criteria- malignancy, previous radiotherapy, hypercalcemia, who refused daily injections, kidney disease stage 3 or more. final included- 180 patients, 80% female age range 65 to 80 yrs. All underwent blood tests including serum PTH, bone profile vitamin D, kidney functions, Dexa Scan. Patients were prescribed injection Teriparatide 20 ug daily plus calcium and Vitamin D oral. At 24 months we assessed tolerability, safety, new fractures, changes in BMD.

Results: Only 30 had received previous bisphosphonates and rest were naïve patients. 14 discontinued due to side effects/unwell/did not want daily injections/developed other comorbidity. 4 had new fragility fractures mostly within first 12 months. 5 had hypercalcemia which was mild/asymptomatic. Average BMD increased after 24 months both at hip (from -3.6 to -2) and spine (from -3.8 to -1.5) Naïve patients had better BMD response than those pretreated with bisphosphonate drug. New vertebral fractures reduced by 80%.

Conclusions: This real-world experience shows efficacy safety and tolerability of injection Teriparatide in a large cohort of patients including elderly which confirms findings from large clinical trials. Anabolic first approach should be considered in high fracture risk patients for patients to get maximum bone protection.

Keywords: Teriparatide, Efficacy, Osteoporosis

DEEP-LEARNING CHEST X-RAY MODEL FOR OSTEOPOROSIS DETECTION IN A SUPER-AGED HAKKA POPULATION

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Background: Osteoporosis is a silent and progressive skeletal disorder that commonly affects the elderly, particularly postmenopausal women. Traditional bone mineral density (BMD) assessments require dual-energy X-ray absorptiometry (DXA), which may not be widely accessible in rural areas. This study employed a deep learning model applied to chest radiographs to estimate BMD and evaluate osteoporosis risk across age and sex groups.

Methods: We conducted a cross-sectional study of 1,663 adults aged ≥50 years (891 men and 772 women). BMD was predicted using a validated convolutional neural network trained on chest X-ray images. Based on estimated T-scores, participants were classified as normal (T-score ≥ -1), osteopenia (T-score < -1), or osteoporosis (T-score < -2.5) according to WHO. Age- and gender-specific distributions were analyzed to assess significance.

Results: In men, the prevalence of predicted osteoporosis increased from 4.83% in the 50–59 age group to 18.37% in the 80–89 group. Women exhibited a sharper rise, from 15.82% in the 50–59 age group to 75.00% in the oldest. The proportion of normal BMD declined with age in both sexes, particularly among women. Differences by age and sex were both statistically significant ($P < 0.0001$). **Within females,** the age effect is even stronger ($P < 0.001$), with the steepest drop between the 50–59 and 60–69 groups. Women demonstrated lower mean BMD in every age band compared with men, with the sex gap widening after 60 years.

Conclusions: Our findings demonstrate the feasibility of using deep learning models applied to chest radiographs to estimate BMD and stratify osteoporosis risk. The model captured known biological trends in age- and sex-specific BMD changes, especially the accelerated bone loss in elderly women older than 60 years. Artificial intelligence-enhanced chest X-ray screening offers a scalable tool for early osteoporosis detection in clinical settings, especially where DXA is not routinely available. These findings support the integration of deep learning approaches into opportunistic osteoporosis screening.

Keywords: Deep Learning**,** Bone Mineral Density**,** Chest Radiograph**,** Super-aged

ANTICHOLINERGIC BURDEN IN OLDER PATIENTS PRESENTING WITH HIP FRACTURE IN BRUNEI DARUSSALAM

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Background: Older adults presenting with acute hip fractures have high mortality and morbidity rates. Polypharmacy is prevalent in older adults and anticholinergic burden (ACB) is known to be associated with adverse outcomes such as falls, cognitive decline, delirium, and increased mortality. This study aimed to evaluate the prevalence of anticholinergic burden, its impact on clinical outcomes, and the effectiveness of deprescribing interventions in this population.

Methods: A retrospective study was conducted on 82 patients (aged ≥ 65 years) admitted with hip fractures over a 1-year period from January 2023 to December 2023. Anticholinergic burden was assessed using the ACB Scale, and scores ≥ 3 were considered clinically significant. The relationship between anticholinergic burden and clinical outcomes, including 1-year mortality, in-hospital delirium and length of stay, was analysed using chi-square test and simple linear regression. Deprescribing practices were also evaluated to determine their impact on reducing ACB.

Results: The median ACB score was 1 (IQR 0-2). Twenty-two percent exhibited prevalence of high ACB (scores ≥ 3). High ACB was significantly associated with increased 1-year mortality (9 (50.0%) vs. 16 (25.5%), $P < 0.05$) but not a higher incidence of delirium (40.0% vs. 10.5%, $P=0.0778$). A simple linear regression revealed that ACB did not significantly impact length of hospital stay ($\beta=-0.29$, 95% CI [-2.01,1.43], $P=0.739$). Deprescribing interventions reduced ACB scores in 61.1% of patients, though 44.4% continued to have high ACB at discharge.

Conclusions: High ACB is prevalent amongst older patients with hip fractures and is strongly associated with increased mortality. These findings underscore the importance of routine ACB screening in hip fracture admissions. A systematic approach to deprescribing, guided by evidence-based frameworks, should be integrated into standard orthogeriatric assessments to address this modifiable risk factor.

Keywords: Anticholinergic Burden, Hip Fracture, Older Adults, Fracture Outcomes, Deprescribing

REVERSIBLE IMPACT OF CIGARETTE SMOKING ON FRAGILITY FRACTURES

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Background: Cigarette smoking is negatively associated with fragility fractures, though its reversibility remains unclear. We aimed to investigate the cumulative and reversible effects of cigarette smoking on fracture risk.

Methods: We analysed data of 5992 men (average age: 74±5.9 years) from the Osteoporotic Fractures in Men Study in the USA. Smoking conditions, including smoking status (current, past, or never smoking), cumulative smoking exposure (tertiles of pack-years) and time since smoking cessation (<10, 10-30, > 30 years) were self-reported, and fractures were radiologically confirmed. A Cox regression was used to determine the association between smoking conditions and fracture risks, controlled for age, BMD, history of falls or prior fractures and lifestyle factors. We calculated the heuristic population-attributable fraction to quantify the number of fractures prevented if smoking was eliminated.

Results: Over a median follow-up of 12.4 (IQR: 7.0-18.2) years, 1084 participants sustained a fracture, including 237 hip fractures. Approximately 3.4% of men currently smoked, while 59% were past smokers. Cigarette

smoking had a dose-response association with fracture risk. Compared with nonsmokers, current smokers were independently associated with two-fold greater fracture risk (adjusted Hazard ratio: 1.85, 95% CI: 1.35-2.54), whereas past smokers with the highest tertile of smoking exposure or less than 10 years of smoking cessation tended to have 20-30% greater risk of fractures (1.17, 0.90-1.39, and 1.29, 0.96-1.74, respectively). By contrast, past smokers who had smoked less or quit more than 10 years ago were not associated with fracture risk. Importantly, if current smokers quit, future fractures would be reduced by 4%; while a quarter of fractures would have been prevented had no individuals ever smoked.
Conclusions: The negative impact of cigarette smoking on bone fragility is reversible, suggesting that quitting smoking lowered fracture risk. This underscores the importance of smoking cessation interventions for preventing fragility fractures in the community.
Keywords: Smoking status, Smoking cessation, Fragility fractures, Reversibility, Cumulative Risk

A NEW DIMENSION OF FRAGILITY FRACTURE: MORTALITY

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Background: Osteoporosis is traditionally recognized for its impact fracture, yet its association with mortality remains underappreciated among clinicians. Fractures, particularly in older adults, are not merely a consequence of osteoporosis but a significant risk actor for increased mortality risk, adding a critical dimension to the disease's burden. In this this presentation
Methods: I examine the link between fractures and mortality, emphasizing the need for greater awareness and proactive management in osteoporosis care to mitigate fatal outcomes.
Results: Our initial study (*Lancet* 1994) revealed that all major fractures were linked to increased risk of mortality, with men having a greater risk than women. This risk was particularly pronounced among patients with hip fractures. A meta-analysis (*Ann Int Med* 2010) further demonstrated that older adults face a 5- to 8-fold increased risk of all-cause mortality in the first three months following a hip fracture. Analyzing data from the Danish National Hospital Discharge Register (*eLife* 2023), which included 307,870 fractures and 122,744 post-fracture deaths, we found that a fracture resulted in a loss of 1 to 7 years of life, with men experiencing a greater reduction than women. Hip fractures were associated with the most significant loss of life years. For instance, a 60-year-old individual who experiences a hip fracture is expected to have their lifespan shortened by approximately 5 to 6 years. We introduce "Skeletal Age" as an innovative metric to quantify the impact of fragility fractures on life expectancy.
Conclusions: Robust evidence over the past 3 decades supports the association between fractures and increased mortality, and that appropriate treatment of patients with osteoporosis may reduce this risk. However, mortality remains an often-underappreciated dimension of osteoporosis management. Fractures should be regarded as critical markers of compromised survival. Improving awareness, ensuring timely interventions, and adopting a multidisciplinary management strategy are essential to reducing the mortality burden associated with osteoporosis and optimizing patient outcomes.
Keywords: Osteoporosis, Fracture, Mortality, Years of Life Lost, Skeletal Age

ADDRESSING CHALLENGES IN OSTEOPOROSIS MANAGEMENT IN VIETNAM

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Background: Vietnam has a population of around 100 million people, making it the 15th most populous country in the world. Current demographic estimates indicate that 23% are under the age of 15, 68% are of working age (15—64 years), and 9% are aged 65 and older. Life expectancy is 75 years, placing Vietnam slightly behind Thailand and China. Vietnam is classified by the World Bank as a lower-middle-income country, with a GDP per capita of US$4,300 (nominal) and approximately US$13,000 (PPP) in 2023. Vietnam's healthcare infrastructure including approximately 1,200 public hospitals and 200 private hospitals. Diagnostic capacity for osteoporosis is limited, with an estimated 200 DXA densitometers nationwide. Medications currently available for osteoporosis treatment include bisphosphonates, hormone replacement therapy, and calcitonin. Denosumab is expected to become available by mid-2025.
Methods: This was a population-based study of more than 1500 individuals aged 60 and older.
Results: The studies revealed that 11% of women and 14% of men had experienced a prior fracture. However, no national epidemiological data on fracture incidence are available to date. The prevalence of osteoporosis, defined by a T-score < −2.5, was 27% in women and 13% in men. Based on National Osteoporosis Foundation treatment criteria, 49% of women and 35% of men aged 60 and older would be considered eligible for therapy. Despite this, more than 95% of patients with a prior fracture do not receive any anti-osteoporosis treatment.
Conclusions: Vietnam is at a critical juncture in addressing the rising burden of osteoporosis in its aging population. Although economic and health indicators have improved substantially, significant gaps remain in fracture risk assessment, diagnosis, and treatment uptake. The combination of low treatment rates, limited diagnostic resources, and a rapidly aging population underscores the urgent need for national epidemiological surveillance, public health strategies, and expanded access to effective osteoporosis therapies.
Keywords: Osteoporosis, Bone Mineral Density, Bisphosphonates, Hormone Replacement Therapy

NOVEL GENETIC VARIANTS ASSOCIATED WITH BONE MINERAL DENSITY IN ASIANS: THE VIETNAM OSTEOPOROSIS STUDY

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Background: Prior studies have identified multiple bone mineral density (BMD)-associated genes in Caucasian populations, but research on Southeast Asian populations is scarce. This study addresses this gap by investigating genetic variants associated with BMD in Vietnamese individuals.
Methods: We conducted a genome-wide association study (GWAS) on 4152 men and women aged 20 years and older from the Vietnam Osteoporosis Study (VOS) project. The individuals were randomly sampled from various districts in Saigon, Vietnam. BMD at the femoral neck, total hip, and lumbar spine was measured by dual-energy X-ray absorptiometry (Hologic Horizon). Our genotyping analysis employed the Illumina Infinium assay platform, specifically the Global Screen Array containing over 700,000 single nucleotide polymorphisms (SNPs). Multivariable regression model adjusted for age, BMI, and sex was applied to search for SNPs associated with BMD. Polygenic Risk Score (PRSice) and linkage disequilibrium (LD) score regression analysis were conducted to assess the genetic correlation between those discovery SNPs and BMD.
Results: We found 16 SNPs that were statistically significantly associated with BMD. Among which, 7 SNPs are mapped to *SORCS2* gene (rs4689808), LINC02131 gene (rs7186410), LINC01234 gene (rs11066695), HMGA1P6 gene (rs7325467), ATXN10 gene (rs528202723), GPRASP1 gene (rs201921260) and MRRFP1 genes (rs766843). The SNPs accounted for between 0.6% and 1.3% of the heritability in BMD. Our result also confirmed at the GWAS level, nine SNPs (rs13213582, rs1871859, rs3779381, rs2908004, rs3801387, rs2707466, rs10242100, rs917727, rs7776725) that