.00 (0.34-3.03, p=0.96)</td>
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</table>
Body Mass Index Predicting the Efficacy Of SGLT-2 Inhibitors and GLP-1 Receptor Agonists on Adverse Cardiovascular Events: A Meta-analysis Study

Dr. Minji Sohn1, Prof. Soo Lim1
1Seoul National University Bundang Hospital, South Korea

Background: Several clinical trials shown that sodium–glucose cotransporter-2 (SGLT-2) inhibitors and glucagon-like peptide-1 (GLP-1) receptor agonists have the cardiovascular benefits. We aimed to find subgroups of people who responded differently to SGLT-2 inhibitors or GLP-1 receptor agonists based on their baseline characteristics of body mass index (BMI).

Methods: Up until the year 2022, randomized clinical trials with SGLT-2 inhibitors or GLP-1 receptor agonists that reported major adverse cardiovascular events by BMI subgroups were searched in PubMed, the Cochrane Library, and EMBASE. The absolute risk reduction (ARR) regarding incidence rates for 3-point major adverse cardiovascular outcomes (MACE) or a composite of either hospitalization for heart failure or cardiovascular death (HHF/CVD) were calculated. Meta-analysis was performed to see if the efficacy of SGLT-2 inhibitors on MACE or HHF/CVD reduction differed depending on the patient’s baseline BMI (random-effects model, assuming inter-study heterogeneity).

Results: A total of 17 cardiovascular outcome trials involving 121,409 participants were selected. In the meta-analysis, the MACE reduction was similar between SGLT-2 inhibitors and GLP-1 receptor agonists (ARR: –0.67 [–1.02 to –0.32] vs. –0.36 [–0.62 to –0.11] events/100 person-years (PY)). SGLT-2 inhibitor therapy reduced both MACE and HHF/CVD (–2.27 [–3.59 to –0.96] events/100 PY), but had higher efficacy for HHF/CVD (p < 0.05). The beneficial effects on either MACE or HHF were not affected by the obesity status in both therapies (BMI ≥30 kg/m² or not). GLP-1 receptor agonists showed the potential to be more effective than SGLT-2 inhibitors in non-obese individuals, but the difference was not significant (–0.92 [–1.64 to –0.20] vs. –0.32 [–0.70 to 0.06] events/100 PY, p = 0.15).

Conclusions: SGLT-2 inhibitors, regardless of BMI, are considered an effective treatment option for reducing cardiovascular events, especially HHF/CVD. With the support of additional research, GLP-1 receptor agonists could be an alternative treatment option to SGLT-2 inhibitors in non-obese patients.
Endothelial Leptin Resistance Favors Inflammation through Hindering PD-L1 Expression

**Mr. Yiu Ming Cheung**, Ms. Hoi Wa Yeung, Ms. Chui Yiu Bamboo Chook, Prof. Wing Tak Wong

1School of Life Sciences, The Chinese University of Hong Kong, Hong Kong SAR

Background: Cardiovascular diseases are considered as a major event contributing to the premature death among the obese individuals worldwide. Along the progression of vasculopathy, endothelial dysfunction is the culprit that results in vascular stiffness. As such, identifying the pathophysiology of these diseases will be important in exploring feasible therapeutic strategy. Leptin, as a hormone mainly known for its role in energy metabolism, also regulates multiple physiological functions. However, owing to the increased adiposity, hyperleptinemia favors the development of leptin resistance that mitigates normal physiological function in certain cell types.

Purpose: Through hyperleptinemia is considered as a cardiometabolic risk factor, whether leptin resistance affects vascular functionality remains largely unknown. Hereby, our study is aimed in exploring a new mechanistic explanation of how hyperleptinemia impairs vascular homeostasis.

Methods: Providing that circulating leptin level is closely associated with body adiposity and feeding behaviors, both hypoleptinemia and hyperleptinemia were generated on C57BL/6 mice by nutritional modulation or genetic knockout on leptin receptor. Endothelial leptin resistance was examined using exogenous leptin stimuli.

Results: Findings across multiple models suggested, the expression of PD-L1, an immune-coinhibitory molecule, was regulated by leptin, the impairment in leptin signaling resulted in vascular PD-L1 downregulation. By employing the mice with obesogenic hyperleptinemia, we showed that the aortic endothelium failed to respond to exogenous leptin stimuli, thereby hindering PD-L1 expression in the inflammatory microenvironment. Given that PD-L1 expression is crucial in maintaining tissue homeostasis by suppressing the activated PD-1+ leukocytes, hindered PD-L1 expression may favor the vascular inflammation by failing to inhibit immunogenic attack, especially when vascular microenvironment is comprised of other cardiometabolic risk factors. Beyond acting as a ligand to leukocytes, our findings also revealed PD-L1 reverse signaling in endothelium plays a role in resolving inflammation and rescuing endothelial functionality.

Conclusions: These preliminary findings propose a new explanation for why obesity results in vasculopathy in relationship with endothelial PD-L1. On the basis of these findings, the ongoing study is focusing on the pathophysiology of PD-L1 in vascular diseases, in which it will provide more comprehensive picture of how leptin resistance disrupts endothelial functionality upon obesity.
Oral Presentations 1

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Qualified and Student Healthcare Professionals in Singapore Display Explicit Weight Bias: A Cross-sectional Web-based Survey

Dr. Anthony Goff, Dr. Cindy Li Whye Ng, Ernest Zhi Hong Aw, Shengyang Xiao, Rebecca Yin Yi Koh, Ting Zuan Ho, Yin Yi Leong, Jun Xi Tan, Dr. Kwang Wei Tham

Singapore Institute of Technology, Singapore

Background: Evidence from around the world suggests that healthcare professionals display weight bias. However, current research has predominantly been performed in Western populations with limited evidence available in Asia.

Purpose: To determine the presence and extent of explicit weight bias in qualified and student healthcare professionals in Singapore.

Methods: An online, cross-sectional survey was extensively advertised in March 2023. All qualified or student healthcare professionals in Singapore were eligible. Responders answered categorical demographic and anthropometric questions (i.e. ethnicity, weight and height), plus completed the Fat Phobia Scale (FPS) and Antifat Attitudes (AFA) questionnaire. BMI was calculated for each participant and categorised according to Asian values. We calculated the total FPS, as well as the total, dislike, fear and willpower scores for the AFA questionnaire. We compared total FPS and AFA questionnaire scores between; i) student and qualified healthcare professionals, ii) BMI categories and iii) ethnicity groups using paired T-test or one way ANOVA with appropriate post-hoc analyses. Statistical significance was denoted by p=<0.05.

Results: Of all participants, 55% (n=294/525) were qualified and 45% (n=231/525) were students. Mean total FPS was 3.19/5.00 (range 2.00-3.86) and total AFA questionnaire score was 2.17/9.00 (range 0.00-6.85). For AFA questionnaire subscales, mean dislike was 2.32/9.00 (range 0.00-7.43), fear was 5.41/9.00 (range 0.00-9.00) and willpower was 1.89/9.00 (range 0.00-9.00). No significant differences were observed on all comparisons for the FPS. For the AFA, there were no significant differences between student or qualified healthcare professionals, however differences were noted between ethnicity groups and BMI categories. Caucasians had lower total AFA score than those who identified as ‘other’ (i.e. not Chinese, Malay or Indian) (MD -1.55, 95CI -3.05 to -0.04) and those with an underweight BMI had lower total AFA score compared to those with healthy (-0.75, -1.24 to -0.26) or overweight (-0.80, -1.39 to -0.21) BMI’s.

Conclusion(s): This is the first large-scale, multi-profession investigation of weight bias of its kind in Southeast Asia. Our findings indicate that both qualified and student healthcare professionals in Singapore display explicit weight bias when measured on the Fat Phobia Scale and the Antifat Attitudes questionnaire. The degree of weight bias demonstrated is comparable to healthcare professionals outside of Asia. It is essential to implement strategies to reduce weight bias of current and future healthcare professionals considering its potential to cause inequalities in, and impact outcomes of, healthcare, not only for obesity, but for a number of associated non-communicable conditions.
Effectiveness of a 6-month Motivational Team Marathon Program to Improve Physical and Health outcomes in Adolescents with Obesity: A Randomised Controlled Trial.

Dr. Lettie Leung1, Dr. Noel Chan2, Dr. Eric P H Chan1, Dr. Esther Ngan3, Dr. Elize Sum Yee Kong1, Dr. Lobo Louie3, Dr. Daniel KK Ng1

1Department of Paediatrics, Kwong Wah Hospital, Hong Kong SAR; 2Department of Nursing and Health Studies, HK Metropolitan University, Hong Kong SAR; 3Department of Radiology, Baylor College of Medicine, USA; 4Department of Physical Education, Hong Kong Baptist University, Hong Kong SAR

Background: Asia now has the highest rate of increase in childhood obesity. Adolescents with obesity have an 80% chance to be adults with obesity, and effective treatment strategies are few.

Purpose: This study examines the short and medium-term effectiveness of a 6 month community-based motivational sports program in Hong Kong adolescents with obesity to reduce weight.

Methods: Following an effective pilot study, we proceeded to a 2 arm, parallel-group randomized controlled, assessor-blinded trial with wait-list controls. Adolescents aged 16-18 years with BMI 25-35 were recruited from neighbourhood schools. After attending 2 interactive dietary and exercise sessions, participants were randomized into intervention Marathon and Control groups. Intervention consisted of twice-weekly ‘exercise combo’ and track-training program totaling 6 months, culminating in running at the annual Hong Kong 10km Marathon event. All participants were followed up for a further 6 months post-intervention.

Main Outcomes: The primary outcome was change in body mass index (BMI). Secondary outcomes included changes in waist circumference (WC), blood pressure (BP) and physical fitness as measured by 9 minute run. Participants were assessed at baseline (T0), at end of the 6-month program (T1) and at the 12-month follow-up (T2). Data analyses were completed based on the intention-to-treat principle. Mixed effect models were used to examine the treatment effect in various outcomes, adjusted by potential predictors.

Results: Between 2015-2017, a total of 102 adolescents were randomly assigned to Marathon (n=50) or Controls (n=52). Mean age was 16.1±0.97 years, and 7.8% were female. 42 completed the Marathon intervention. At T1, Marathon participants had significantly lower BMI than controls (adjusted difference -1.19kg/m2, p=0.008, 95%CI: -2.06, -0.32); at T2, the effect remained significant but lower (adjusted difference - 0.95kg/m2, p=0.031, 95%CI: -1.82, -0.09). For secondary outcomes, at T1, Marathon participants had significantly lower WC (adjusted difference -2.73cm, p=0.019, 95%CI: -4.99, -0.46) and ran 112m more than controls in the 9-min run (p=0.007, 95%CI: 33.12, 193.49). However, the difference was not maintained at T2. Systolic BP was significantly lower at T2 only, by 4.63mmHg (p=0.009, 95%CI: -8.11, -1.15). Control participants were almost 5 times more likely to have elevated BP/ Hypertension at T2 (p=0.028, 95%CI: 1.12, 20.0). No significant adverse effects were encountered.

Conclusion: A 6-month Motivational Team Marathon Program is feasible, and can improve physical and health outcomes in adolescents with obesity. Maintenance intervention is warranted to sustain the effects gained, as obesity is afterall a chronic disease.
Effectiveness of a Novel Artificial Intelligence-assisted Weight Loss App on Improving Eating Behaviors: A Mixed-method Evaluation

Dr. Han Shi Jocelyn Chew¹, Dr. Nicholas WS Chew, Mr. Shaun Ser Ern Loong, Dr. Su Lin Lim, Dr. Wai San Wilson Tam, Mr. Yip Han Chin, Dr. Ariana M Chao, Dr. Georgios K Dimitriadis, Dr. Yujia Gao, Professor Jimmy Bok Yan So, A/Prof. Asim Shabbir, A/Prof. Kee Yuan Ngiam

¹National University of Singapore, Singapore

Background: Overweight and obesity remains a public health concern with a rising prevalence. An emerging area in weight management is self-regulation over momentary eating impulses.

Purpose: To examine the feasibility and effectiveness of a novel artificial intelligence (AI)-assisted weight management app on improving eating behaviors.

Methods: A single group, pretest posttest study was conducted. Participants completed the one-week run-in of a 12-weeks app-based weight management program called the Eating Trigger-Response Inhibition Program (eTRIP). The self-monitoring system was built upon three main components namely (1) chatbot-based check-ins on eating lapse triggers, (2) local food-based computer vision image recognition, and (3) automated time-based nudges and meal stopwatch. At every mealtime, participants were prompted to take a picture of their food, of which the food items were identified by a computer vision image recognition technology, which then triggered a set of chatbot-initiated questions on eating triggers (e.g. who the users were eating with). Paired t-tests were used to compare the differences in psycho-behavioral constructs before and after the 7 days program, including overeating habit, snacking habit, consideration of future consequences, self-regulation of eating behaviors, anxiety, depression, and physical activity. Qualitative feedback was analyzed using content analysis according to the four steps namely decontextualization, recontextualization, categorization and compilation.

Results: The mean age, and self-reported BMI and waist circumference was 31.25 ± 9.98 years, 28.86 ± 7.02 kg/m², and 92.58 ± 18.23 cm respectively. There were significant improvements in all the seven psycho-behavioral constructs except for anxiety. After adjusting for multiple comparisons, statistically significant improvements were found for overeating habit (-0.32 ± 1.16, P < .001), snacking habit (-0.22 ± 1.12, P < .002), self-regulation of eating behavior (0.08 ± 0.49, P = .007), depression (-0.12 ± 0.74, P = .007), and physical activity (1288.60 ± 3055.20 MET-min/day, P < .001). Forty-one participants reported skipping at least 1 meal (i.e. breakfast, lunch or dinner), summing to a total of 578 (67.1%) of meals skipped. Eighty (34.8%) participants provided textual feedback that indicated a satisfactory user experience from using eTRIP. Four themes emerged namely (1) becoming more mindful with self-monitoring; (2) personalized reminders with prompts and chatbot; (3) food logging with image recognition; and (4) engaging with simple, easy, and appealing user interface. Attrition rate was 8.7%.

Conclusions: eTRIP is a feasible and effective weight management program to be tested in a larger randomized controlled trial for its effectiveness and sustainability as a personalized weight management program from people with overweight and obesity.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Mean before</th>
<th>Mean after</th>
<th>Mean difference</th>
<th>p-value</th>
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</thead>
<tbody>
<tr>
<td>Overeating habit</td>
<td>-1.16</td>
<td>-0.32</td>
<td>-0.32</td>
<td>&lt;.001*</td>
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<td>Snacking habit</td>
<td>-1.12</td>
<td>-0.22</td>
<td>-0.22</td>
<td>&lt;.002*</td>
</tr>
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<td>Self-regulation</td>
<td>-0.49</td>
<td>0.08</td>
<td>0.08</td>
<td>.007*</td>
</tr>
<tr>
<td>Depression</td>
<td>-0.74</td>
<td>-0.12</td>
<td>-0.12</td>
<td>.007</td>
</tr>
<tr>
<td>Physical activity</td>
<td>1288.60</td>
<td>4243.51</td>
<td>4154.91</td>
<td>&lt;.001*</td>
</tr>
</tbody>
</table>

IPAQ (Walk), n=146
IPAQ (Moderate), n=146
IPAQ (Vigorous), n=170
IPAQ (Total), n=128

Depression
Anxiety
SREBQ
Automation (snacking)
Behavioral frequency (snacking)
Identity (snacking)
Behavioral frequency (overeating)
Identity (overeating)
Behavioral frequency (identity)
Preoccupation
Voice
Behavioral frequency
Response
Pain
Pain (nausea)
Pain (headache)
Pain (backache)
Pain (restlessness)
Pain (rollback)
Pain (muscle)
Pain (loss of appetite)
Pain (injury)
Pain (affect)
Pain (depression)
Pain (anxiety)
Pain (fatigue)
Pain (sleep)
Pain (function)
Pain (energy)
Pain (mood)
Pain (behavior)
Pain (concentration)
Pain (motivation)
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Public Acceptance in Using Artificial Intelligence-assisted Weight Management Apps in High-Income Southeast Asian Adults with Overweight and Obesity: A Cross-sectional Study

Dr. Han Shi Jocelyn Chew, Dr. Palakorn Achananuparp, Dr. Mayank Dalakoti, Dr. Nicholas WS Chew, Mr. Yip Han Chin, Dr. Yujia Gao, Professor Jimmy Bok Yan So, A/Prof. Asim Shabbir

1National University of Singapore, Singapore

Background: With the penetration of artificial intelligence (AI) in various healthcare services including weight management, the perceptions and acceptability of such technology in Singapore remains unclear. Efforts to incorporate AI into healthcare service delivery will be futile if users are unwilling to use them.

Purpose: To examine user perceptions of AI-based mobile apps for weight management in adults with overweight and obesity.

Methods: 280 participants were recruited between May to November 2022. Participants completed a questionnaire on sociodemographic profiles, Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) and Self-Regulation of Eating Behaviour Questionnaire. R was used to conduct structural equation modelling. Model fits were tested using maximum likelihood, generalised unweighted least squares. Correlation and linear regression analyses were conducted to describe the association between factors.

Results: 271 participant responses were analyzed, representing participants with mean age of 31.56 ± 10.75 years old, median (interquartile range) BMI and waist circumference of 27.2 kg/m2 (24.2-28.4 kg/m2) and 86.4 (80.0-94.0) cm respectively. 188 (69.4%) participants intended to use AI-assisted weight loss apps. UTAUT2 explained 63.3% of the variance in our sample’s intention to use AI-assisted weight management apps with satisfactory model fit: CMIN/df=1.932, GFI=0.966, AGFI=0.954, NFI=0.909, CFI=0.954, RMSEA=0.059, SRMR=0.050. Only performance expectancy, hedonic motivation, and the habit of using AI-assisted apps were significant predictors of intention. Comparison with existing literature revealed vast variabilities in the determinants of AI- and non-AI weight loss app acceptability in adults with and without overweight and obesity.

Conclusion: UTAUT2 produced a good fit in explaining the acceptability of AI-assisted apps among a multi-ethnic, developed, southeast Asian sample with overweight and obesity. UTAUT2 model is recommended to guide the development of AI-assisted weight management apps among people with overweight and obesity.
Oral Presentations 2

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Obesity Increases the Serum Exosomal ECM1 Protein Level that Enhances Breast Cancer Development under Obesity Conditions

Dr. Anna Hiu-Yee Kwan1, Mr. Keyang Xu1, Dr. Ai Fu2, Dr. Zhaoyi Li2, Dr. Liangbin Miao2, Dr. Zhonghan Lou2, Dr. Condon Lau2, Dr. Tao Su4, Prof. Teijin Tong5, Prof. Jianfeng Bao2, Prof. Aiping Lyu1

1Centre for Cancer and Inflammation Research, School of Chinese Medicine, Hong Kong Baptist University, Hong Kong SAR, 2Affiliated Hangzhou Xixi Hospital, Zhejiang University School of Medicine, China, 3Department of Physics, City University of Hong Kong, Hong Kong SAR, 4International Institute for Translational Chinese Medicine, School of Pharmaceutical Science, Guangzhou University of Chinese Medicine, China, 5Department of Mathematics, Hong Kong Baptist University, Hong Kong SAR

Background: Clinical studies show that obesity promotes breast cancer (BC) development. Obese BC patients usually have advanced disease stages at diagnosis, more complications and higher mortality when compared to non-obese BC patients. Currently, most of the suggested mechanisms that explain the enhanced BC development under obesity conditions are mainly focused on adipocyte dysfunctions.

Exosomes are extracellular vehicles released by many cell types. They mediate intracellular communication by transporting exosomal cargo to target cells. However, the exosomal cargo contents may be changed under pathological circumstances, which potentiate the pathological conditions.

Purpose: Here, we aimed to examine whether obesity affected the serum exosomal protein profiles and identify the exosomal protein(s) that mediated the enhanced BC development under obesity conditions.

Methods: We collected serum samples from obese (or overweight) and normal weight human subjects, and also from high-fat diet-induced obesity (DIO) mice and control-diet mice. We used iTRAQ-based quantitative proteomics and multiple reaction monitoring (MRM)-mass spectrometry to examine the serum exosomal protein profiles of these samples. Functional studies and constitutive Rab27a knockout (B6/J-Rab27a-Cas9-KO) mice were used to examine the roles of the identified exosomal protein in promoting BC development under obesity conditions.

Results: A total of 96 obese or overweight human subjects and 48 normal weight healthy subjects were recruited for their serum exosome samples. Our data showed that obesity significantly increased the extracellular matrix protein 1 (ECM1) protein level in the serum exosomes of the obese/overweight human subjects, which was also suggested in the DIO mouse models. The role of exosomes in mediating obesity-associated BC development was demonstrated by our interesting finding that obesity failed to increase the cancer growth and metastasis in the BC-bearing B6/J-Rab27a-Cas9-KO mice. More importantly, treatments with serum exosomes purified from DIO mice significantly enhanced the ECM-1 protein levels in the breast tumors and increased the BC metastasis and growth in these mice.

Conclusion: Our study is the first few reporting the important role of the exosomal ECM1 protein in mediating the enhanced growth and metastasis of BC under obesity conditions.

Implication of the study: Exosomes have high translational potential for disease treatments because of their endogenous functionality and intrinsic targeting property. Our study suggests a novel yet pragmatic exosomal-based strategy to treat obesity-associated BC.
Oral Presentations 2

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Consumer Experience of the Retail Food Environment in the Philippines

Dr. Elaine Borazon1, Prof. Dr. Bee Koon Poh2, Dr. Mohd Jamil Sameeha3, Dr. Sirinya Phulkerd3, Dr. Helen Trevena5, Dr. Anne-Marie Thow4, Dr. Cut Novianti Rachmi5, Ms. Ma. Rica Sidney Magracia6

1National Sun Yat-sen University, Kaohsiung City, Taiwan, 2Universiti Kebangsaan Malaysia, Kuala Lumpur, Malaysia, 3Mahidol University, Nakhon Pathom, Thailand, 4University of Sydney, Sydney, Australia, 5Reconstra Utama Integra, Jakarta, Indonesia, 6FEU Roosevelt, Cainta, Philippines

There has been an increase in both obesity and overweight prevalence in the Philippines, with overweight rising by 4.1% and obesity by 2.4% from 2015 to 2018. Modifying the community’s obesogenic environment to promote healthy food can reinforce social norms for healthier food consumption and reduce obesity rates. Therefore, this study aims to interpret consumer experiences, perceptions, and behaviors in various retail food environments (supermarkets, hypermarkets, convenience, and traditional stores) using a consumer-intercept survey. The questionnaire includes questions on sociodemographic characteristics, food shopping preferences, factors influencing food purchases, and perceptions of the retail food environment, including food availability and adequacy.

The study found that the majority of the respondents were from low-income households composed of four to five family members, and with an average monthly grocery spending of PHP 4588 (USD 81.85). The most purchased products across all food retail stores were bread (66.67%), instant noodles (63.38%), and chips (57.72%), indicating a high prevalence of low-nutrient, high-calorie foods in their diets. Consumers spent the most on basic staples such as rice (PHP 915.85), meat and chicken (PHP 581.90), and fish and seafood (PHP 413.75). The study revealed that the majority of processed food items (92.00%) and beverages (100.00%) were usually bought in the supermarket, while 58.80% of fresh food items were bought in traditional markets. Consumers claimed that they prefer purchasing food in retail stores that prioritize food safety (86.77%), freshness (82.85%), and quality (82.96%). Moreover, the study revealed a concerning trend in the perceived availability and adequacy of healthy food options, with only around half of the respondents (51.47%) perceiving healthy food to be available and less than half (44.81%) perceiving it to be adequate.

Overall, these findings provide valuable insights into the food purchasing behaviors and preferences of low-income households, highlighting the need for interventions to improve the retail food environment, increase access to healthy food options, and reduce obesity prevalence.
Positive Outlier Strategies on Sustaining Healthy Lifestyle Changes after an Online Weight Intervention Programme for Childhood Obesity

Ms. Adelia Jostanto, Ms. Khairunisa Bte Khaider, Ms. Catherine Hui En Liew, Ms. Siao Hui Toh, Dr. Elaine Chu Shan Chew

*Lee Kong Chian School of Medicine, Singapore, Department of Paediatrics, KK Women’s and Children’s Hospital, Singapore*

Background: Guidelines recommend intensive health behaviour lifestyle interventions to be more than 26 hours over 6 to 12 months for childhood obesity treatment. The Kick Start Move Smart (KSMS) programme was an online pilot programme for childhood obesity which involved counselling visits with physicians, exercise sessions with sports trainers, and nutrition sessions with dietitians which provided the recommended treatment hours. Some participating families showed significantly lower body mass index (BMI), improved quality of life and health behaviours, and were therefore identified as positive outliers. We hypothesise that the positive outliers’ strategies can be incorporated into a mobile health (mHealth) application to support parents in sustaining healthy lifestyle behaviours.

Purpose: To identify positive outlier strategies to sustain healthy lifestyle changes beyond the KSMS programme that can be incorporated into the development of an mHealth application.

Methods: Positive outliers from the KSMS programme were identified as families who completed more than 26 hours of intervention. A focus group discussion (FGD) involving five parents was conducted. Major themes discussed include strategies to sustain healthy lifestyle behaviour changes. The FGD was recorded, transcribed, and analysed using thematic analysis.

Results: Several strategies to sustain healthy lifestyle changes practised by positive outlier families were identified. Parent-child communication was crucial in tailoring the appropriate healthy lifestyle behaviours for their child. Knowledge about healthy lifestyle behaviours had supported the setting of family rules and sustaining of health behaviours for both child and parent. Positive reinforcements such as reward systems were helpful for some children in maintaining behavioural changes. Family-level changes included involvement of family members and peers in participation of health behaviours. Child involvement and participation in healthy lifestyle behaviours outside the home settings also helped to sustain the changes.

Conclusion: Positive outlier strategies including effective parent-child communication, knowledge about healthy lifestyle behaviours, and positive reinforcements or reward systems can be integrated into the mHealth application to better support parents in managing their child’s weight and sustaining healthy lifestyle changes.
Real-world Efficacy and Safety of Naltrexone-bupropion Therapy in Chinese Patients with Obesity: A Single-centre Experience

Dr. Kimberly Hang Tsoi, Dr. David Tak Wai Lui, Ms. Carol Ho Yi Fong, Ms. Nancy Su Jiang, Dr. Wing Sun Chow, Dr. Michele Mae Ann Yuen

1Department of Medicine, School of Clinical Medicine, Li Ka Shing Faculty of Medicine, The University of Hong Kong, Hong Kong SAR

Background: Naltrexone-bupropion (Contrave®) has shown efficacy and safety in large randomised controlled trials, predominantly consisting of Caucasians. Data are limited in the Asian populations.

Purpose: We carried out a retrospective case-control study of Chinese patients with obesity to evaluate the efficacy and safety of naltrexone-bupropion in real-world clinical practice.

Methods: We performed a retrospective case-control study of Chinese patients with obesity managed in the Obesity Clinic of Queen Mary Hospital in Hong Kong between December 2015 and December 2021. Electronic health records of patients treated with naltrexone-bupropion were retrieved for body weight and height, obesity-related metabolic parameters and adverse events over a 12-month period. Age- and sex-matched controls from the Obesity Clinic who were on self-directed lifestyle management only were identified for comparison of weight changes. General linear models were used to analyse the change in body weight over 12 months.

Results: Thirty-seven patients treated with naltrexone-bupropion were included (mean age 42.2±8.4 years, 54.1% men, baseline body mass index 37.3±4.6 kg/m2), with their characteristics comparable with the 37 age- and sex-matched controls. Among the 37 naltrexone-bupropion-treated patients, 18 (48.6%) and 13 (35.1%) of them continued treatment by 6 months and 12 months. They achieved mean weight loss of 9.2±5.2% at 6 months and 9.7±8.1% at 12 months, significantly more than the controls (p<0.001). There were concomitant improvements in the obesity-related parameters over 12 months. Ten patients (27.0%) discontinued naltrexone-bupropion due to side effects such as neurological and gastrointestinal manifestations, all within the first 12 months.

Conclusion: We demonstrated the real-world efficacy and safety of naltrexone-bupropion among Chinese patients with obesity.
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LIBERTY ASTHMA QUEST Study Design: 1960 patients who were 12 years of age or older with uncontrolled asthma were randomly assigned in a 2:1:1 ratio to receive add-on subcutaneous DUPLEXENT at a dose of 300 or 500 mg every 2 weeks or matched-value placebo for 52 weeks. The primary analysis was on the annualized rate of severe exacerbations and the absolute change from baseline to week 12 in the forced expiratory volume in 1 second (FEV1) before bronchodilators use in the overall treatment population. Secondary endpoints included the exacerbation rate and FEV1 in patients with a baseline FEV1 of less than 50% predicted. Eosinophilic and FeNO levels were compared with baseline eosinophilic and FeNO levels in the overall treatment population. Eosinophilic and FeNO levels were compared with baseline eosinophilic and FeNO levels in the overall treatment population.

References:

Presentation: Dupilumab: a solution for patients with uncontrolled asthma. Indications: Atopic Dermatitis, eosinophilic and FeNO-dependent asthma. Up to 72% reduction in significant exacerbation reduction in validated severe exacerbations at Week 24 with DUPLEXENT 200 mg Q2W + SOC vs placebo + SOC (P=0.0003)†. For patients with eosinophilic- and FeNO-dependent asthma at Week 52 with DUPLEXENT 200 mg Q2W + SOC vs placebo + SOC (P=0.001)†. 200 mL improvement in lung function at Week 52 with DUPLEXENT 200 mg Q2W + SOC vs placebo + SOC (P=0.001)†. 86% of patients reduced or no increase in their OCS dose by Week 24 with DUPLEXENT 300 mg Q2W + SOC vs 68% with placebo + SOC (P=0.001)†. Up to 75% of patients high responder rate in Asthma Control Questionnaire measures of sleep, activity, Limitations, and breathlessness†.

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