THE INTEGRATED WOMEN'S HEALTH PROGRAMME (IWHP): KEY FINDINGS

ABOUT IWHP
IWHP is a cohort study investigating associations between menopause and age-related health issues in midlife Singaporean women.

PARTICIPANTS DATA

<table>
<thead>
<tr>
<th>Number of women recruited</th>
<th>Average age</th>
<th>Average age of menopause</th>
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<td>1201</td>
<td>56</td>
<td>49</td>
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81% Married
41% University / higher education graduates
72% Post-menopausal

KEY FINDINGS FROM IWHP:

● SPINAL OSTEOPOOROSIS

6.8% of women had Spinal Osteoporosis (OP)

Chronic joint pain was the most commonly reported symptom (38%)

Top 5 variables with strong association with Spinal OP:

- Age
- Weight
- Post-menopausal status
- Right hand grip strength
- Chronic joint pain

Novel screening tool with these 5 variables can more reliably predict spinal OP in midlife Singaporean women.

● SLEEP APNEA

Partner-witnessed sleep apnea predicted higher Bone Mineral Density (BMD), independent of age, ethnicity, diabetes, body mass index (BMI) and hand grip strength.

Obstructive sleep apnea has a protective effect on bone health, which potentially could be applied to new drug development.
**Bone Mineral Density**

Bone Mineral Density (BMD) in midlife women differ by ethnicity and site:

- **Underweight, Chinese women** had a higher risk of osteoporosis.
- **Indian women** had higher femoral neck BMD.

Osteoporosis is more frequent in the Femoral Neck than in the Lumbar Spine.

**Loss of Bladder Control**

52% of healthy midlife Asian women reported Urinary Incontinence (UI).

Associated risk factors for UI are:

- Post-menopausal status
- Education level
- Obesity
- Ethnicity
- Women who have given birth

**Depression / Anxiety**

16% identified as having depressive and/or anxiety symptoms.

Weaker upper body (Lower hand grip strength) + Poor lower body strength (Longer duration to complete the repeated chair stand test)

were associated with the elevated odds for depressive (1.7x greater odds) and/or anxiety symptoms (1.3x greater odds).

**Insulin Resistance**

Factors associated with Insulin Resistance:

1. Obesity
2. High Visceral Adipose Tissue
3. Low physical performance
4. High Tumor Necrosis Factor - alpha

Higher Body Mass Index, greater Visceral Adipose Tissue and lower physical performance contributed to excess insulin resistance in women of Malay ethnicity (compared to Chinese women).

Higher levels of Tumor Necrosis Factor - alpha, in addition to higher Body Mass Index, greater Visceral Adipose Tissue and lower physical performance contributed to excess insulin resistance in women of Indian ethnicity (compared to Chinese women).
**VITAMIN D DEFICIENCY**

- 33% were deficient in Vitamin D
- 4x higher in women of Indian ethnicity
- 6x higher in women of Malay ethnicity

- 26% of the cohort sample had Hypertension
- Nulliparous, older women with lower education levels, with none or mild hot flushes were associated with higher Systolic Blood Pressure

**SEXUAL HEALTH**

- 56% of healthy midlife Asian women were sexually active in the past month
- Sexual dysfunction was identified in 70% of those who were sexually active.

- Underweight BMI and sexual inactivity were found to be correlated
- Women with weaker hand grip strength were associated with higher sexual dysfunction
- Women of Malay ethnicity were associated with lower sexual dysfunction

**HYPERTENSION**

- 44% of the cohort sample had Prehypertension

**REFERENCES**


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