1

The Show Must Go On - Menopause at the Crossroads of Art, Performance and Health

June Tan Sheren, MBBS, MMed Family Medicine, MSc Performing Arts Medicine
Tucker Medical, Singapore

Introduction / Objectives Performing artists represent high-functioning professionals in whom precision neuromuscular control, physical endurance, mental acuity, emotional regulation and physiological recovery are fundamental to their work. Menopause-related changes are potentially disruptive to performers, affecting physical, cognitive and emotional faculties that may compromise performance capacity and career longevity within a highly competitive industry. Voice change remains an under-recognized symptom of menopause in clinical practice, despite evidence that the most dramatic vocal shifts in women occur during menopause transition. A substantial body of literature on menopausal voice syndrome—long established within the professional singing and voice science communities—has informed best practices in voice care including modifications in technique, repertoire, lifestyle, and pharmacological interventions. This presentation aims to examine menopause care through the lens of performing arts medicine. The principles apply not only across performing arts disciplines, but may also offer transferable insights for clinicians caring for high-performing women in fields beyond the arts.

Materials and Methods This work synthesises interdisciplinary clinical experience from menopause medicine and performing arts medicine, supported by literature on hormonal effects on the singing voice, musculoskeletal health, cognition and mental health. The impact of menopause on performance health is examined. Existing practices in the management of menopausal voice syndrome are described.

Results / Discussion Menopausal changes affect multiple performance-critical systems. Dysphonia results from vocal fold changes similar to vulvovaginal atrophy in menopause. Musculoskeletal changes contribute to pain, increased injury risk and pelvic floor dysfunction. Brain fog, memory lapses, lack of focus and impaired concentration can be disastrous for any performer. Vasomotor symptoms and sleep disruption can exacerbate performance anxiety. Psychological changes including loss of identity can severely affect artistic output and mental well-being. Standard symptom-focused menopause assessments may fail to detect the full extent of the impact of menopause on performers, necessitating a personalized approach. Evidence from voice literature supports the effectiveness of targeted interventions in mitigating menopausal voice changes. These principles of management extend beyond singers to other performers across disciplines.

Conclusion Menopause presents occupational health challenges for performing artists with potential consequences for performance and careers. A personalized and function-led approach to care is required. Greater awareness of menopausal voice syndrome and related performance impacts may enhance clinical care for performing artists and other high-performing women whose work depends on finely-tuned physiological and cognitive performance.

2

Management of Menopausal Disorders in Japanese Working Women: A Nationwide Survey of Gynecologists

Ogawa M.1, Yamaguchi A.2, Iida M.3, Kinouchi R.4, Okano H.5, Takamatsu K6.
1. Fukushima Medical Center for Children and Women, Fukushima Medical University.
2. Department of Obstetrics and Gynecology, Fukushima Medical University School of Medicine.
3. Department of Preventive Medicine and Public Health, Keio University School of Medicine.
4. Department of Obstetrics and Gynecology, Institute of Health Biosciences, The University of Tokushima Graduate School.
5. Iidabashi Ladies Clinic.
6. Tsukubamirai Endo Ladies Clinic.

Introduction As the employment rate of middle-aged women rises, the impact of menopausal symptoms on labor productivity has become a significant social issue. Gynecologists play a crucial role in managing these symptoms to support women's continued workforce participation. This study aimed to investigate the current status of gynecological management for working women with menopausal disorders in Japan, focusing on physicians' perceptions, treatment practices, educational background, and the burden of clinical care.

Materials and Methods A web-based questionnaire survey was conducted among members of the Japan Society of Obstetrics and Gynecology (JSOG) currently engaged in clinical practice. We analyzed data from 919 valid responses. The survey items included physician demographics, clinical experiences regarding menopausal symptoms affecting work performance, treatment modalities, educational opportunities prior to board certification, and challenges in practice. Additionally, consultation times for menopausal disorders were quantitatively compared with those for dysmenorrhea using Wilcoxon signed-rank test to evaluate the time burden.

Result/Discussion Of the respondents, 59.3% were female, 60.5% were aged 40–59, and 85.2% worked full-time. Regarding the impact on working women, 89.4% of physicians had encountered patients complaining of reduced work performance due to menopausal disorders, and 57.8% had seen patients requiring absenteeism. Notably, 82.4% reported observing improvements in work performance following treatment. The most common treatments were Kampo (Japanese herbal medicine) (97.8%) and HRT (97.5%). However, regarding education, 66.4% stated they had "little" or "no" opportunity to acquire knowledge on menopausal medicine before obtaining their board certification. The major challenges cited in practice were "diverse symptoms" (69.7%) and the care being "time-consuming" (63.9%). Quantitative analysis revealed that consultation times for menopausal disorders were significantly longer than those for dysmenorrhea for both initial visits (19.8±12.6 vs. 18.5±10.3 min, $P<0.001$) and follow-up visits (9.2±5.4 vs. 7.9±4.9 min, $P<0.001$), reflecting the complexity of management.

Conclusion Japanese gynecologists actively manage menopausal disorders in working women and recognize the high efficacy of treatment in restoring work performance. However, physicians face challenges related to insufficient pre-specialist education and the time-intensive nature of care due to symptom complexity. To better support the working menopausal population, it is necessary to enhance educational programs for residents and establish efficient clinical management systems that accommodate the time required for comprehensive care.

3

Potentiating effects of equol supplementation on aerobic exercise-induced arterial destiffening in postmenopausal women

Uchiyama S1, Ito N1, Hayashi K2
1) R&D Headquarters, Nutraceutical Division Otsuka Pharmaceutical Co. Ltd.
2) Institute of Sports and Health Education, Department of Human Development, Kokugakuin University

Introduction/Objectives Central arterial stiffness increases markedly after menopause and contributes cardiovascular disease. Equol, a metabolite of soy isoflavone daidzein, has estrogen-like bioactivity. However, only 30-50% of women can endogenously produce it. Previously, we demonstrated that when isoflavone intake was combined with aerobic exercise intervention, carotid artery stiffness decreased significantly in equol producers but not in non-producers. This study revealed whether the equol supplementation synergistically affects aerobic exercise-induced reductions in central arterial stiffness in non-producers.

Materials and Methods This study is two randomized, double-blind, placebo-controlled, two-period crossover trials involving a total of 44 healthy non-producers: one trial was conducted in 22 women assigned to a combined aerobic exercise plus supplement intervention, and the other trial was conducted in 22 women assigned to a supplement-only intervention. Participants ingested either equol supplements (10 mg S-equol/day) or placebo for 12 weeks separated by a 12-week washout. The equol supplements and placebo tablets were manufactured by the Otsuka Pharmacological Co., Ltd (Tokyo, Japan). The exercise plus supplementation group completed supervised aerobic exercise training 2-3 days/week.

Results/Discussion The final PPS analysis included 13 women in the intervention group combining aerobic exercise plus supplement, and 16 women in the intervention group with supplements only. In the exercise plus supplementation group, equol supplementation resulted in a significantly greater reduction ($p<0.05$) in carotid artery β-stiffness index (-18%) compared with placebo (-8%) with a similar trend observed for arterial compliance. Flow-mediated dilation of the brachial artery increased significantly after the exercise training regardless of the presence of equol supplementation. In contrast, the supplement only group showed no differential effect of equol on arterial stiffness.

Taken together, our results demonstrate that equol supplementation significantly enhanced the magnitude of reductions in carotid arterial stiffness induced by aerobic exercise. This synergistic effect may reflect the estrogen-like actions of equol on vascular function, thereby potentiating the adaptive response to aerobic exercise.

Conclusion These findings indicate that equol supplementation synergistically augments aerobic exercise training-induced reductions in central arterial stiffness in postmenopausal women who can't produce equol, supporting a hybrid lifestyle strategy to improve vascular health in this at-risk population.

4

Relationship Between Equol Status and Oral Health in Postmenopausal Japanese Women

Uchiyama S1, Kitaoka R1, Ueno T1, Iino K2, Kobayashi W3, Murashita K4

1) R&D Headquarters, Nutraceutical Division Otsuka Pharmaceutical Co. Ltd.
2) Department of Obstetrics and Gynecology, Hirosaki University Graduate School of Medicine
3) Department of Oral and Maxillofacial Surgery, Hirosaki University Graduate School of Medicine
4) Research Institute of Health Innovation, Hirosaki University

Introduction/Objectives Equol, produced by gut bacteria from soy isoflavones (daidzein), exhibits higher estrogen-like activity than its precursor. Due to its particularly strong binding affinity to estrogen receptor β, it is expected to act as a selected estrogen receptor β-selective phytoestrogen. and is also called a PhytoSERM. Equol is considered beneficial for various symptoms associated with estrogen deficiency, especially in postmenopausal women. Furthermore, it exhibits selective androgen modulator, antioxidant, and anti-inflammatory effects, suggesting its physiological actions are diverse including men. However, not all individuals can produce equol, and individuals are classified as equol producers or non-producers. Numerous studies have explored the association between equol production capacity and various diseases and symptoms in postmenopausal women. In postmenopausal women, decreased salivary secretion is often linked to reduced estrogen levels. This decrease in salivary secretion can contribute to oral health issues such as halitosis, taste disorders, glossodynia, progression of periodontal disease, and increased risk of dental caries. However, the direct relationship between equol and these oral health parameters has not yet been established.

The purpose of this study is to investigate the association between equol-producing ability and oral health status in postmenopausal women.

Materials and Methods We utilized data from the 2023 Iwaki Health Promotion Project, a large-scale, population-based longitudinal health survey conducted annually in Hirosaki City, Aomori Prefecture, Japan. Started in 2005, the project has enrolled approximately 1,000 residents each year, thereby providing extensive health assessments and valuable longitudinal data for public health research. For this analysis, we included 281 postmenopausal women who self-reported cessation of menstruation for at least one year. Oral health parameters assessed included salivary secretion rate, oral mucosal moisture, tongue pressure, oral diadochokinesis, number of teeth, and oral health–related quality of life (OHIP-14). Equol production capacity was determined by calculating the log ratio of urinary equol to daidzein concentrations in spot urine samples.

Results/Discussion Of the 281 participants, 131 (46.6%) were identified as equol producers. There was no significant difference in age and BMI between the two groups. Equol producers exhibited significantly higher salivary secretion rates, elevated salivary IgA levels, and better OHIP-14 scores compared to non-producers.

Conclusion These findings suggest that equol production capacity is positively associated with favorable oral health outcomes in postmenopausal women. Further research is warranted to validate these preliminary findings and clarify the underlying mechanisms.

5

Relationship Between Equol Status and Wrist and Shoulder joint function in Postmenopausal Japanese Women

Uchiyama S1, Kitaoka R1, Ueno T1, Iino K2, Murashita K3

1) R&D Headquarters, Nutraceutical Division Otsuka Pharmaceutical Co. Ltd.
2) Department of Obstetrics and Gynecology, Hirosaki University Graduate School of Medicine
3) Research Institute of Health Innovation, Hirosaki University

Introduction/Objectives Equol, a metabolite produced by gut bacteria from the soy isoflavone daidzein, has stronger estrogen-like activity than its precursor and exhibits high binding affinity for estrogen receptor β. Therefore, it is considered as a selected estrogen receptor β-selective phytoestrogen (PhytoSERM). Equol has been reported to alleviate various symptoms associated with estrogen deficiency in postmenopausal women, and furthermore exhibits selective androgen modulator, antioxidant, and anti inflammatory properties. However, only a portion of individuals can produce equol, classifying them as equol producers or non producers. Joint pain is a common menopausal symptom, yet its mechanisms remain insufficiently clarified. Previous studies suggest that equol may alleviate pain related to finger joint disease (Heberden's and Bouchard's nodes). Nevertheless, the relationship between equol producing ability and overall wrist and shoulder joint function has not been fully examined. This study aimed to investigate the associations between equol-producing status and wrist and shoulder joint function and activities of daily living (ADL) in postmenopausal women.

Materials and Methods Data were obtained from the 2023 Iwaki Health Promotion Project, a large-scale, population-based longitudinal health survey conducted annually in Hirosaki City, Aomori Prefecture, Japan. Started in 2005, the project has enrolled approximately 1,000 residents each year. For this

analysis, 281 postmenopausal women who reported at least one year since their last menstruation were included. Assessments consisted of wrist and shoulder joint range of motion, shoulder abduction strength, and functional evaluation using the HAND20 and the Shoulder Pain and Disability Index (SPADI). Equol production status was determined based on the log ratio of urinary equol to daidzein concentrations in spot urine samples.
Results/Discussion Of the 281 participants, 131 (46.6%) were categorized as equol producers. No significant differences were observed in age and BMI between the equol producer and non-producer. Specifically, significant differences between groups were observed in wrist joint dorsal flexion (right and left), shoulder joint abduction angle, shoulder abduction muscle strength, HAND20 scores, and SPADI scores. Equol producers showed superior joint range of motion, greater muscle strength, and better functional status, as evidenced by lower HAND20 and SPADI scores.
Conclusion Equol-producing ability is positively associated with improved wrist and shoulder joint function and ADL performance in postmenopausal women. Equol's biological properties, including its SERM-like and anti-inflammatory effects, may contribute to these differences. Further research is warranted to elucidate the mechanistic pathways underlying these relationships and explore potential therapeutic interventions for joint health in postmenopausal populations.

6

Life's Essential 8 Cardiovascular Health Metrics and Lipoprotein(a) in Women Healthcare Workers in relation to Menopause Status

Yufei Li1, Brenda Shak2, Carolyn Yap2, Soon Kieng Phua3, Tar Choon Aw1,4, Wann Jia Loh1,4
1 Duke-NUS Medical School
2 Clinical Trial Research Unit, Changi General Hospital, Singapore
3 Department of Laboratory Medicine, Changi General Hospital
4 Department of Endocrinology, Changi General Hospital

Background The majority of the healthcare workers are women. Yet, the cardiovascular health (CVH) status and prevalence of elevated lipoprotein(a), a genetic cardiovascular risk factor, among women healthcare workers remain unclear. This study investigated the American Heart Association's Life's Essential 8 (AHA's LE8) CVH metrics and lipoprotein(a) concentrations of women healthcare workers in Singapore, particularly in relation to menopause status.
Methods A total of 1525 female healthcare workers participated in the LPACO study. Their CVH scores were calculated using the AHA's LE8 metrics, and serum lipoprotein(a) was measured. Overall CVH score, health behaviour scores (diet, exercise, smoking, sleep), and health factor scores (body mass index, blood lipids, glucose, blood pressure) were stratified by age, ethnicity, job type, and menopause status.
Results Of all participants, the mean age was 39.4 years, 56% were Chinese, and 41% were from nursing, 17.2% reported being post-menopausal. The mean of the overall CVH score was 69.7 ± 11.9 (out of 0-100), with the lowest mean scores in diet (49.2 ± 12.1) and physical activity (35.9 ± 42.8) metrics. Mean overall CVH score decreases with age, with the best score found in the age 20-29 years group, followed by the age 30-39, age 40-49, and age≥50 (74.2, 69.7, 69.3, 65.3, respectively; $p<0.001$). Chinese workers have the highest overall CVH score, followed by Filipinos, Indians, and Malays (71.8, 69.0, 67.5, 64.4; $p<0.001$). Across job types, doctors have the highest overall CVH score, followed by AHPs, nurses, administrative, and ancillary roles (74.8, 73.1, 68.8, 68.2, 65.9; $p<0.001$). The menopause group compared with the non-menopause group had lower mean health behaviour scores (66.5 vs. 63.4, $p=0.003$) and mean health factor scores (63.6 vs. 78.0, $p<0.001$). Median lipoprotein(a) concentration was higher in the menopause group compared to the non-menopause group [19.2 vs 16.2 nmol/L, $p=0.002$]. Elevated Lipoprotein(a) >105 nmol/L was observed in 10% of the cohort, higher in the menopause group than in the non-menopause group (14% vs 9.4%, $p = 0.034$).
Conclusion Menopause was associated with worse cardiovascular health metrics and a higher prevalence of elevated lipoprotein(a) that affects 14% of women healthcare workers who had menopause. Modifiable risk factors that require substantial improvement are diet and physical activity, particularly among postmenopausal women.
Keywords: female, healthcare workers, cardiovascular health, Life's Essential 8, health behaviour, health factor, lipoprotein(a), women's health, nurses.

7

A Case of a Breast Cancer Survivor with Rupture of an Endometriotic Cyst and Growth of a Submucosal Myoma in the Right Ovary During Tamoxifen Administration

Koichi Shinohara1, Natsuki Nakanishi1, Kazushi Watanabe1, Satoko Osuga1, Seina Fujiwara2
1 Department of Obstetrics and Gynecology, Aichi Medical University,
2 Department of Obstetrics and Gynecology, Hekinan Municipal Hospital

Introduction Tamoxifen (TAM) is a selective estrogen receptor modulator (SERM) primarily used in the Adjuvant therapy of breast cancer. It exhibits antiestrogenic activity in breast tissue but estrogenic activity in the endometrium. TAM has also been reported to increase endometrial polyps, endometrial hyperplasia, and endometrial cancer.
Objectives We report a case of endometriotic cyst rupture during TAM therapy.
Ethical Considerations This case was published with the patient's consent and with due consideration given to the confidentiality of personal information.
Result/Discussion Patient: 50 years old, 0 pregnancies. Regarding breast cancer, Left IDC pT1 (11mm) N0 (0/1) M0 grade 2 Ki67 20% ER 100% PR 100% HER2 negative. Right IDC pT1 (4.9mm) N0 (0/1) M0 grade 2 Ki67 5% ER 100% PR 100% HER2 negative. Bilateral Breast Cancer + SLNB. Five years of TAM was planned as adjuvant therapy.
Family history Mother had bilateral breast cancer. Mother's sister had unilateral breast cancer. Mother's sister's daughter had unilateral breast cancer. Father had prostate cancer.
Although the patient was BRCA negative, due to her strong genetic background, a total hysterectomy with bilateral salpingo-oophorectomy (BSO) was proactively recommended. MRI revealed a 4cm endometriotic cyst in the right ovary. A 37mm submucosal fibroid was also present. CA125: 36U/mL. TAM showed E2: 238pg/mL and FSH: 5.0mIU/mL, indicating that ovulation was not suppressed. GnRH antagonist andAI were also suggested. However, due to acute abdominal pain and a ruptured endometriotic cyst, an emergency laparotomy with total hysterectomy and BSO was performed.
Conclusion The use of TAM after breast cancer surgery may increase the risk of developing hormone-dependent gynecological diseases.
GnRH antagonists are also an option for endocrine therapy for ER-positive breast cancer, so we felt it was necessary to coordinate efforts, including the presence or absence of hormone-dependent gynecological diseases, before initiating TAM.

8

Menopausal hormone therapy shows organ-specific associations with liver and bone outcomes in a longitudinal Taiwanese cohort

I-Jung Feng1,2| Yi-Hung Sun3 |Nga-San Hong4| Ming-Lung Yu2,5 | Yung-Chieh Tsai4
1Institute of Precision Medicine, National Sun Yat-Sen University, Kaohsiung, Taiwan
2The Center of Excellence for Metabolic Associated Fatty Liver, National Sun Yat-sen University, Kaohsiung, Taiwan
3Department of Obstetrics and Gynecology, Pingtung Veterans General Hospital, Pingtung, Taiwan
4Center for Reproductive Medicine, Department of Obstetrics and Gynecology, Chi-Mei Medical Center, Tainan, Taiwan
5Hepatobiliary Division, Department of Internal Medicine and Hepatitis Center, Kaohsiung Medical University Hospital, Kaohsiung Medical University, Kaohsiung, Taiwan

Introduction/Objectives Menopause may accelerate metabolic-associated steatotic liver disease (MASLD), fibrosis risk and bone deterioration, yet real-world evidence on menopausal hormone therapy (MHT) is inconsistent. We assessed associations of menopausal status and MHT use with incident liver and bone outcomes in a large Taiwanese health check-up cohort.
Materials and Methods We integrated multi-year MJ Health Check-Up data for women aged 45–65 years and constructed four disease-free cohorts: MASLD-free (N=9,505), fibrosis-free (baseline FIB-4 <1.3; N=10,670), normal bone mineral density for incident osteopenia (N=15,323), and non-osteoporosis for incident osteoporosis (N=12,545). Menopause was defined by questionnaire menstrual history. Index date was the first visit recording menopause for postmenopausal women and the first health check-up visit for premenopausal women. Among postmenopausal women, MHT use was compared with no MHT use. Outcomes were incident MASLD, incident significant fibrosis risk during follow-up, and DXA-defined osteopenia/osteoporosis. Cox proportional hazards models estimated adjusted hazard ratios (aHRs) with 95% confidence intervals, adjusting for demographics, lifestyle factors, adiposity, metabolic indicators and liver function markers.
Result/Discussion Postmenopause (vs premenopause) was associated with higher risks: MASLD aHR 1.79 (95% CI 1.50–2.14), significant fibrosis risk 2.57 (2.14–3.09), osteopenia 2.93 (2.58–3.34) and osteoporosis 9.19 (6.79–12.44) (all p<0.0001). MASLD incidence increased from 17.9 to 29.5 per 1,000 person-years after menopause. In postmenopausal women, MHT showed no statistically significant associations with liver outcomes (MASLD 1.07 [0.90–1.28]; fibrosis risk 0.95 [0.80–1.12]) but was associated with lower risks of bone outcomes (osteopenia 0.80 [0.72–0.88]; osteoporosis 0.69 [0.59–0.81]). This organ-specific contrast suggests that hepatic associations of MHT may vary across individuals and could be attenuated when evaluated as an overall average effect.
Conclusion In this longitudinal cohort, menopause was associated with increased liver and skeletal risks. Among postmenopausal women, MHT was bone-protective while liver associations were neutral on average. Further analyses incorporating detailed MHT regimens and metabolic risk profiles are needed to clarify potential heterogeneity in hepatic associations.

9

Physical Activity Interventions for Mental Health in Menopausal Women: A Systematic Review (2015–2025)

Melissa Gan University College London

Background Mental health challenges, including depression and anxiety, are commonplace in menopausal individuals and contribute significantly to a reduced quality of life. Physical activity is a non-pharmacological intervention shown to improve mental health outcomes in menopausal individuals. However, evidence on the extent of its effectiveness and the most effective types of interventions remains limited. In the United Kingdom, several new public health policies have been introduced to support menopausal individuals, including the expansion of social prescribing, which connects individuals to non-clinical community services such as exercise class and well-being activities. Additional policies are expected in the coming years.
Objectives This systematic review aims to evaluate the effectiveness of physical activity interventions in improving the mental health outcomes of menopausal women in the United Kingdom. This review integrates clinical effectiveness with policy relevance, ensuring that findings are actionable and aligned with public health priorities in the United Kingdom.
Methods This review followed PRISMA guidelines. Searches were conducted in CINAHL and MEDLINE for studies published between 2015 and 2025. Eligible studies included women experiencing menopause and assessed structured physical activity interventions (e.g., aerobic exercise, resistance training, yoga, Pilates, HIIT) compared with minimal or no activity. Study designs comprised randomized controlled trials, clinical trials, observational studies, and qualitative studies. Risk of bias was assessed using RoB2 for RCTs, ROBINS-I for non-randomized studies, and CASP for qualitative studies. Certainty of evidence was evaluated using GRADE. Given heterogeneity in interventions and outcomes, findings were synthesised narratively.
Results Eighteen studies were included. Mind-body interventions were associated with the most significant improvements in outcomes, while supervised training programs showed notable benefits in reducing anxiety and depressive symptoms. Evidence regarding the influence of socio-economic status was limited. According to GRADE assessment, certainty of evidence was moderate for improvements in depression, anxiety, stress, and overall psychological well-being, and low-to-moderate for mood outcomes. The small number of studies conducted in the United Kingdom highlight a significant evidence gap.
Conclusion Structured physical activity interventions, particularly mind-body interventions, positively impact mental health during menopause. Although most evidence originates from international studies, the findings remain relevant to national menopause policies. Translating these interventions into evidence-based policy is critical to ensure equitable mental health benefits, particularly for women in lower socio-economic groups. Further research is needed, focusing on psychosocial factors, inclusive terminology, and implementation-focused designs. The protocol for this review was registered with PROSPERO (Registration number: 1148222) as part of a training record.

10

Beyond the WHI: Persistent Safety Misconceptions 20 Years Later

Farah S.1, Lee JJ.1, Aggarwal I.1, Puvanendran R.1
1KK Women and Children's Hospital

Background The 2002 Women's Health Initiative (WHI) study dramatically altered menopause hormone therapy (MHT) prescribing patterns. Despite two decades of subsequent research and updated guidelines, physician attitudes may remain anchored to historical safety concerns, potentially limiting patient access to evidence-based treatment.
Methods We conducted a cross-sectional survey of 186 physicians practicing menopause management in Singapore, including 113 Family Medicine and 73 Obstetrics & Gynaecology specialists. Knowledge was assessed using 21 questions covering indications, contraindications, risks, and clinical scenarios.

Attitudes were evaluated through five targeted questions examining confidence, safety perceptions, and prescribing behaviours. Participants were stratified by clinical experience to examine generational differences in MHT attitudes.

Results Persistent safety misconceptions were widespread, with 61.3% of physicians expressing concerns about MHT's safety profile regardless of patient medical history. Paradoxically, physicians with >20 years experience demonstrated significantly greater safety concerns than younger colleagues ($p<0.05$), suggesting lasting impact from the WHI era. Specific misconceptions reflected outdated understanding: 74.7% incorrectly believed MHT increases endometrial cancer risk, whilst 66.1% were unaware of gallbladder disease risk. The clinical impact proved substantial: physicians with safety concerns scored significantly worse on clinical scenarios (20.0% vs 46.5% achieving ≥4/6 correct answers, $p<0.001$). Despite 83.9% recognising MHT as essential treatment, only 69.9% would recommend it to patients, and 72.6% to family members. Most concerning, 52.2% would avoid hormonal treatment for premature ovarian insufficiency patients, potentially denying young women crucial cardiovascular and bone protection.

Conclusions Twenty years post-WHI, physician safety perceptions remain disproportionately influenced by historical data rather than contemporary evidence. This perpetuates treatment barriers for eligible women. Targeted educational interventions emphasising current risk-benefit profiles could reshape clinical practice and improve patient access to evidence-based menopause care.

11

Cross-sectional Population-based Survey of Perimenopausal Women for Menopause Symptoms and Attitudes

Dypti Lulla, Ang Seng Bin, Shirley Kwok, Rukshini Puvanendran

Background Menopause symptoms and experience varies considerably between women and can in influenced by multiple biopsychosocial and cultural factors, age and ethnicity. In this study, we studied the symptoms and attitudes of perimenopausal women in Singapore.

Methods Women aged 40-60 attending women's health talks and forums in Singapore completed an anonymized, voluntary online questionnaire in English. We collected demographic information, assessed menopause status and attitudes towards menopause and hormone therapy. Participating reporting menopause symptoms completed the Menopause Rating Scale (MRS) questionnaire.

Results 147 perimenopausal women reported at least one moderate to very severe symptom of menopause. Most common menopause symptoms reported were joint and muscular discomfort (44.2 percent), followed by sleep problems (43.5 percent) and physical and mental exhaustion (39.5 percent). Common terms for attitudes towards menopause included natural (51.3 percent), old age (45.0 percent), and threatening, dreading, causing symptoms and health problems (40.0 percent).

Conclusion This population-based study sheds light on common symptoms of perimenopausal women and their attitudes towards menopause and hormone therapy.

17

Managing treatment-induced and exacerbated menopause in breast cancer survivors: Communication and support strategies to optimize endocrine therapy adherence and outcomes

GALIANO, I.
INSTITUTION: Thrive On Pte Ltd, Singapore

Introduction/Objectives Endocrine therapy (ET) for hormone receptor–positive breast cancer commonly induces premature menopause in premenopausal women and exacerbates menopausal symptoms in postmenopausal patients, including vasomotor, musculoskeletal, and sleep disturbances. These symptoms are frequently under-prepared for and under-managed, undermining treatment persistence. Suboptimal adherence is directly associated with increased recurrence risk and breast cancer–specific mortality. This presentation aims to demonstrate how menopause-focused preparation, communication, and structured support can improve ET adherence and long-term clinical outcomes.[1][2][3]

Materials and Methods This work synthesizes a decade of breast cancer survivorship coaching experience at Thrive On Pte Ltd with a comprehensive review of oncology literature regarding ET side effects and adherence. We analyzed the "Preparation Gap" and "Toxicity Burden" using data from Lambertini et al. (2023) and Grigorian et al. (2022). Effectiveness was evaluated through a meta-analysis of 25 studies regarding supportive interventions (Bright et al., 2023) and real-world implementation success via the Malaysia Pink Ribbon Initiative (Schliemann et al., 2024), which utilized nurse-led navigation for emotional and barrier resolution.[1]

Result/Discussion Three modifiable barriers to adherence emerged from the synthesis:

1. The Preparation Gap: Many women are not adequately informed about the intensity and nature of menopause-related symptoms associated with ET, which significantly amplifies psychological distress when symptoms appear.[1] 2. The Toxicity Burden: Joint pain, sleep disturbance, and sexual dysfunction act as treatment-limiting toxicities rather than minor side effects; notably, 30% of women discontinue therapy due to joint pain alone.[1] 3. System Disconnection: Approximately 33% of patients discontinue ET silently without consulting their clinicians, highlighting a failure in ongoing communication and follow-up.[1] Meta-analytic data confirms that menopause-aware counseling and regular structured contact (navigation) significantly improve ET adherence compared to usual care. In the Pink Ribbon Initiative, structured navigation improved treatment adherence from 87% to 98%. Improved persistence with ET is consistently linked to a significant reduction in recurrence risk and mortality benefits in both pre- and post-menopausal populations.[4][5][1]

Conclusion For women experiencing treatment-induced or exacerbated menopause, education alone is insufficient to maintain adherence. Menopause-specific preparation, empathetic listening, and structured, continuous support must be integrated into the multidisciplinary continuum of care. By addressing the "support gap," we can optimize endocrine therapy adherence and ensure that life-saving clinical prescriptions translate into long-term survival.

Sources

[1] Slides-Adherence-crises.pdf https://ppl-ai-file-upload.s3.amazonaws.com/web/direct-files/attachments/55830198/666c587c-c9af-413e-8f41-18783f25e4b1/Slides-Adherence-crises.pdf

[2] Adherence to Cancer Survivorship Care Guidelines and ... https://ascopubs.org/doi/10.1200/GO.21.00246

[3] Cancer treatment and survivorship statistics, 2025: An urgent call to ... https://pmc.ncbi.nlm.nih.gov/articles/PMC12223334/

[4] Cancer treatment and survivorship statistics, 2025 - Wagle https://acsjournals.onlinelibrary.wiley.com/doi/full/10.3322/caac.70011

[5] Cancer Treatment & Survivorship Facts & Figureswww.cancer.org › research › cancer-facts-statistics › survivor-facts-figures https://www.cancer.org/research/cancer-facts-statistics/survivor-facts-figures.html

19

Association between menopausal symptoms and subjective sleep quality in Japanese working women

Makiko Arima[1], Yoshikuni Edagawa[2], Kohta Suzuki[3], Nahoko Shirato[1], Chikako Kawahara[4], Yoshie Miwa[5]
[1] Showa Medical University, Tokyo, Japan
[2] Ritsumeikan University, Osaka, Japan
[3] Aichi Medical University, Aichi, Japan
[4] Teikyo University, Tokyo, Japan
[5] Women's Healthcare Awareness & Menopause Network Society. Tokyo, Japan

Introduction / Objectives Sleep disturbances are common during the menopausal transition and represent an important health concern among midlife women. Subjective sleep quality may reflect psychological and physiological conditions beyond objectively measured sleep duration. Menopausal symptoms, particularly psychological symptoms, may contribute to perceived sleep impairment. This study aimed to examine the association between menopausal symptoms and subjective sleep quality and to compare the influence of symptom domains and objectively measured sleep duration in Japanese working women.

Materials and Methods We analyzed data from 92 Japanese working women aged 40–60 years. Menopausal symptoms were assessed using the Simplified Menopausal Index (SMI), which evaluates vasomotor, psychological, and somatic symptoms. Subjective sleep quality over the past month was assessed using the global sleep quality item of the Pittsburgh Sleep Quality Index (PSQI). Objective sleep duration was measured using a wearable sleep monitoring device. Multiple linear regression analysis was performed with subjective sleep quality as the dependent variable. Independent variables included SMI domain scores, objective sleep duration, age, and working hours.

This study was supported by the Japan Agency for Medical Research and Development (AMED).

Results / Discussion Psychological symptom scores were significantly associated with poorer subjective sleep quality ($\beta = -0.679$, $p = .001$), whereas objective sleep duration was not significantly associated ($p = .170$). Vasomotor and somatic symptom scores were also not significant predictors.

These findings suggest that subjective sleep quality in midlife women is more strongly associated with psychological menopausal symptoms than with objectively measured sleep duration.

Conclusion Psychological menopausal symptoms were independently associated with subjective sleep quality, while objectively measured sleep duration was not. Assessment of menopausal symptoms, particularly psychological symptoms, may be important for understanding sleep-related complaints and supporting appropriate health management in midlife women.

20

The MARIE Project: A Global, Multidimensional Examination of Menopausal Health with Insights from Singapore

Ieera Madan Aggarwal1, Vindya Pathiraja2, George Uchenna Eleje3, Jie Sun4, Gayathri Delanerolle5
1. KK Women's and Children Hospital, Singapore
2. University of Ruhana, Matara, Sri Lamka
3. Nnamdi Azikiwe University, Awka, Nigeria
4. Southern University of Science and Technology, Shenzen, China
5. Hampshire and Isle of Wight Healthcare NHS foundation Trust, Southampton, United Kingdom

Background The MARIE Project (Menopause and Ageing Research in International Environments) is a global research initiative spanning 13 countries, designed to generate the first cross-country, multidimensional evidence base on menopausal health. Moving beyond menopause as a purely biological transition, MARIE conceptualizes it as a complex life-course experience shaped by psychological wellbeing, socio-cultural norms, structural inequities, and health-system responsiveness. By integrating women's lived experiences with contextual determinants, the project demonstrates how symptom burden, delayed recognition, and inequitable access to care persist across diverse income settings. This abstract presents findings from the overall MARIE framework with emphasis on the Singapore arm (WP2A), highlighting how global patterns intersect with a high-income, multicultural Asian context.

Methods MARIE employs a mixed, equity-oriented research design across 13 countries, incorporating qualitative and quantitative components to examine biological, psychological, socio-cultural, and health-system domains. The Singapore qualitative study purposively sampled 18 women across perimenopause, natural menopause, and surgical/medically induced menopause, ensuring variation in ethnicity, socio-economic status, comorbidity, and healthcare access. Semi-structured interviews were analyzed using the Delanerolle and Phiri Framework, enabling structured cross-domain and cross-national comparison.

Results Across countries, including Singapore, menopausal experiences were heterogeneous but marked by consistent structural patterns. Vasomotor symptoms, genitourinary syndrome of menopause (GSM), sleep disruption, musculoskeletal pain, and cognitive changes were widely reported. Psychological sequelae including anxiety, mood instability, and occupational impairment were frequently compounded by workplace pressures and caregiving roles. In Singapore, a high-income nation with advanced healthcare infrastructure, key challenges mirrored global findings: inconsistent primary care knowledge, reluctance to prescribe hormone replacement therapy (HRT), fragmentation of services, and cost disparities between public and private sectors. Socio-cultural silence particularly around sexual health reinforced delayed symptom recognition and reliance on informal networks. Surgical menopause and multimorbidity intensified symptom burden while narrowing treatment options.

Notably, participation in MARIE itself prompted symptom recognition and help-seeking among some Singapore participants, underscoring menopause's systemic invisibility in routine health screening. Across settings, resilience mediated by social support, health literacy, and workplace flexibility buffered distress but was unevenly distributed, reflecting broader structural inequities.

Conclusions Through its analytical framework and cross-national design, MARIE provides a coherent global narrative: menopausal health remains systematically under-recognized, and existing healthcare pathways frequently fail to meet women's multidimensional needs, irrespective of national income level. The Singapore findings exemplify how even well-resourced systems can reproduce inequities when cultural stigma, fragmented services, and limited clinician training persist. Embedding women's voices into clinical pathways, strengthening culturally competent training, integrating menopause into chronic disease management, and legitimizing menopause within workplace and public health policy are critical next steps. MARIE positions menopausal health not as an individualized transition, but as a global public health and equity priority requiring coordinated international response.

Keywords: Menopause, Perimenopause, Surgical menopause, HRT, Women's health, Health systems, Workplace health, MARIE project

22

Age at menarche, menopause, reproductive life span and postmenopausal sexual discomfort: a prospective cohort study

Zhuolin Xiea, Ruiyi Tanga, Feiling Huanga, Penghui Fenga, Yubo Fana, Rong Chen, MDa*
National Clinical Research Center for Women's Health and Obstetric and Gynecologic Diseases, Department of Obstetrics and Gynecology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China

Objective Reproductive life span serves as a crucial indicator of cumulative endogenous estrogen exposure. While the timing of reproductive milestones impacts long-term health outcomes, their specific effects on postmenopausal symptoms vary significantly across ethnicities, cultures, and socioeconomic backgrounds. Crucially, to date, no studies have specifically examined the associations of age at menarche, age at menopause, or reproductive life span with menopausal symptoms in Chinese women. To fill this critical knowledge gap, this study aims to investigate the impact of these reproductive factors on the prevalence and severity of menopausal symptoms in a midlife Chinese population.
Methods This prospective, community-based longitudinal study included 557 midlife women from the Peking Union Medical College Hospital Aging Longitudinal Cohort of Women in Midlife (PALM). Reproductive life span was calculated by subtracting age at menarche from age at menopause. Menopausal symptoms were evaluated through the Menopause-Specific Quality of Life (MENQOL) questionnaire, covering vasomotor, psychosocial, physical, and sexual domains. Generalized estimating equations (GEE) with a logistic regression model were used to estimate adjusted odds ratios (aORs) for associations between reproductive factors and menopausal symptoms.
Results Mean age at menarche and menopause were 13.92±1.62 and 50.56±3.20 years, with a mean reproductive life span of 36.64±3.56 years. Multivariate analysis revealed that women with menopause before age 40 had a significantly higher risk of sexual discomfort (aOR= 3.961, 95% CI: 1.228, 12.780) compared with the reference normal age group (50-54 years). Similarly, a shorter reproductive life span (<30 years) was linked to increased sexual discomfort (aOR= 2.373, 95% CI: 1.076, 5.234) compared with the 35-37 year group, whereas a longer reproductive life span (38-40 years) demonstrated a protective effect against reporting sexual symptoms (aOR = 0.692, 95% CI: 0.540, 0.887). Neither age at menopause nor reproductive life span showed significant associations with other domains in fully adjusted models, while age at menarche was not associated with any menopausal symptoms.
Conclusion Earlier menopause and shorter reproductive life spans are independently associated with a higher likelihood of postmenopausal sexual discomfort, but show no significant links to other symptoms. Age at menarche is not associated with any symptom domains. These findings from the longitudinal ovarian aging cohort in China suggest that the duration of cumulative endogenous estrogen exposure is primarily linked to postmenopausal sexual health, highlighting the urgent need for targeted sexual health monitoring in women with limited lifetime estrogen exposure.

23

A Community-First, Youth-Led Model to Advance Menopause and Midlife Awareness in Asia Through Intergenerational Support and Workplace Inclusion

Yap Jun Wei Elmer, Tan Valery (Surety Singapore), June Tan Sheren MBBS, MMed Family Medicine, MSc Performing Arts Medicine, Tucker Medical, Singapore

Introduction / Objectives Menopause and midlife remain stigmatized subjects in many Asian communities. While clinical care is essential, early awareness, symptom literacy and psychological safety to speak openly remain uneven, often shaped by cultural norms and intergenerational silence. Many women navigate symptoms without recognising their link to perimenopause and menopause, delaying help-seeking and limiting access to supportive resources. Surety Singapore was developed as a community-first, youth-led social impact model to normalise conversations about menopause and midlife, strengthen peer and intergenerational support, and mobilise multi-stakeholder action across communities and workplaces. This presentation explores how Surety's unique blueprint may inspire youth advocates globally to catalyse practical support for midlife wellbeing.
Materials and Methods This presentation synthesizes quantitative and qualitative data from all community programs, workplace initiatives, and public events organized by Surety. Data sources included participant surveys, focus group discussions, and stakeholder interviews. The impact of these efforts on menopause awareness, intergenerational understanding, and workplace inclusion was examined using descriptive statistics and thematic analysis to identify changes in knowledge, attitudes, and reported practices.
Results / Discussion Across over 30 international hybrid events, Surety engaged more than 5,000 attendees, including its flagship Midlife Festival held in Singapore. Post-event surveys showed that 98% of participants reported improved ability to manage symptoms, 74% sought treatment following the programmes, and 81% felt more comfortable speaking openly about midlife changes. Beyond live programmes, digital content reached over 500,000 people internationally, extending education beyond in-person touchpoints. Inclusion efforts were extended to underserved groups, including migrant domestic workers. The ecosystem engages clinicians and practitioners, corporate and youth champions, and male allies to broaden reach and reinforce shared responsibility for midlife wellbeing. Collectively, these findings indicate that facilitated, community-based spaces can strengthen confidence, reduce stigma, and support earlier, more timely care-seeking.
Conclusion A community-first, intergenerational, youth-led model can strengthen menopause and midlife awareness by creating psychologically safe spaces for dialogue and reinforcing evidence-informed education through clinical stewardship. Mobilising partnerships extends support into workplaces and the broader society. Surety's experience suggests a practical blueprint that younger advocates globally can adapt to catalyse culturally-sensitive, community-based menopause awareness movements, reducing stigma and removing barriers to early support and care-seeking.

24

Menopausal arthralgia: Definition and associations with longitudinal changes in sex hormones and climacteric symptoms

Zhuolin Xiea,b; Eu-Leong Yongb*; Rong Chena*
a National Clinical Research Center for Women's Health and Obstetric and Gynecologic Diseases, Department of Obstetrics and Gynecology, Peking Union Medical College Hospital, Chinese Academy of Medical Sciences & Peking Union Medical College, Beijing, China
b Department of Obstetrics and Gynecology, Yong Loo Lin School of Medicine, National University of Singapore, Singapore
1*Rong Chen: chenrongpumch@163.com; 2*Eu-Leong Yong: obgyel@nus.edu.sg

Objective To define menopausal arthralgia, and study its relationships with estradiol, follicle-stimulating hormone (FSH) levels, and climacteric symptoms during the menopausal transition.
Methods Participants from a longitudinal cohort who were in the menopausal transition (within five years of the final menstrual period) with ≥2 assessment visits were included. Menopausal arthralgia was defined as moderate or severe muscle and joint pain affecting multiple sites, with onset or which worsened, during the menopausal transition. Multivariable binary logistic regression assessed associations.

Results Among 327 women (mean age 48.4□3.6), 212 (64.83%) experienced menopausal arthralgia. Lower initial FSH levels [aOR 0.71 (95%CI 0.53, 0.96)], and a more rapid rise of FSH during the menopausal transition [aOR 2.97 (95%CI 1.02, 8.68)], increased risks for menopausal arthralgia after adjustment for age, BMI, and menopausal status. Concomitantly, higher initial estradiol levels were associated with increased risk [aOR 1.34 (95%CI 1.05, 1.71)], while more rapid rate of decline was associated with an increased trend [aOR 2.03 (95%CI 1.00, 4.12)] for menopausal arthralgia. The presence of hot flashes [aOR 3.58 (95%CI 2.10, 6.07)], night sweats [aOR 3.33 (95%CI 1.92, 5.76)], and vulvo-vagina discomfort [aOR 3.19 (95%CI 1.86, 5.46)] also increased risk for menopausal arthralgia after covariate adjustment.

Conclusion Menopausal arthralgia is associated with initial high estradiol and low FSH levels, and their rapid changes during the menopausal transition. Menopausal arthralgia should be recognized as an integral component of the menopausal transition, closely linked with decline in estrogen and rise in FSH levels and associated climacteric symptoms.