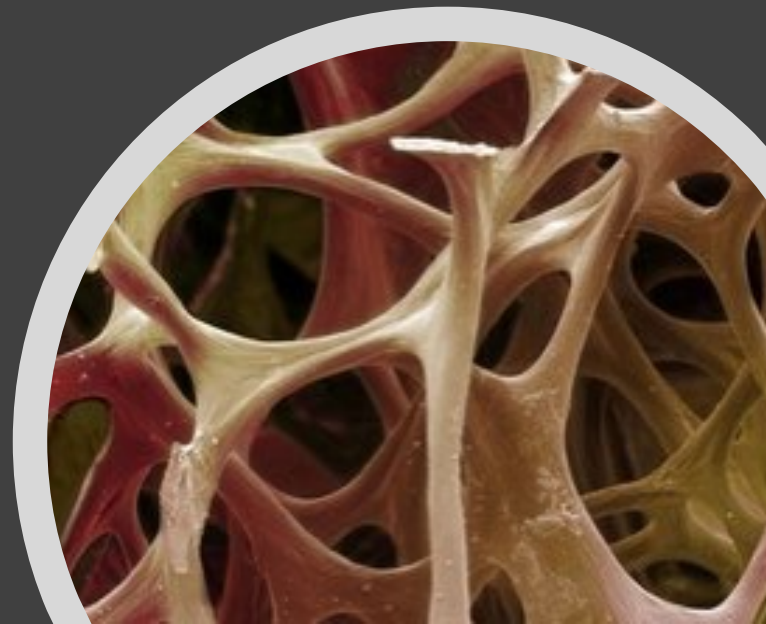
Bone Health: Covid - 19

Nick Birch

Consultant Spinal Specialist



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Covid:	**Physical and Psychological Impact of the Pandemic**
Physical Effects of Covid on Bone:	**The Brain / Bone Axis**
Psychological Effects of Covid on Bone:	**Anxiety, Depression, Stress, Suicide**
The Future:	**Avoidable harms of lockdown**

Physical and Psychological Impact of Covid-19

Teens to Fourth Decade - Physical

Reduced exercise – “WFH” walk / cycle to work, regular gym, organized sport

Reduced sun exposure – group least likely to take supplementary vitamins etc.

Debility following Covid-19 infection (30% chance long-term neurological consequence / Long Covid)

Reduced peak bone mass and persistent increased risk of early osteopenia / osteoporosis

Reduced access to healthcare services

Loss of economic amenity of unemployed

Teens to Fourth Decade - Psychological

Increased anxiety

Persistent alteration of mood

Direct effect on bone through Brain / Bone axis

Persistent alteration sports / exercise behaviour – decreased motivation (lockdown lethargy), reduction of resources (crashed economy)

Damaging effect on self-esteem of Covid implications for employment

Peri-menopausal - Physical

Reduced exercise – “WFH” walk / cycle to work, regular gym, organized sport

Reduced sun exposure – may be mitigated by supplements but considerable proportion of population not aware and won’t take

Debility following Covid-19 infection (30% chance long-term neurological consequence / Long Covid)

Persistent increased risk of early osteopenia / osteoporosis

Reduced access to healthcare services

Loss of economic amenity of unemployed

Deterioration of chronic pain conditions

Peri-menopausal - Psychological

Persistent alteration sports / exercise behaviour

Increase anxiety

Persistent alteration of mood

Direct effect on bone through Brain / Bone axis

Persistent alteration sports / exercise behaviour – decreased motivation (lockdown lethargy), reduction of resources (crashed economy)

Damaging effect on self-esteem of Covid implications for employment

Post-menopausal - Physical

Reduced load bearing exercise – regular exercise, looking after grandchildren etc. – decreased bone mass, increased sarcopenia, increased falls risk

Reduced exposure to sunlight - may be mitigated by supplements

Debility following Covid-19 infection (30% chance long-term neurological consequence / Long Covid) – less well tolerated than in younger age groups and persistent disability more likely

Deterioration of chronic pain conditions

Post-menopausal - Psychological

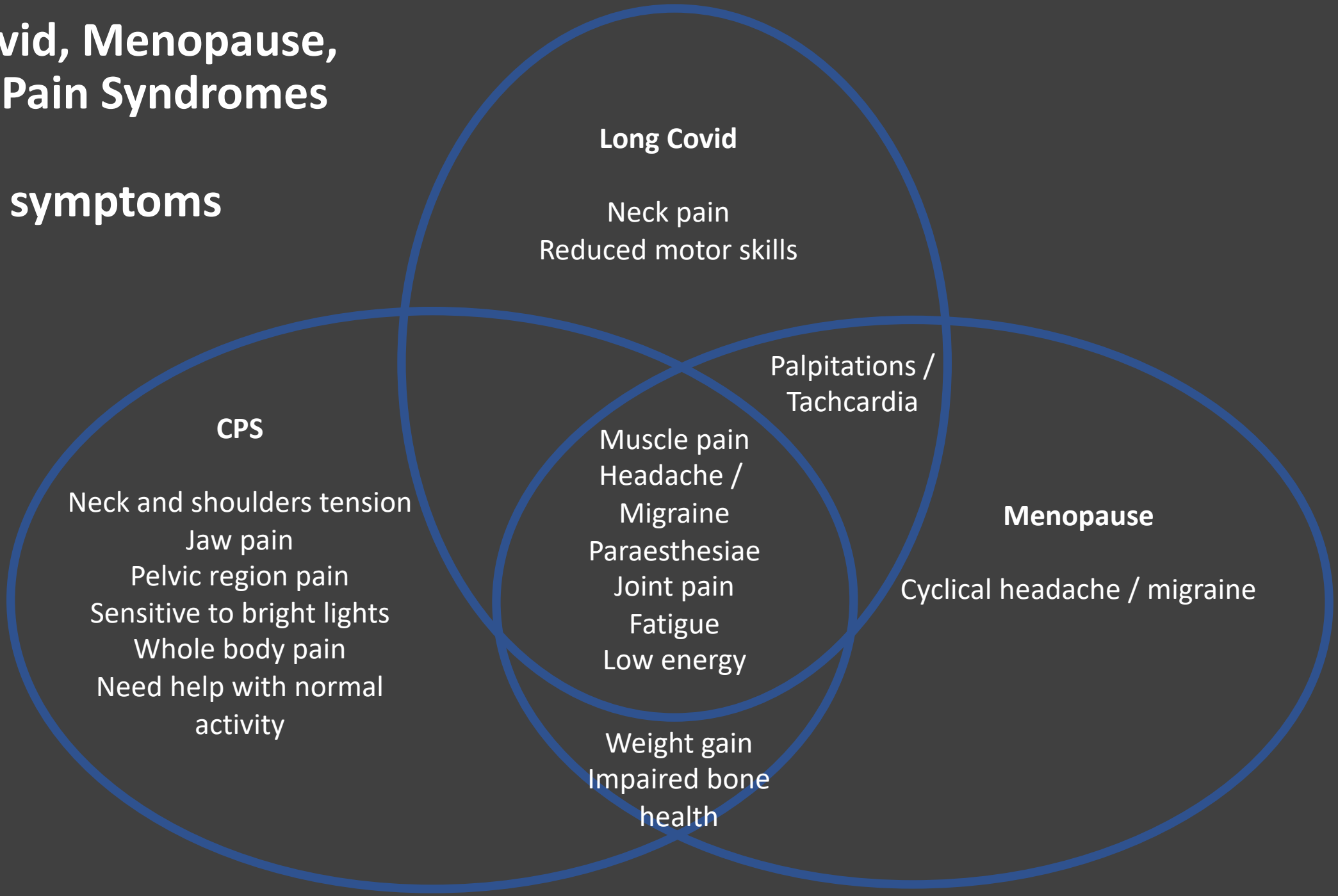
Prolonged separation from family / loved ones – anxiety, depression, grief reactions

Direct effect on bone through Brain / Bone axis

Guilt if, as a result of Covid, becomes more of a burden on family / carers etc

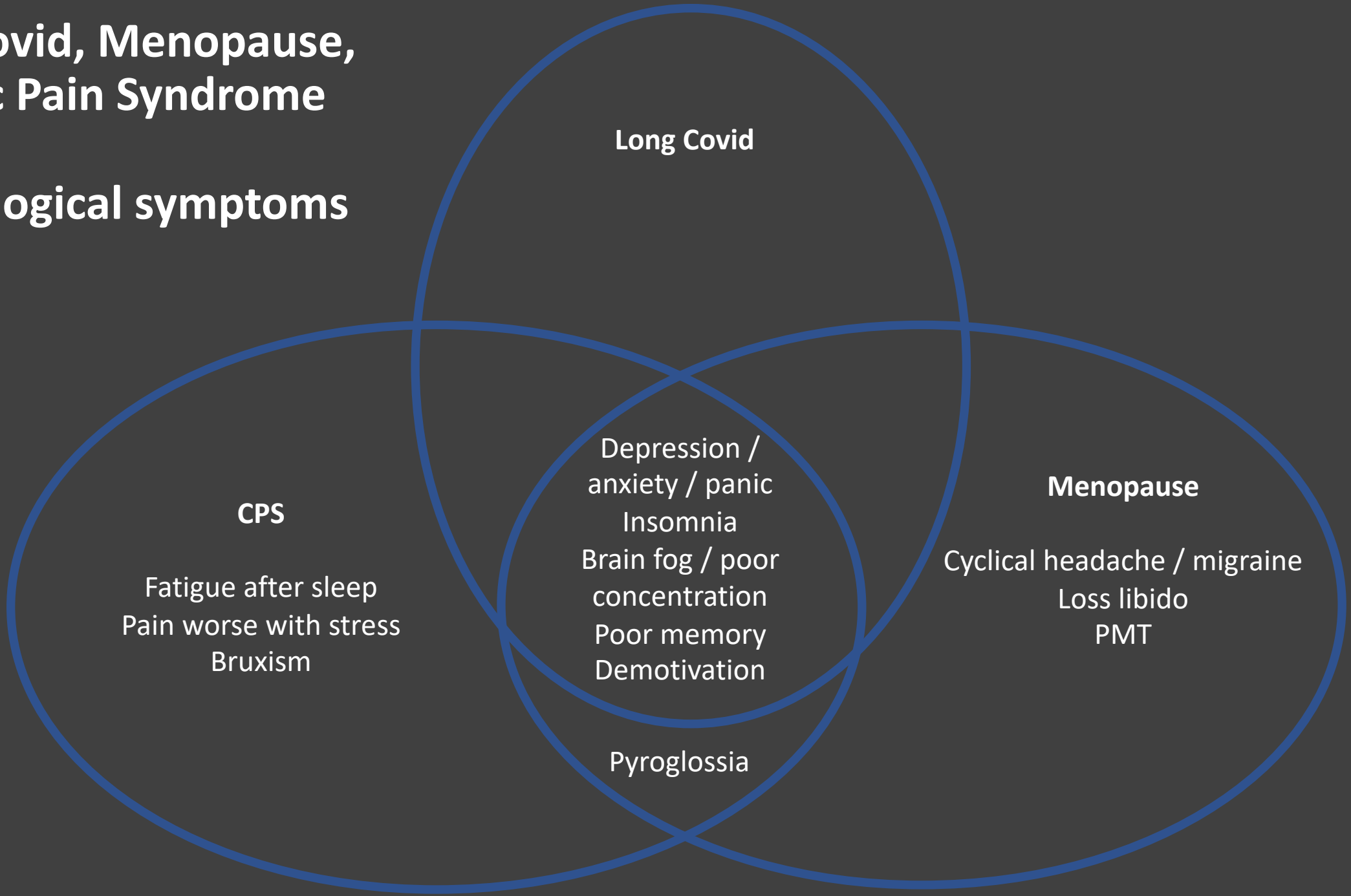
Long Covid, Menopause, Chronic Pain Syndromes

Physical symptoms



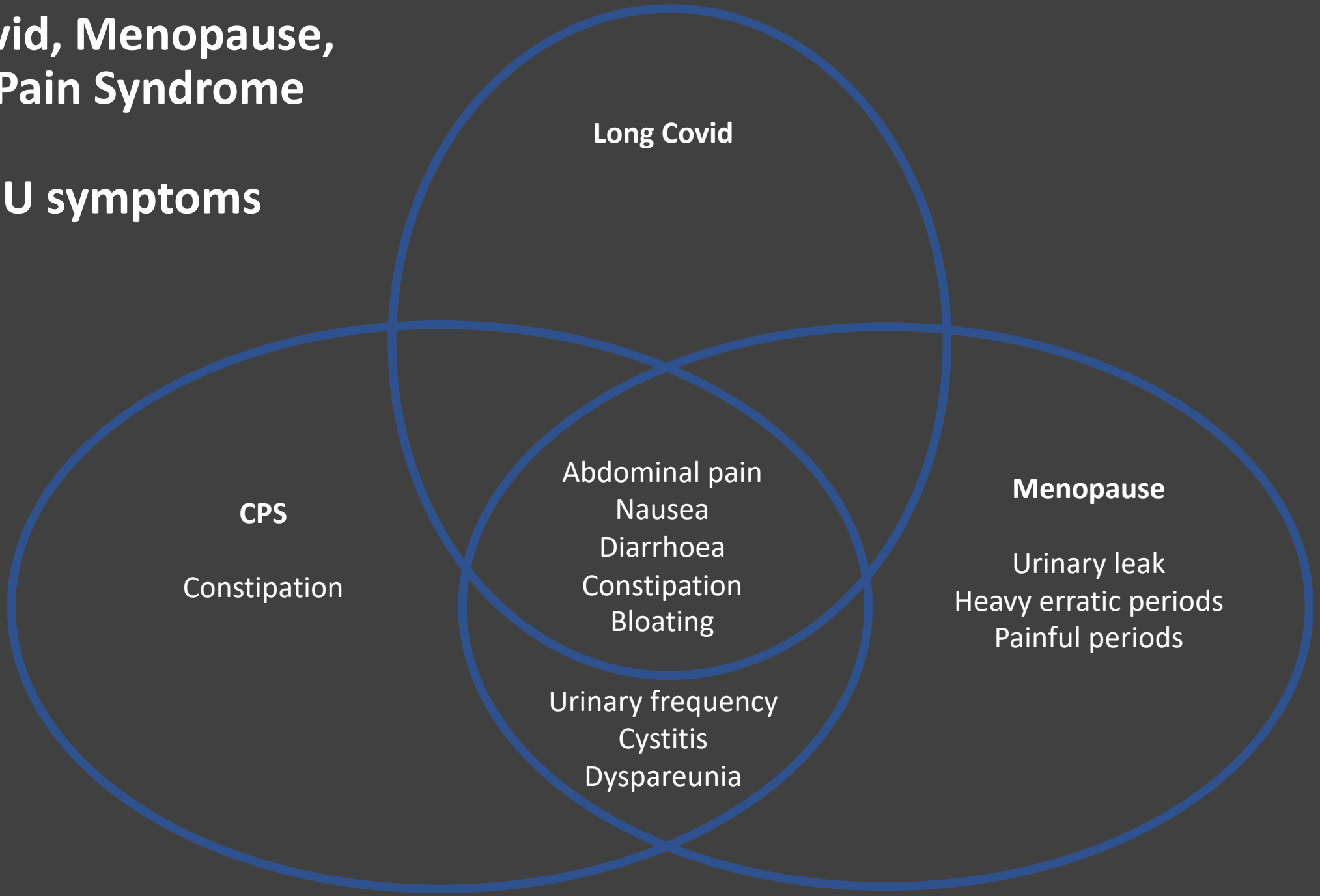
Long Covid, Menopause, Chronic Pain Syndrome

Psychological symptoms



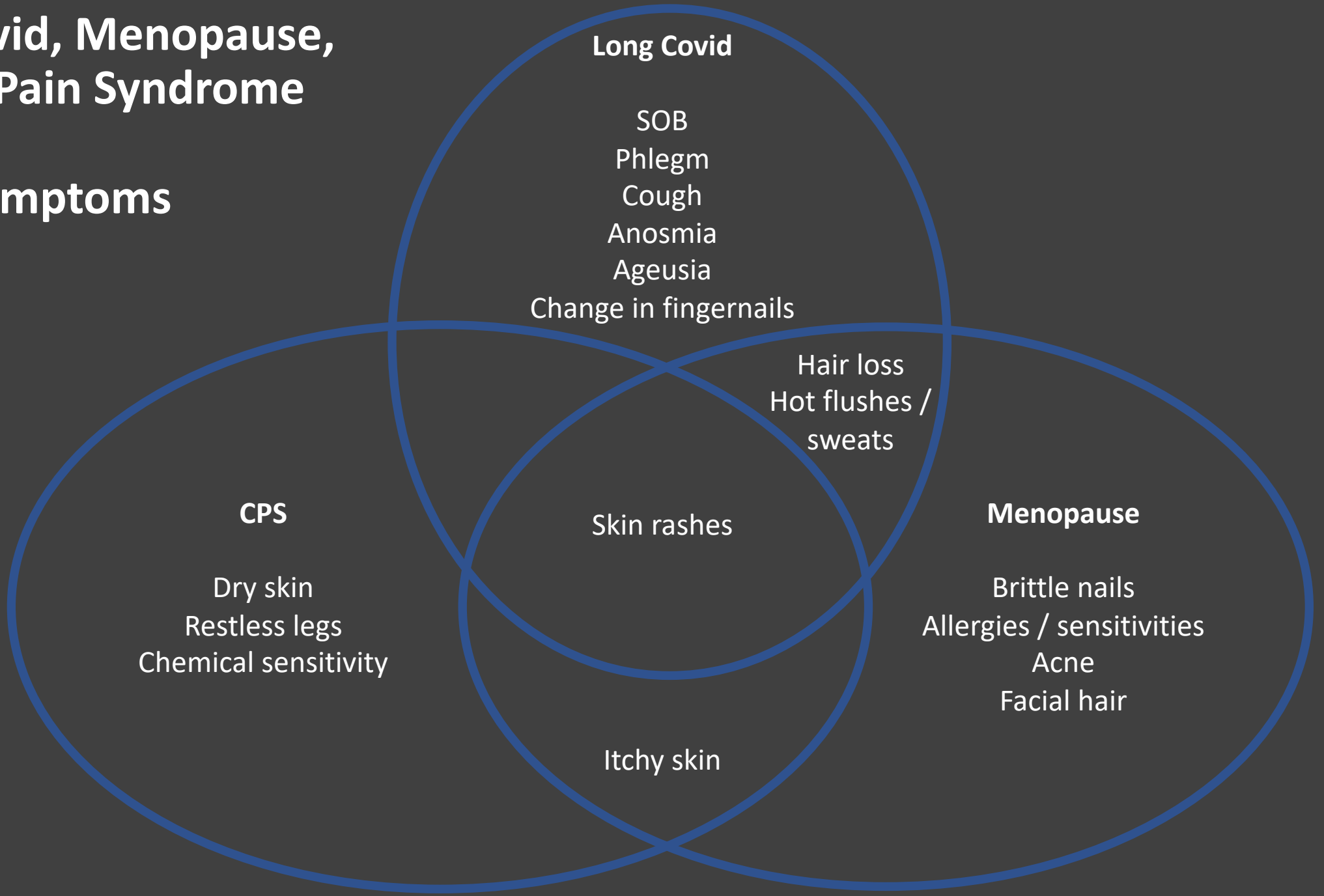
Long Covid, Menopause, Chronic Pain Syndrome

GI and GU symptoms



Long Covid, Menopause, Chronic Pain Syndrome

Other symptoms



Healthcare Implications of Covid-19

Osteoporosis International
https://doi.org/10.1007/s00198-020-05793-3

VIEWPOINTS

How has COVID-19 affected the treatment of osteoporosis? An IOF-NOF-ESCEO global survey

N. R. Fuggle[1,2] · A. Singer[3] · C. Gill[4] · A. Patel[4] · A. Medeiros[4] · A. S. Mlotek[5] · D. D. Pierroz[5] · P. Halbout[5] · C. N. Harvey[1] · J.-Y. Reginster[6,7] · C. Cooper[1,8] · S. L. Greenspan[9]

Received: 3 November 2020 / Accepted: 9 December 2020

Abstract
Summary The effects of COVID-19 have the potential to impact on the management of chronic diseases including osteoporosis. A global survey has demonstrated that these impacts include an increase in telemedicine consultations, delays in DXA scanning, interruptions in the supply of medications and reductions in parenteral medication delivery.

Osteoporosis International (2021) 32:39–46
https://doi.org/10.1007/s00198-020-05542-6

ORIGINAL ARTICLE

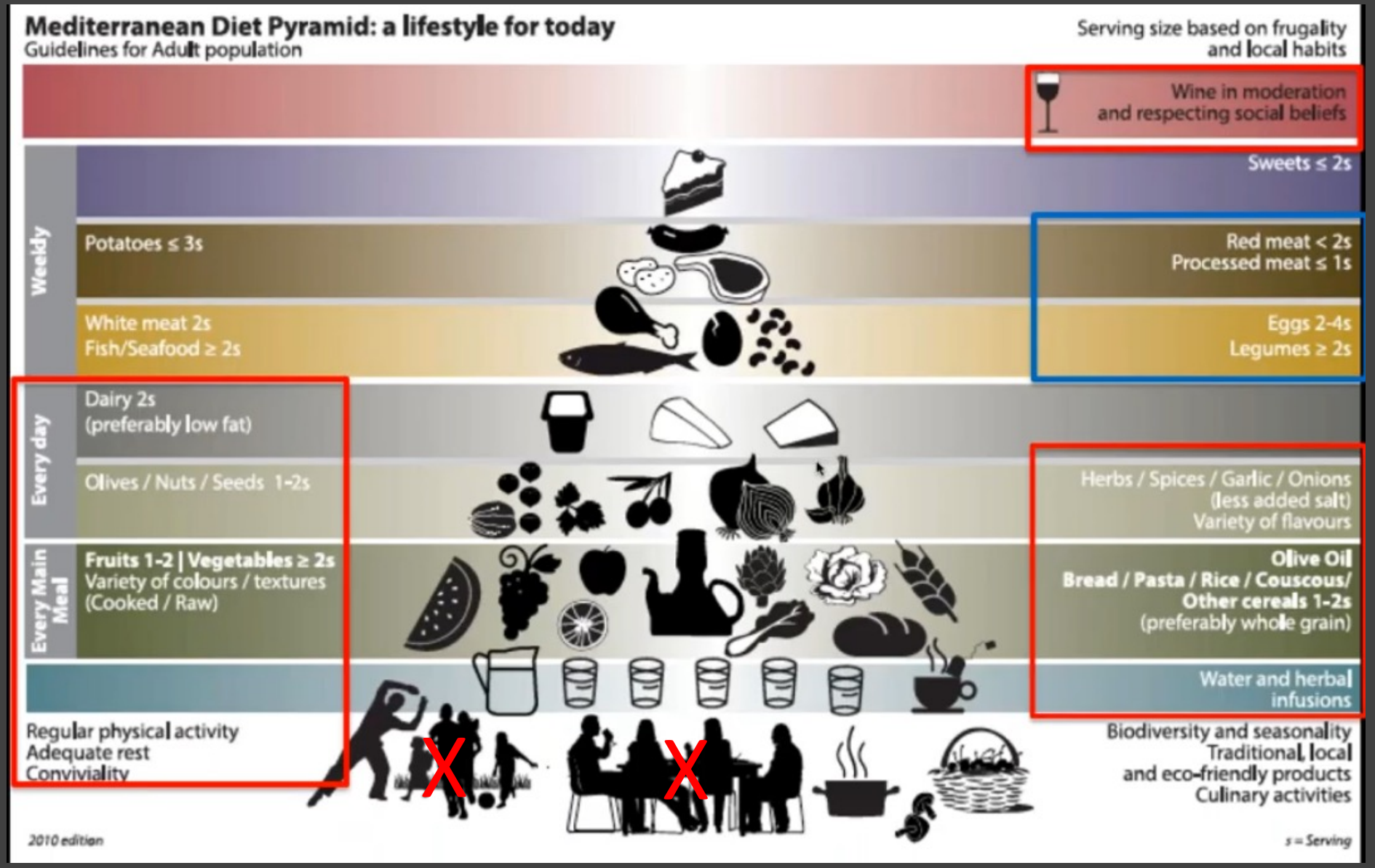
Global impact of COVID-19 on non-communicable disease management: descriptive analysis of access to FRAX fracture risk online tool for prevention of osteoporotic fractures

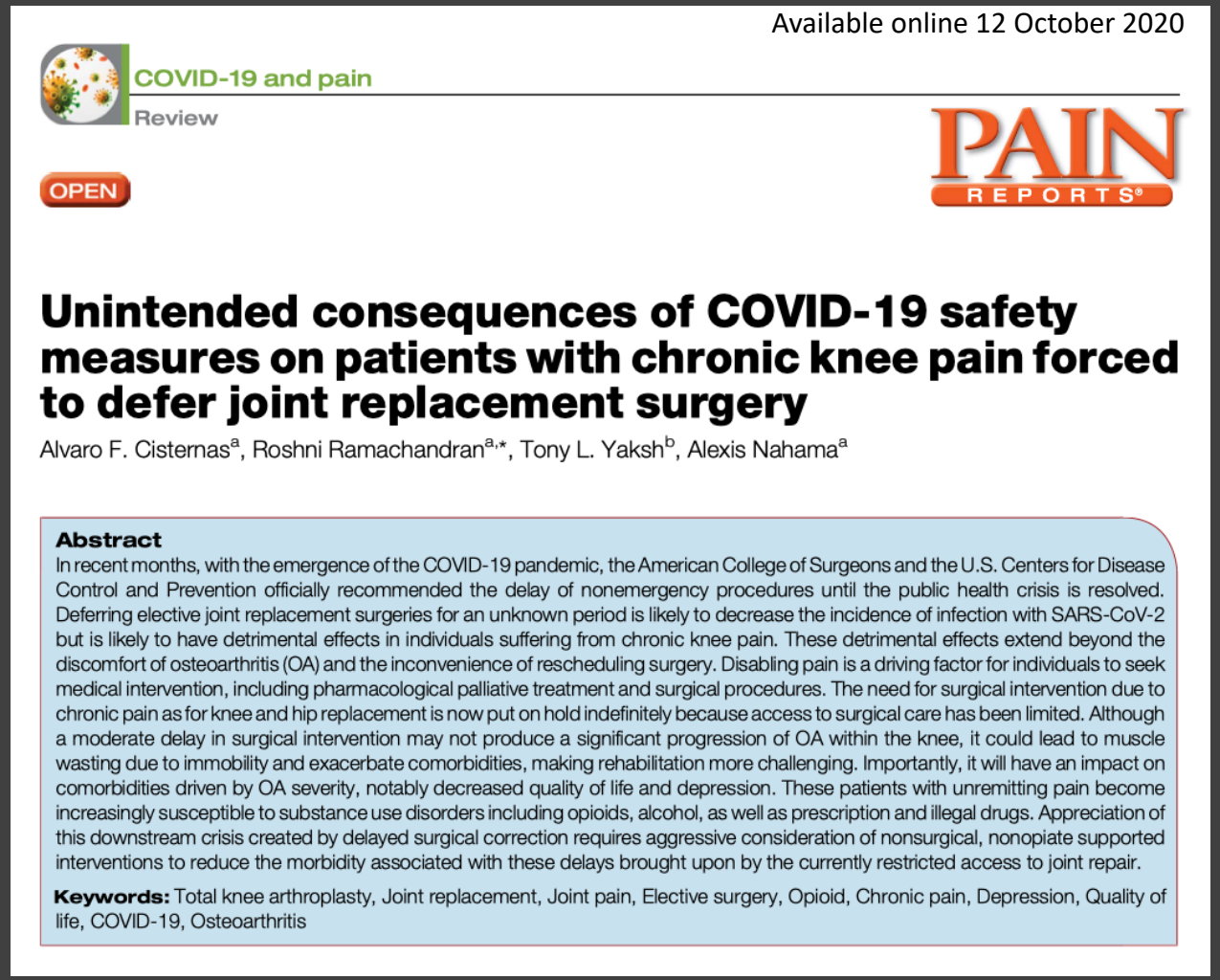
E. V. McCloskey[1,2] · N. C. Harvey[3,4] · H. Johansson[2,5] · M. Lorentzon[5,6,7] · L. Vandenput[5,6] · E. Liu[5] · J. A. Kanis[2,5]

Received: 10 June 2020 / Accepted: 7 July 2020 / Published online: 14 October 2020

Abstract
Summary The COVID-19 pandemic, and its management, is markedly impacting the management of osteoporosis as judged by access to online FRAX fracture risk assessments. Globally, access was 58% lower in April than in February 2020. Strategies to improve osteoporosis care, with greater use of fracture risk assessments, offer a partial solution.

Negative Effects of Repeated Lockdowns





Available online 12 October 2020

COVID-19 and pain

Review

PAIN REPORTS

OPEN

Unintended consequences of COVID-19 safety measures on patients with chronic knee pain forced to defer joint replacement surgery

Alvaro F. Cisternas[a], Roshni Ramachandran[a,*], Tony L. Yaksh[b], Alexis Nahama[a]

Abstract

In recent months, with the emergence of the COVID-19 pandemic, the American College of Surgeons and the U.S. Centers for Disease Control and Prevention officially recommended the delay of nonemergency procedures until the public health crisis is resolved. Deferring elective joint replacement surgeries for an unknown period is likely to decrease the incidence of infection with SARS-CoV-2 but is likely to have detrimental effects in individuals suffering from chronic knee pain. These detrimental effects extend beyond the discomfort of osteoarthritis (OA) and the inconvenience of rescheduling surgery. Disabling pain is a driving factor for individuals to seek medical intervention, including pharmacological palliative treatment and surgical procedures. The need for surgical intervention due to chronic pain as for knee and hip replacement is now put on hold indefinitely because access to surgical care has been limited. Although a moderate delay in surgical intervention may not produce a significant progression of OA within the knee, it could lead to muscle wasting due to immobility and exacerbate comorbidities, making rehabilitation more challenging. Importantly, it will have an impact on comorbidities driven by OA severity, notably decreased quality of life and depression. These patients with unremitting pain become increasingly susceptible to substance use disorders including opioids, alcohol, as well as prescription and illegal drugs. Appreciation of this downstream crisis created by delayed surgical correction requires aggressive consideration of nonsurgical, nonopiate supported interventions to reduce the morbidity associated with these delays brought upon by the currently restricted access to joint repair.

Keywords: Total knee arthroplasty, Joint replacement, Joint pain, Elective surgery, Opioid, Chronic pain, Depression, Quality of life, COVID-19, Osteoarthritis

Royal College of Surgeons Bulletin April 2021

NHS waiting times **statistics** published on Thursday show the NHS has not met the legal 18 week standard for hospital treatment for five years. Only 64.5% of patients in February waiting for hospital treatment were treated within 18 weeks in February, against the government's target of 92%. In total 387,885 people are now waiting over 18 weeks.

The statistics show the total waiting list for hospital treatment is a record 4.7 million people – the highest the figure has been since records began in 2007. Within that, almost 400,000 people were waiting more than 52 weeks for hospital treatment. This compares to just 1,643 people waiting over a year in February 2020. There were also over 1 million patients waiting longer than six months for hospital treatment in February 2021.

The Brain / Bone Axis

frontiers in Psychology

REVIEW
published: 30 November 2020
doi: 10.3389/fpsyg.2020.612366

Effects of Neurological Disorders on Bone Health

Ryan R. Kelly[1,2†], *Sara J. Sidles*[1,2†] *and Amanda C. LaRue*[1,2*]

[1] *Research Services, Ralph H. Johnson VA Medical Center, Charleston, SC, United States,* [2] *Department of Pathology and Laboratory Medicine, Medical University of South Carolina, Charleston, SC, United States*

Neurological diseases, particularly in the context of aging, have serious impacts on quality of life and can negatively affect bone health. The brain-bone axis is critically important for skeletal metabolism, sensory innervation, and endocrine cross-talk between these organs. This review discusses current evidence for the cellular and molecular mechanisms by which various neurological disease categories, including autoimmune, developmental, dementia-related, movement, neuromuscular, stroke, trauma, and psychological, impart changes in bone homeostasis and mass, as well as fracture risk. Likewise, how bone may affect neurological function is discussed. Gaining a better understanding of brain-bone interactions, particularly in patients with underlying neurological disorders, may lead to development of novel therapies and discovery of shared risk factors, as well as highlight the need for broad, whole-health clinical approaches toward treatment.

Keywords: Neurology, disease, osteoporosis, bone, mental health, depression, PTSD

OPEN ACCESS

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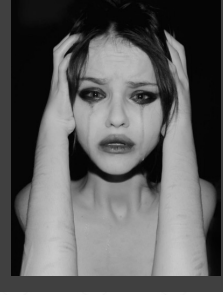
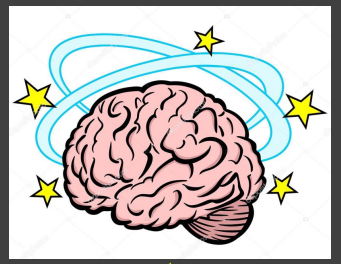
Carmelo Mario Vicario, University of Messina, Italy

Reviewed by:



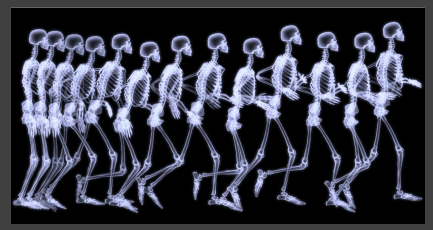
Dementia

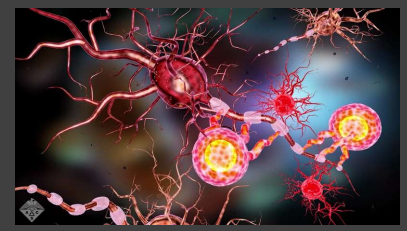
Head injury



Stroke

MS





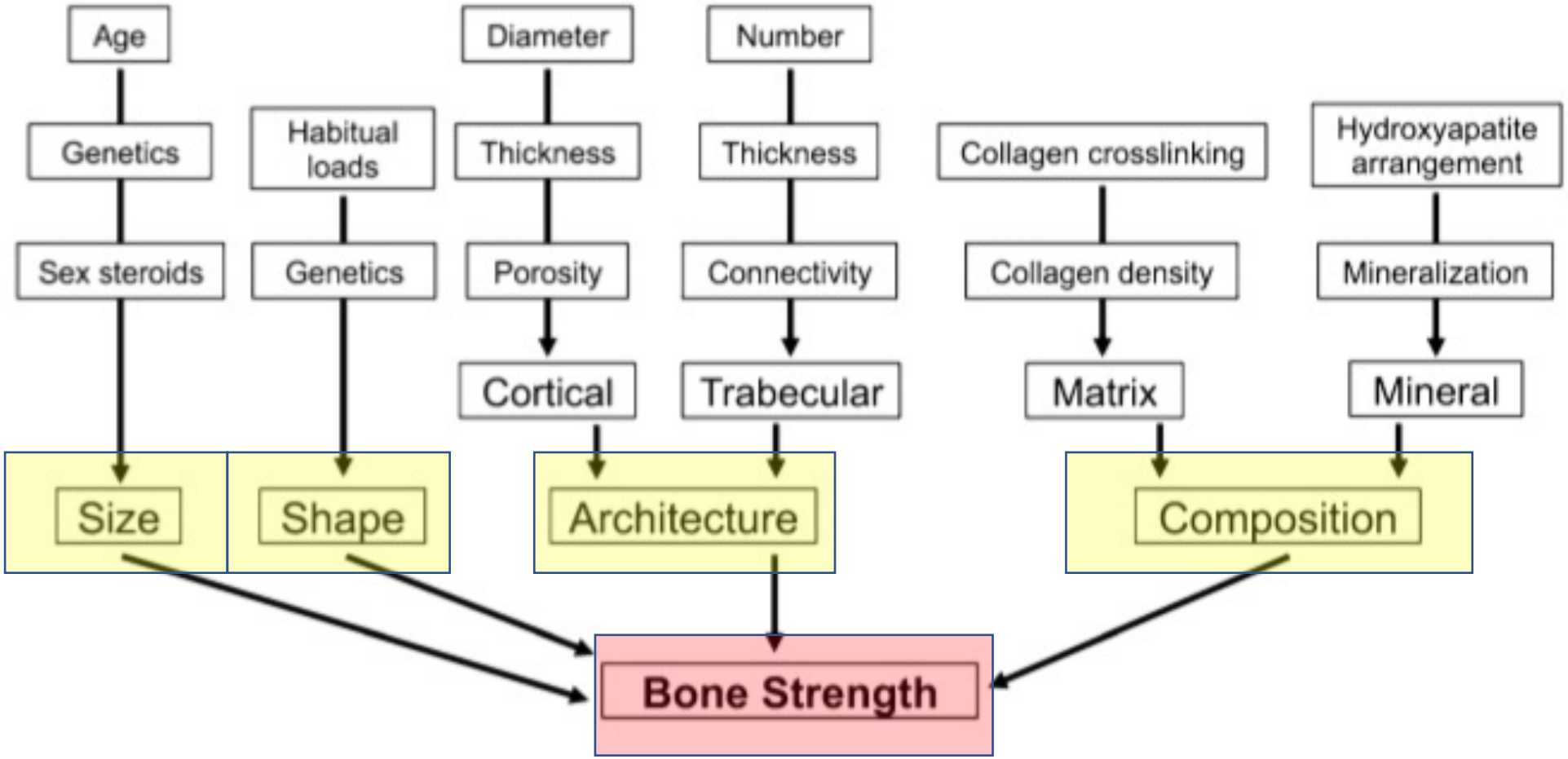
The ability of bone to resist fracture is the best indicator of bone quality

Potentially related to several bone properties:

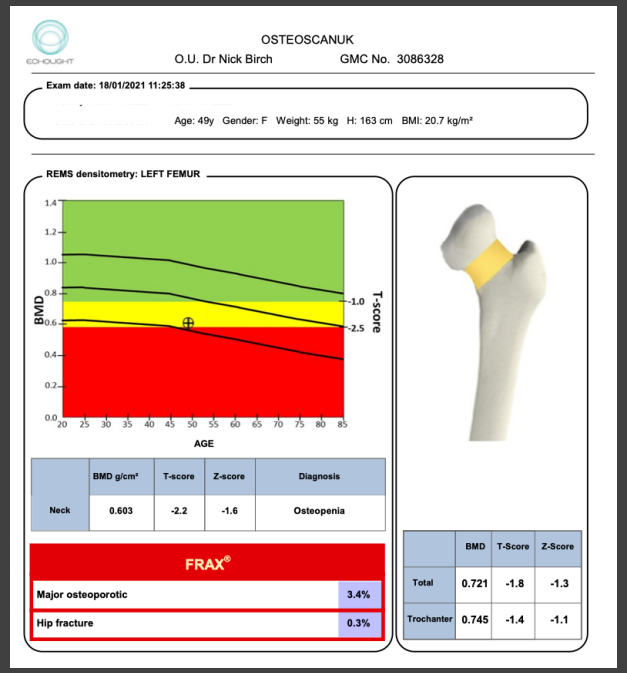
Mineralisation
Bone mineral density (BMD)
Bone turnover rate
Microarchitecture
Geometry

SOLOMON EPSTEIN, MD
Mayo Clinic Proceedings 2005; 80 (3):379-388

Factors Contributing to Bone Health



REMS Output



OSTEOSCANUK
O.U. Dr Nick Birch GMC No. 3086328

Exam date: 18/01/2021 11:25:38

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

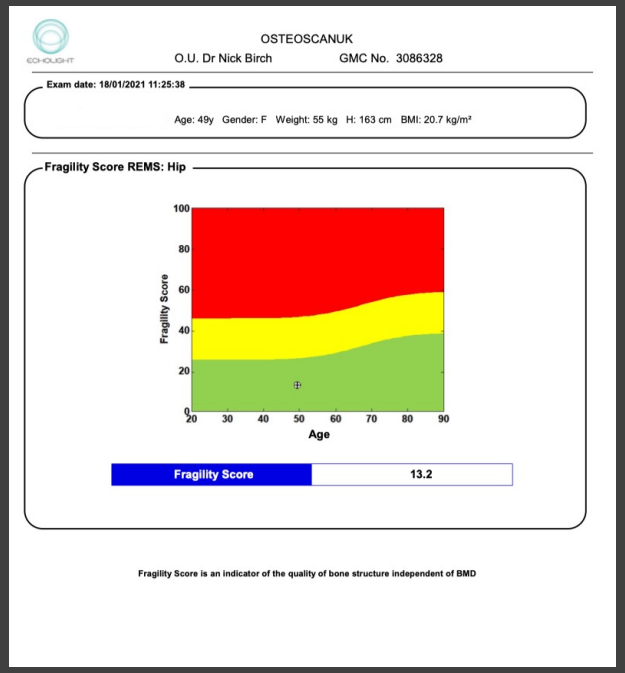
REMS densitometry: LEFT FEMUR

	BMD g/cm²	T-score	Z-score	Diagnosis
Neck	0.603	-2.2	-1.6	Osteopenia

	BMD	T-Score	Z-Score
Total	0.721	-1.8	-1.3
Trochanter	0.745	-1.4	-1.1

FRAX®

Major osteoporotic	3.4%
Hip fracture	0.3%



OSTEOSCANUK
O.U. Dr Nick Birch GMC No. 3086328

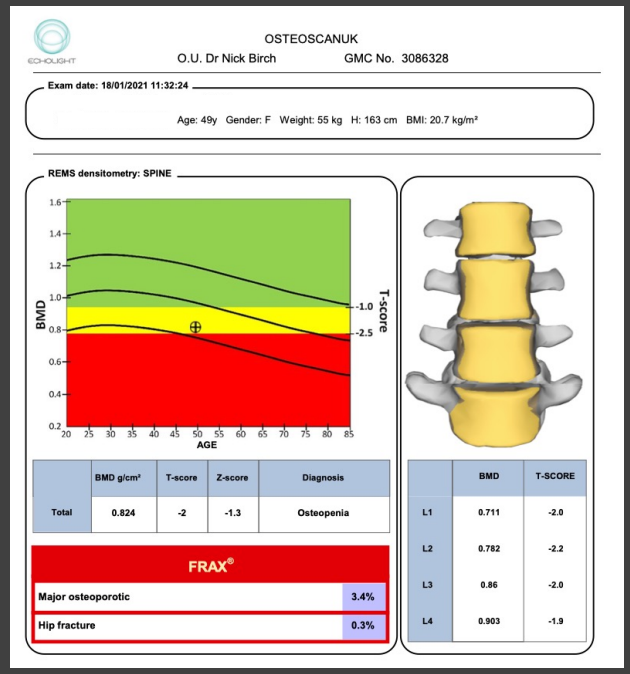
Exam date: 18/01/2021 11:25:38

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

Fragility Score REMS: Hip

Fragility Score	13.2

Fragility Score is an indicator of the quality of bone structure independent of BMD



OSTEOSCANUK
O.U. Dr Nick Birch GMC No. 3086328

Exam date: 18/01/2021 11:32:24

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

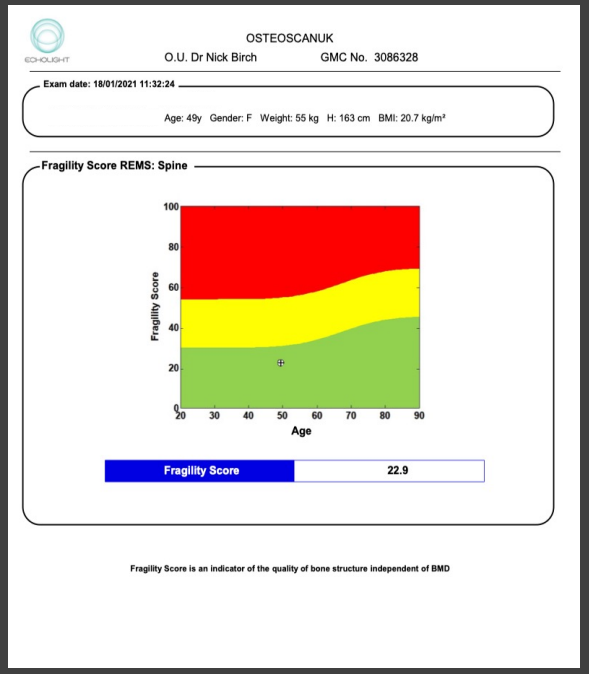
REMS densitometry: SPINE

	BMD g/cm²	T-score	Z-score	Diagnosis
Total	0.824	-2	-1.3	Osteopenia

	BMD	T-SCORE
L1	0.711	-2.0
L2	0.782	-2.2
L3	0.86	-2.0
L4	0.903	-1.9

FRAX®

Major osteoporotic	3.4%
Hip fracture	0.3%



OSTEOSCANUK
O.U. Dr Nick Birch GMC No. 3086328

Exam date: 18/01/2021 11:32:24

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

Fragility Score REMS: Spine

Fragility Score	22.9

Fragility Score is an indicator of the quality of bone structure independent of BMD

BMI T-SCORE Z-SCORE BMD (g/cm²) FRAX® (> 40 years) FRAGILITY SCORE

Psychology:

Anxiety, Depression, Stress, Suicide

Published in final edited form as:
Trends Endocrinol Metab. 2009 October ; 20(8): 367–373. doi:10.1016/j.tem.2009.05.003.

DEPRESSION AS A RISK FACTOR FOR OSTEOPOROSIS

Giovanni Cizza[1], **Svetlana Primma**[1], and **Gyorgy Csako**[2]
[1]Clinical Endocrine Section, Clinical Endocrinology Branch, NIDDK, NIH, DHHS
[2]Department of Laboratory Medicine, Clinical Center, NIH, DHHS

Abstract

Osteoporosis is a major public health threat. Multiple studies have reported an association between depression and low bone mineral density, but a causal link between these two conditions is disputed. Here we review the endocrine and immune alterations secondary to depression that might affect bone mass. We also discuss the possible role of poor lifestyle in the etiology of osteoporosis in subjects with depression and the potential effect of antidepressants on bone loss. We propose that depression induces bone loss and osteoporotic fractures, primarily *via* specific immune and endocrine mechanisms, with poor lifestyle habits and use of specific antidepressants also potential contributory factors.

Brain and Behavior
Open Access

Bone density and depressive disorder: a meta-analysis

Julietta Ursula Schweiger[1], Ulrich Schweiger[1], Michael Hüppe[2], Kai G. Kahl[3], Wiebke Greggersen[1] & Eva Fassbinder[1]

[1]Department of Psychiatry and Psychotherapy, Lübeck University Medical School, Lübeck, Germany
[2]Department of Anesthesiology, Lübeck University Medical School, Lübeck, Germany
[3]Department of Psychiatry, Social Psychiatry and Psychotherapy, Hannover Medical School, Hannover, Germany

Keywords
Absorptiometry, bone density, depressive disorder, meta-analysis, osteoporosis, photon

Correspondence
Ulrich Schweiger, Klinik für Psychiatrie und Psychotherapie, Universität zu Lübeck, Ratzeburger Allee 160, D-23538 Lübeck, Germany. Tel: +494515002454; Fax: +494515006198; E-mail: ulrich.schweiger@uksh.de

Funding Information
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***Brain and Behavior*, 2016; 6(8), e00489, doi: 10.1002/brb3.489**

Abstract

Background: The aim of this study was to evaluate the evidence of low bone mineral density (BMD) in depression. Low BMD is a major risk factor for osteoporotic fractures and frailty. **Methods:** The searched database was Pubmed, Meta-analysis included human studies in men and women fulfilling the following criteria: (1) assessment of BMD in the lumbar spine, the femur or the total hip; (2) comparison of BMD between depressed individuals and the healthy control group; (3) measurement of BMD using dual-energy X-ray absorptiometry (DEXA); and (4) data on the mean, standard deviation, or standard error of BMD. **Results:** Twenty-one studies were identified, encompassing 1842 depressed and 17,401 nondepressed individuals. Significant negative composite weighted mean effect sizes were identified for the lumbar spine ($d = -0.15$, 95%CL -0.22 to -0.08), femur ($d = -0.34$, 95%CL -0.64 to -0.05), and total hip ($d = -0.14$, 95%CL -0.23 to -0.05) indicating low BMD in depression. Examining men and women shows low bone density in the lumbar spine and femur in women and low bone density in the hip in men. The differences between men and women with MDD and the comparison group tended to be higher when examined by expert interviewers. Low bone density was found in all age groups. **Conclusions:** Bone mineral density is reduced in patients with depressive disorders. The studies provide little evidence for potential relevant mediating factors.

International Journal of Women's Health
Dovepress
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REVIEW

Emerging evidence on the link between depressive symptoms and bone loss in postmenopausal women

Elizabeth Mollard[1]
Laura Bilek[2]
Nancy Waltman[1]

[1]College of Nursing, University of Nebraska Medical Center, Lincoln, NE, [2]College of Allied Health Professionals, University of Nebraska Medical Center, Omaha, NE, USA

Abstract: Osteoporosis and depression are major health problems of crisis proportions in postmenopausal women. Researchers have established a relationship between bone loss and depression, although few studies have focused on postmenopausal women. The purposes of this integrative review were to synthesize and summarize the available literature on: 1) the associations between bone loss and depression in postmenopausal women; and 2) potential variables that impact the associations between bone loss and depression in postmenopausal women. After searching the databases PubMed, CINAHL, Embase, and the Cochrane library between 2007 and 2017, 12 articles met the inclusion criteria. The majority of the included studies supported the relationship between depression and bone loss in postmenopausal women, although little information is offered as to why this relationship exists. This review summarizes the research that has been completed on depression and bone loss in postmenopausal women and identifies gaps in the literature. These findings will aid in the planning of future research and the development of health care recommendations.

Keywords: osteoporosis, depression, osteopenia, vitamin D, parathyroid, physical activity

J UOEH 37 (4): 245–253 (2015)

[Review]

Chronic Psychological Stress as a Risk Factor of Osteoporosis

Kagaku AZUMA[1]*, Yasuhiro ADACHI[1], Haruki HAYASHI[1] and Kin-Ya KUBO[2]

[1] *Department of Anatomy, School of Medicine, University of Occupational and Environmental Health, Japan. Yahatanishi-ku, Kitakyushu 807-8555, Japan*

[2] *Seijoh University Graduate School of Health Care Studies, 2-172 Fukinodai, Tokai 476-8588, Japan*

Abstract **:** Osteoporosis, the most common metabolic skeletal disease, is characterized by decreased bone mass and deteriorated bone quality, leading to increased fracture risk. With the aging of the population, osteoporotic fracture is an important public health issue. Organisms are constantly exposed to various stressful stimuli that affect physiological processes. Recent studies showed that chronic psychological stress is a risk factor for osteoporosis by various signaling pathways. The purpose of this article is to review the recent progress of the association between chronic psychological stress and osteoporosis. Increasing evidence confirms the physiological importance of the central nervous system, especially the hypothalamus, in the regulation of bone metabolism. Both animal and human studies indicate that chronic psychological stress induces a decrease of bone mass and deterioration of bone quality by influencing the hypothalamic-pituitary-adrenocortical (HPA) axis, sympathetic nervous system, and other endocrine, immune factors. Active mastication, proven to be an effective stress-coping behavior, can attenuate stress-induced neuroendocrine responses and ameliorate stress-induced bone loss. Therefore, active mastication may represent a useful approach in preventing and/or treating chronic stress-associated osteoporosis. We also discuss several potential mechanisms involved in the interaction between chronic stress, mastication and osteoporosis. Chronic stress activates the HPA axis and sympathetic nervous system, suppresses the secretion of gonadal hormone and growth hormone, and increases inflammatory cytokines, eventually leading to bone loss by inhibiting bone formation and stimulating bone resorption.

Keywords **:** chronic psychological stress, hypothalamus, mastication, osteoporosis, sympathetic nervous system.

(Received September 14, 2015, accepted November 2, 2015)

Observational Study

Medicine®

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The incidence and risk of osteoporosis in patients with anxiety disorder

A Population-based retrospective cohort study

Chen Hong-Jhe, MD[a], Kuo Chin-Yuan, MD[b], Tu Ming-Shium, MD[a], Wang Fu-Wei, MD[a], Chen Ru-Yih, MD[a], Hsueh Kuang-Chieh, MD[a], Pan Hsiang-Ju, MD[a], Chou Ming-Yueh, MD[c,d], Chen Pan-Ming, MD[e,*], Pan Chih-Chuan, PhD[f,*]

Abstract

The purpose of this study was to investigate the relationship between anxiety disorder (AD) and the subsequent development of osteoporosis.

We conducted a population-based retrospective cohort analysis according to the data in the Longitudinal Health Insurance Database 2000 of Taiwan. We included 7098 patients in both the AD and no-anxiety cohort who were matched according to age and sex between January 1, 2000, and December 31, 2013. The incidence rate and the risk ratios (RRs) of subsequent new-onset osteoporosis were calculated for both cohorts. We used Cox proportional hazards models to assess the effect of AD. The Kaplan–Meier method was applied to estimate the cumulative osteoporosis incidence curves.

The AD cohort consisted of 7098 patients, and the comparison cohort comprised the same matched control patients without anxiety. The risk of osteoporosis was higher in the AD cohort than in the comparison cohort. In addition, the incidence of newly diagnosed osteoporosis remained significantly increased in all of the stratified follow-up durations (0–1, 1–5, 5–10, ≥10years). Patients with AD were 1.79 times more likely to get osteoporosis than those without AD. We also observed a significant increase in osteoporotic risk in AD patients who are comorbid with hypertension, diabetes mellitus, and chronic liver disease.

The incidence of osteoporosis in Taiwan is associated with an a priori AD history. The risk ratios are the highest for osteoporosis within 1 year of AD diagnosis, but the risk remains statistically significant for >1 year. Clinicians should pay particular attention to osteoporotic comorbidities in AD patients.

Abbreviations: AD = anxiety disorder, RRs = risk ratios, BMD = bone mineral density, CRP = C-reactive protein, IL-6 = interleukin-6, TNF-α = tumor necrosis factor-alpha, NHI = National Health Insurance, NHIRD = National Health Insurance Database, ICD-9-CM = International Classification of Disease Ninth Revision Clinical Modification, LHID2000 = Longitudinal Health Insurance Database 2000, COPD = chronic obstructive pulmonary disease, HRs = hazard ratios, CI = confidence interval.

Keywords: anxiety disorders, epidemiology, osteoporosis, risk factors

Published 2016

frontiers in Psychiatry

REVIEW
published: 09 April 2019
doi: 10.3389/fpsyt.2019.00200

Impacts of Psychological Stress on Osteoporosis: Clinical Implications and Treatment Interactions

Ryan R. Kelly[1,2†], Lindsay T. McDonald[1,2†], Nathaniel R. Jensen[1,2], Sara J. Sidles[1,2] and Amanda C. LaRue[1,2]*

[1] *Research Services, Ralph H. Johnson VA Medical Center, Charleston, SC, United States,* [2] *Department of Pathology and Laboratory Medicine, Medical University of South Carolina, Charleston, SC, United States*

The significant biochemical and physiological effects of psychological stress are beginning to be recognized as exacerbating common diseases, including osteoporosis. This review discusses the current evidence for psychological stress-associated mental health disorders as risk factors for osteoporosis, the mechanisms that may link these conditions, and potential implications for treatment. Traditional, alternative, and adjunctive therapies are discussed. This review is not intended to provide therapeutic recommendations, but, rather, the goal of this review is to delineate potential interactions of psychological stress and osteoporosis and to highlight potential multi-system implications of pharmacological interventions. Review of the current literature identifies several potentially overlapping mechanistic pathways that may be of interest (e.g., glucocorticoid signaling, insulin-like growth factor signaling, serotonin signaling) for further basic and clinical research. Current literature also supports the potential for cross-effects of therapeutics for osteoporosis and mental health disorders. While studies examining a direct link between osteoporosis and chronic psychological stress are limited, the studies reviewed herein suggest that a multi-factorial, personalized approach should be considered for improved patient outcomes in populations experiencing psychological stress, particularly those at high-risk for development of osteoporosis.

Keywords: osteoporosis, bone, psychological stress, mental health, depression, PTSD, pharmacology, alternatives

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Gabriella Martino,
Università degli Studi di Messina, Italy

Reviewed by:
Hatta Sidi,
National University of Malaysia, Malaysia
Maria Cristina Gugliandolo,
University of Cassino, Italy

****Correspondence:***
Amanda C. LaRue
laruerc@musc.edu

† These authors have contributed equally to this work and share first authorship

The Journal of Clinical Investigation

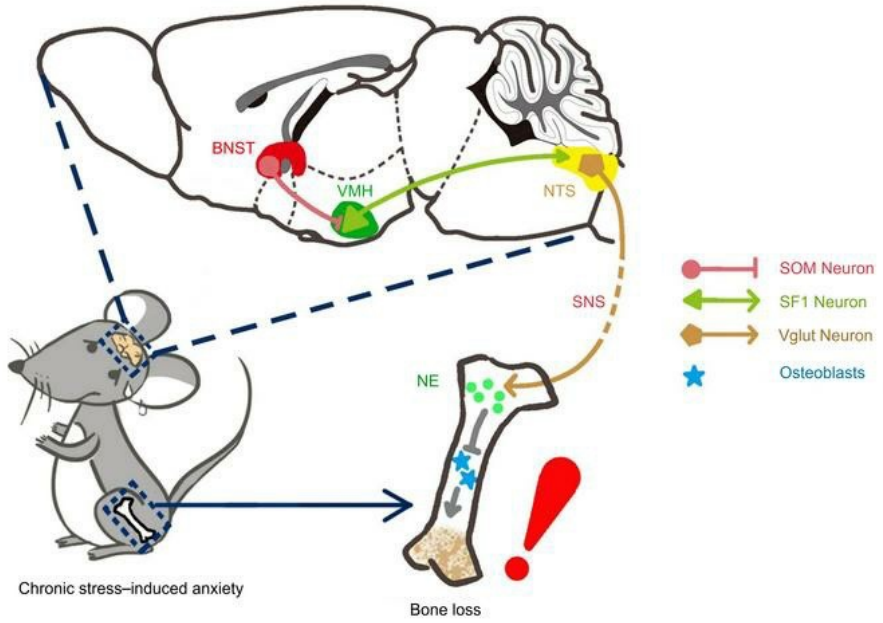
RESEARCH ARTICLE

A GABAergic neural circuit in the ventromedial hypothalamus mediates chronic stress–induced bone loss

Fan Yang,[1,2,3,4,5] Yunhui Liu,[1,2,3,4,5] Shanping Chen,[1,2,3,4,5] Zhongquan Dai,[6] Dazhi Yang,[7] Dashuang Gao,[1,2,3,4,5] Jie Shao,[1,2,3,4,5] Yuyao Wang,[1,2,3,4] Ting Wang,[1,2,3,4] Zhijian Zhang,[8,9] Lu Zhang,[10] William W. Lu,[10] Yinghui Li,[6] and Liping Wang[1,2,3,4,5]

[1]Brain Cognition and Brain Disease Institute, Shenzhen Institutes of Advanced Technology, Chinese Academy of Sciences (CAS), [2]CAS Key Laboratory of Brain Connectome and Manipulation, [3]Guangdong Provincial Key Laboratory of Brain Connectome and Behavior, [4]Shenzhen-Hong Kong Institute of Brain Science–Shenzhen Fundamental Research Institutions, Shenzhen, China. [5]University of Chinese Academy of Sciences, Beijing, China. [6]State Key Laboratory of Space Medicine Fundamentals and Application, China Astronaut Research and Training Center, Beijing, China. [7]Department of Orthopedics, Union Shenzhen Hospital, Huazhong University of Science and Technology, Shenzhen, China. [8]Center for Brain Science, Key Laboratory of Magnetic Resonance in Biological Systems and State Key Laboratory of Magnetic Resonance and Atomic and Molecular Physics, Wuhan Institute of Physics and Mathematics, CAS, Wuhan, China. [9]Center for Excellence in Brain Science and Intelligence Technology, CAS, Shanghai, China. [10]Department of Orthopaedics and Traumatology, The University of Hong Kong, Hong Kong, China.

Homeostasis of bone metabolism is regulated by the central nervous system, and mood disorders such as anxiety are associated with bone metabolism abnormalities, yet our understanding of the central neural circuits regulating bone metabolism is limited. Here, we demonstrate that chronic stress in crewmembers resulted in decreased bone density and elevated anxiety in an isolated habitat mimicking a space station. We then used a mouse model to demonstrate that GABAergic neural circuitry in the ventromedial hypothalamus (VMH) mediates chronic stress–induced bone loss. We show that GABAergic inputs in the dorsomedial VMH arise from a specific group of somatostatin neurons in the posterior region of the bed nucleus of the stria terminalis, which is indispensable for stress-induced bone loss and is able to trigger bone loss in the absence of stressors. In addition, the sympathetic system and glutamatergic neurons in the nucleus tractus solitarius were employed to regulate stress-induced bone loss. Our study has therefore identified the central neural mechanism by which chronic stress–induced mood disorders, such as anxiety, influence bone metabolism.



THE BONE & JOINT JOURNAL EST. 1948

■ TRAUMA

Fractures and the increased risk of suicide

A POPULATION-BASED CASE-CONTROL STUDY

C-F. Chang,
E. C-C. Lai,
M-K. Yeh

From Graduate Institute of Medical Science, National Defense Medical Center, Taipei, Taiwan

Aims

A high rate of suicide has been reported in patients who sustain fractures, but the association remains uncertain in the context of other factors. The aim of this study was to examine the association between fractures and the risk of suicide in this contextual setting.

Patients and Methods

We performed a case-control study of patients aged 40 years or older who died by suicide between 2000 and 2011. We included patients' demographics, physical and mental health problems, and socioeconomic factors. We performed conditional logistic regression to evaluate the associations between fractures and the risk of suicide.

Results

We included a total of 34 794 patients who died by suicide and 139 176 control patients. We found that fractures as a homogenous group (adjusted odds ratios (aOR), 1.48; 95% confidence interval (CI) 1.43 to 1.53), and specifically pelvic (aOR 2.04; 95% CI 1.68 to 2.47) and spinal fractures (aOR 1.53; 95% CI 1.43 to 1.64), were associated with a higher risk of suicide. In addition, we found that patients who had a lower income, had never married, had lower levels of educational attainment, or had coexistent physical and mental conditions such as anxiety, mood disorders, and psychosis-related disorders had a higher risk of suicide.

Conclusion

Fractures, specifically those of the hip and spine, were associated with an increased risk of suicide. The findings suggest that greater clinical attention should be given to this risk in patients with fractures, especially for those with additional risk factors.

Cite this article: *Bone Joint J* 2018;100-B:780–6.

■ C-F. Chang, MS, PhD Candidate
General Institute of Medical Science, National Defense

Suicide in Elderly Patients with Hip Fracture

A South Korean Nationwide Cohort Study

Suk-Yong Jang, MD,* Dae-Suk Yang, MD,* Yong-Han Cha, MD, Heon-Jong Yoo, MD, Kap-Jung Kim, MD, and Won-Sik Choy, MD

Investigation performed at Eulji University Hospital, Daejeon, Republic of Korea

Background: The purpose of the present study was to evaluate the incidence rate (IR) of suicide in elderly patients with hip fracture on the basis of a nationwide cohort and to analyze the change in the hazard ratio for suicide after hip fracture over time in comparison with a control group.

Methods: Patients with hip fracture and their matched controls were selected from the National Health Insurance Service-Senior cohort (NHIS-Senior) of the Republic of Korea. The NHIS-Senior consists of 558,147 people selected by a 10% simple random-sampling method from a total of 5.5 million subjects ≥60 years of age in 2002. Risk-set matching (1:2) on the propensity score was performed with use of a nearest neighbor matching algorithm with a maximum caliper of 0.1 for the hazard components. The IR of suicide and 95% confidence interval (CI) were calculated on the basis of a generalized linear model with a Poisson distribution. The effect size was presented as a hazard ratio (HR) with use of the Cox proportional-hazard model with a robust variance estimator that accounts for clustering within matched pairs.

Results: A total of 11,477 patients with hip fracture and 22,954 matched controls were included. The mean duration of follow-up was 4.59 years, generating 158,139 person-years. During follow-up, a total of 170 suicides were identified. Comparisons at up to 180 days and 365 days showed that patients with hip fracture were at higher risk for suicide than matched controls ($p = 0.009$ and 0.004, respectively; stratified log-rank test). During the first 180 days of follow-up, 14 suicides were identified in patients with hip fracture during 11,152 person-years (IR, 266.1 per 100,000 person-years; 95% CI, 157.6 to 449.4). Patients with hip fracture were 2.97 times more likely to kill themselves than their matched controls during the same period (HR = 2.97; 95% CI, 1.32 to 6.69).

Conclusions: Hip fracture in elderly patients increased suicide risk within a year. A new approach to psychiatric evaluation and management is needed in elderly patients with hip fracture.

Level of Evidence: Therapeutic Level III. See Instructions for Authors for a complete description of levels of evidence.

RENATA/PHOTOGRAPHY/GETTY

Isolation and fear of infection are factors contributing to a rise in anxiety and depression.

COVID'S MENTAL-HEALTH TOLL: SCIENTISTS TRACK SURGE IN DEPRESSION

Researchers are using huge data sets to link changes in mental health to coronavirus-response measures.

By Alison Abbott

As the COVID-19 pandemic enters its second year, new fast-spreading variants have caused a surge in infections in many countries, and renewed lockdowns. The devastation of the pandemic – millions of deaths, economic strife and unprecedented curbs on social interaction – has already had a marked effect on people's mental health. Researchers worldwide are investigating the causes and effects of this stress, and some fear that the deterioration in mental health could linger long after the pandemic has subsided. Ultimately, scientists hope that they can use the mountains of data being collected in studies about mental health to link the impact of particular control measures to changes in people's well-being, and to inform the management of future pandemics.

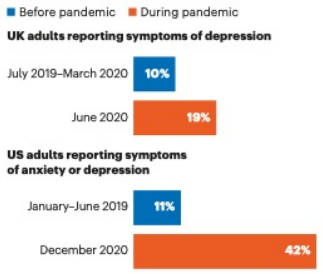
The data that emerge from these studies will be huge, says sociologist James Nazroo at the University of Manchester, UK. "This is really ambitious science," he says.

Some 42% of people surveyed by the US Census Bureau in December reported symptoms of anxiety or depression in December, an increase from 11% the previous year. Data from other surveys suggest that the picture is similar worldwide (see 'COVID's mental stress'). "I don't think this is going to go back to baseline anytime soon," says clinical psychologist Luana Marques, at Harvard Medical School in Boston, Massachusetts, who is monitoring the mental-health impacts of the crisis in US populations and elsewhere.

Major events that have shaken societies, such as the 9/11 terrorist attack in New York, have left some people with psychological distress for years, says Marques. A study of more than 36,000 New York residents and rescue workers revealed that more than 14 years after the attack, 14% still had post-traumatic stress disorder and 15% experienced depression – much higher rates than in comparable populations (5% and 8%, respectively; H. T. Jordan *et al. Environ. Health* **18**, 12; 2019).

COVID'S MENTAL STRESS

The percentage of people experiencing symptoms of depression and anxiety has surged amid the COVID-19 pandemic, data from nationally representative surveys show.



SOURCE: OFFICE FOR NATIONAL STATISTICS (UK DATA); CENTERS FOR DISEASE CONTROL AND PREVENTION (US DATA)

Fear and isolation

The distress seen during the pandemic probably stems from limits on social interactions, tensions among families in lockdown together and fear of illness, says psychiatrist Marcella Rietschel at the Central Institute for Mental Health in Mannheim, Germany.

Studies and surveys conducted so far during the pandemic consistently show that young people, rather than older people, are most vulnerable to increased psychological distress, perhaps because their need for social interactions is stronger. Data also suggest that young women are more vulnerable than young men, and people with young children, or a previously diagnosed psychiatric disorder, are at particularly high risk for mental-health problems. "The things that we know predispose people to mental health problems and conditions have been increased as a whole," says Victor Ugo, a campaign officer who specializes in mental-health policy at United for Global Mental Health, an advocacy group in London.

Scientists running large, detailed international studies say they might eventually be able to show how particular COVID-control measures – such as lockdowns or restrictions on social interaction – reduce or exacerbate mental-health stress, and whether some populations, such as minority ethnic groups, are disproportionately affected by certain policies. That could inform the response later in this pandemic and in future ones, say researchers.

"We have a real opportunity, a natural experiment, in how policies in different countries impact people's mental health," says epidemiologist Kathleen Merikangas at the US National Institutes of Mental Health in Bethesda, Maryland.

To draw studies together, Daisy Fancourt, a psychoneuroimmunologist at University College London, launched the Wellcome-funded CovidMinds programme, which has assembled around 140 longitudinal studies from across more than 70 countries. These recruit large numbers of participants and collect health information at regular intervals. CovidMinds links scientists in different countries and encourages the use of standardized questionnaires so that outcomes can be directly compared in international collaborations. "This may allow us to compare the psychological

Covid and suicide: Japan's rise a warning to the world? - BBC News

18 Feb 2021

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Covid and suicide: Japan's rise a warning to the world?

By Rupert Wingfield-Hayes
BBC News, Tokyo

18 February

Coronavirus pandemic

Japan reports suicides faster and more accurately than anywhere else in the world. Unlike most countries, here they are compiled at the end of every month. During the Covid pandemic the numbers have told a disturbing story.

In 2020, for the first time in 11 years, suicide rates in Japan went up. Most surprising, while male suicides fell slightly, rates among women surged nearly 15%.

In one month, October, the female suicide rate in Japan went up by more than 70%, compared with the same month in the previous year.

What is going on? And why does the Covid pandemic appear to be hitting women so much worse than men?

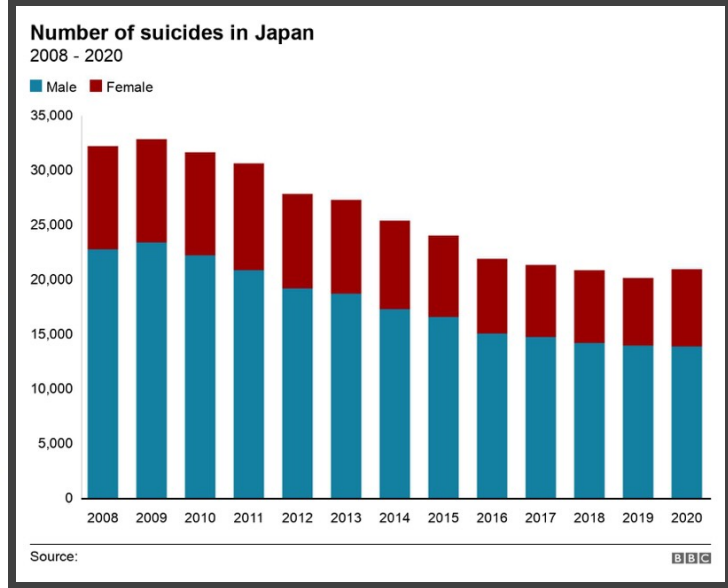
Warning: Some may find the content of this story upsetting

Meeting face-to-face with a young woman who has repeatedly tried to kill herself is a troubling experience. It has given me new respect for those who work on suicide prevention.

I am sitting in a walk-in centre in Yokohama's red-light district, run by a suicide prevention charity called the Bond Project.

Across the table is a 19-year-old woman, with bobbed hair. She sits

motionless.



Post-COVID Stress Disorder: Another Emerging Consequence of the Global Pandemic

January 8, 2021

Phebe Tucker, MD , Christopher S. Czapla, MD

Psychiatric Times, Vol 38, Issue 1, Volume 38, Issue 01

The pandemic has triggered an array of emotional, physical, and economic issues but in the midst of this crisis, nations have shared and learned from each other's experiences.

kalafoto/AdobeStock

Throughout 12,000 years of human history, pandemics have killed an estimated 300 million to 500 million people, with the bubonic plague decimating an estimated 60% of the European population during the Middle Ages. Despite modern advances in medicine, coronavirus disease 2019 (COVID-19) has caused more than 1 million reported deaths in less than a year. Aside from the death toll, the pandemic has triggered significant emotional, physical, and economic problems around the world. But even in the midst of this crisis, nations have an opportunity to share and learn from each other's experiences.

Figure. The Balancing Act: Stressors and Protective Factors Associated With the Pandemic

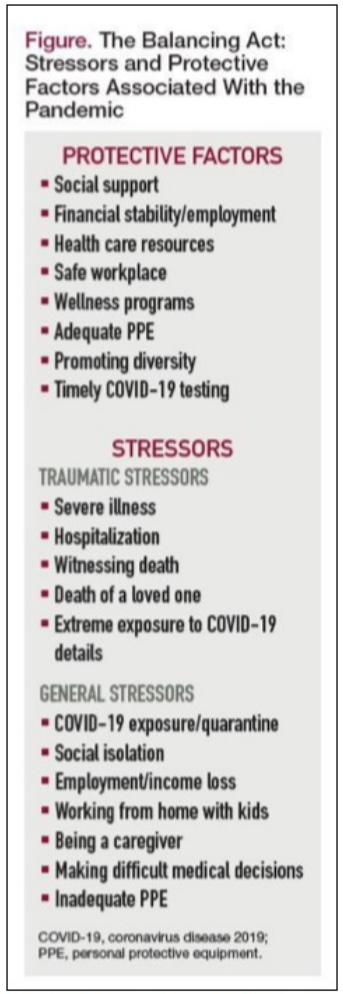


Figure. The Balancing Act: Stressors and Protective Factors Associated With the Pandemic

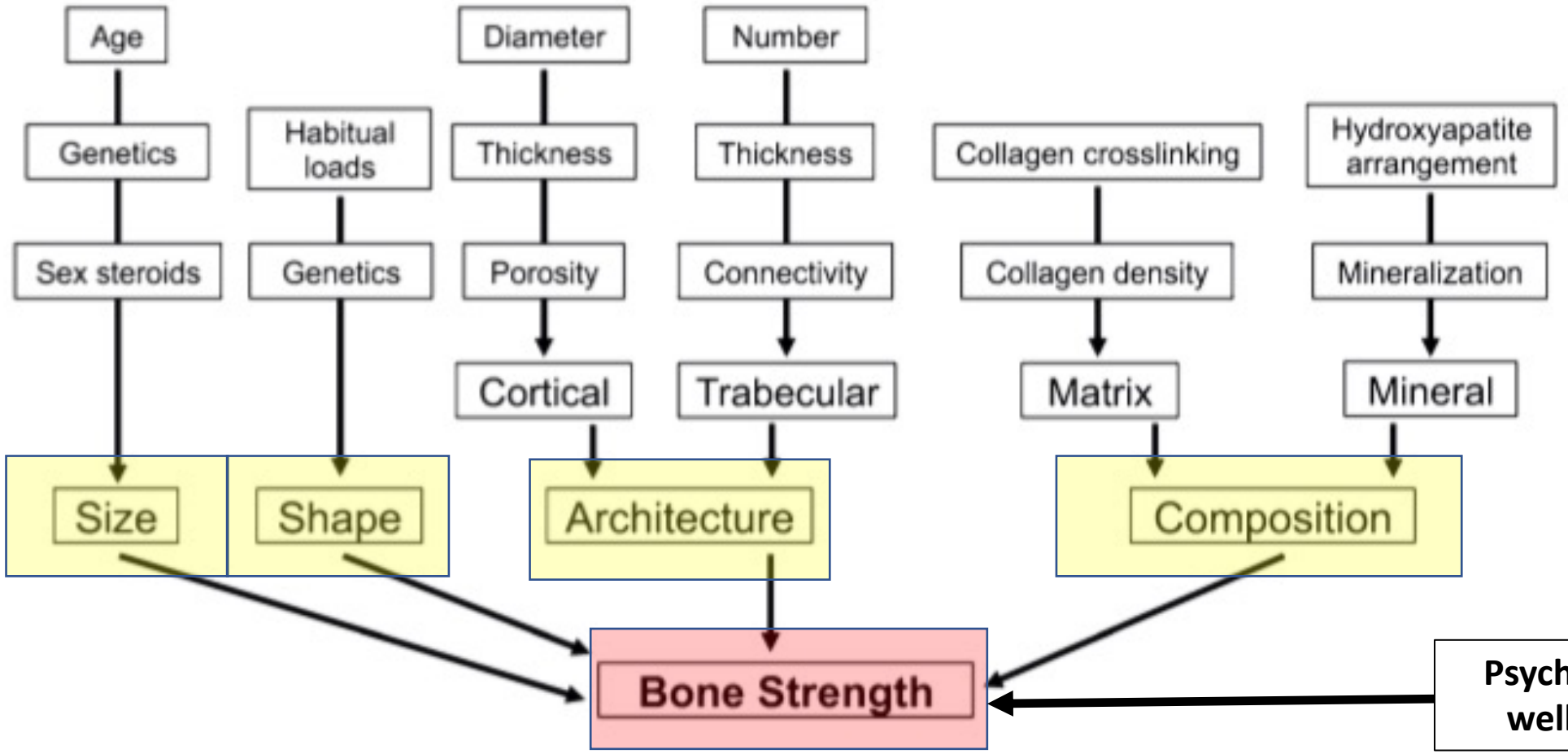
Eurofound (2020), *Living, working and COVID-19 dataset*, Dublin http://eurofound.link/covid19data

24 February 2021

Young people are emerging as some of lockdown's biggest losers who, along with those out of work, report the lowest levels of well-being, despite some improvement since the onset of the pandemic

Women also continue to face a disproportionate impact and remain less optimistic about their future than men - this gap widening further between April and July. The pandemic has also affected the work–life balance of women more than men

Factors Contributing to Bone Health



The Future:

Avoidable harms of societal lockdowns

Royal Osteoporosis Society

Better bone health for everybody

Delivering core NHS and care services during the pandemic and beyond

EVIDENCE FOR HEALTH AND SOCIAL CARE SELECT COMMITTEE INQUIRY: OSTEOPOROSIS AND FRACTURE PREVENTION SERVICES

Issued by the Royal Osteoporosis Society Clinical Committee | V1.1 June 2020

Executive summary

Given the immense pressures placed on the NHS and care sector by the COVID-19 pandemic, it is imperative to reduce demand on these services by minimising the impact of other preventable diseases.

Osteoporosis causes over half a million broken bones (fractures) in the UK every year, costing £4 billion annually, and leading to substantial ill health and premature deaths. With our ageing demographic, osteoporotic fractures will place an ever-increasing burden on the NHS and care sector. Indeed, osteoporosis was recognised by the UK Chief Medical Officer, Professor Chris Whitty, as one of six key health priorities for the over 65s during the COVID-19 pandemic.

Rapid resumption of osteoporosis and fracture prevention services is vital to mitigate an otherwise inevitable increase in broken bones and hospital admissions resulting from hip and other fractures over the coming months and years.

Lockdown Benefits and Harms

New York, USA

Cite this as: *BMJ* 2020;371:m4263
http://dx.doi.org/10.1136/bmj.m4263
Published: 03 November 2020

Covid-19: Experts debate merits of lockdowns versus "focused protection"

Jeanne Lenzer

Three experts with widely differing viewpoints regarding appropriate public health measures to control the spread of covid-19 weighed in on lockdowns during a debate[1] sponsored by Johns Hopkins University.

The experts represented viewpoints ranging from advocacy for "focused protection" as described in the Great Barrington Declaration[2] to recommendations for population-wide mandates as described in the John Snow Memorandum.[3]

David Dowdy, associate professor of epidemiology at Johns Hopkins School of Public Health, said he agreed with "much of the content" of the memorandum, which states that broad lockdowns were initially necessary to "reduce mortality and to prevent healthcare services from being overwhelmed" but that the focus should shift to detecting localised outbreaks through a "comprehensive find, test, trace, isolate, and support system" approach once low levels of covid-19 are attained.

Dowdy cited Australia's approach of increased testing to determine where transmission is occurring and then focusing interventions on local geographic areas (for example, postal codes) where transmission is going up. But Dowdy said he declined to sign the memorandum, which was signed by thousands of doctors worldwide, because he was concerned that it could "implicitly shame" doctors with differing viewpoints and make some fearful of speaking out.

Jay Bhattacharya, professor of medicine at Stanford University and a health economist who co-authored the Great Barrington Declaration, said the vastly differing mortality risk rates based on age and co-morbidities and other factors could allow "focused protection" for those at risk while allowing children to go to school and younger adults to continue working.

Citing seroprevalence data[4] published by the World Health Organization, Bhattacharya said that covid-19 has an infection survival rate of 95% for people 70 years and older. While he described 5% mortality among the elderly as a "severe problem," he pointed out that the survival rate for people under 70 is orders of magnitude better at 99.95%.

Bhattacharya added that broad lockdowns can paradoxically increase harms to the elderly as economic displacement induced by lockdowns leads young adults to live with older parents. A benefit of focused protection, he told *The BMJ*, is that resources could be redirected from low yield interventions to where supports are most needed.

Stefan Baral, an infectious disease epidemiologist at Johns Hopkins School of Public Health, said he supported adaptive interventions to protect at-risk people rather than broad lockdowns of entire populations. He said his mother lives in Sweden and "there's nowhere else I would have wanted my mom to be. I love my mom and I feel she's safe there."

But Baral said that simply opening up society in the US isn't sufficient unless, and until, support is in place for at-risk people. "Testing is just data, it's not an intervention," he said. "If you're poor and told to test and isolate if positive, without measures in place to pay that person's wages and to pay for a hotel room if they can't isolate at home, testing is meaningless, leaving many people to face impossible choices. "

Baral called for "resources before restrictions," saying the current approach in the US is "good for rich folk" who can isolate, work from home, and have food delivered. He said, "We're asking people already on the economic margins to absorb social costs," which is worsening already existing inequalities and suffering.

Herd immunity and the true measure of success

When the moderator suggested that the Great Barrington Declaration recommended herd immunity as a strategy, Bhattacharya explained that he and his colleagues don't see herd immunity as a strategy but as a simple "biological fact," adding, "It will eventually happen. That's how epidemics end. So, the only question is how you get there with the least amount of human misery, death, and harm." The best way, he said, is to "acknowledge who actually is in danger and devote enormous creativity, resources, and energy to protect them."

There appeared to be some consensus among the panellists that the measure of successful public health interventions can't solely rest with death counts from covid-19. The downstream harms of lockdowns must be considered in the benefit-to-harm calculus of various forms of lockdown.

Bhattacharya cited an estimate from the United Nations World Food Program indicating that pandemic lockdowns causing breaks in the food chain are expected to push 135 million people into severe hunger and starvation by the end of this year. Other harms include the difficult to measure effects of missed schooling for many children.

Another area of consensus was that broad lockdowns are to be avoided. Differences remained among the experts about how best to go about more focused lockdowns as countries face second and third waves of covid-19, but they expressed their hope that this initial dialogue will be the beginning of many more respectful and evidence based discussions.

Study: Lockdown harms 10 times greater than benefits

Tribune Desk Published at 10:47 am January 11th, 2021

BIGSTOCK

Dr Ari Joffe said inaccuracies in initial modelling and forecasting led to a contagion of fear and policies across the world

Aging Clinical and Experimental Research
https://doi.org/10.1007/s40520-019-01294-4

REVIEW

Radiofrequency echographic multi-spectrometry for the in-vivo assessment of bone strength: state of the art—outcomes of an expert consensus meeting organized by the European Society for Clinical and Economic Aspects of Osteoporosis, Osteoarthritis and Musculoskeletal Diseases (ESCEO)

Adolfo Diez-Perez[1] · Maria Luisa Brandi[2,3] · Nasser Al-Daghri[4] · Jaime C. Branco[5] · Olivier Bruyère[6] · Loredana Cavalli[2,3] · Cyrus Cooper[7] · Bernard Cortet[8] · Bess Dawson-Hughes[9] · Hans Peter Dimai[10] · Stefano Gonnelli[11] · Peyman Hadji[12] · Philippe Halbout[13] · Jean-Marc Kaufman[14] · Andreas Kurth[15,16] · Medea Locquet[17] · Stefania Maggi[18] · Radmila Matijevic[19,20] · Jean-Yves Reginster[4,6] · René Rizzoli[21] · Thomas Thierry[22,23]

Received: 17 June 2019 / Accepted: 24 July 2019

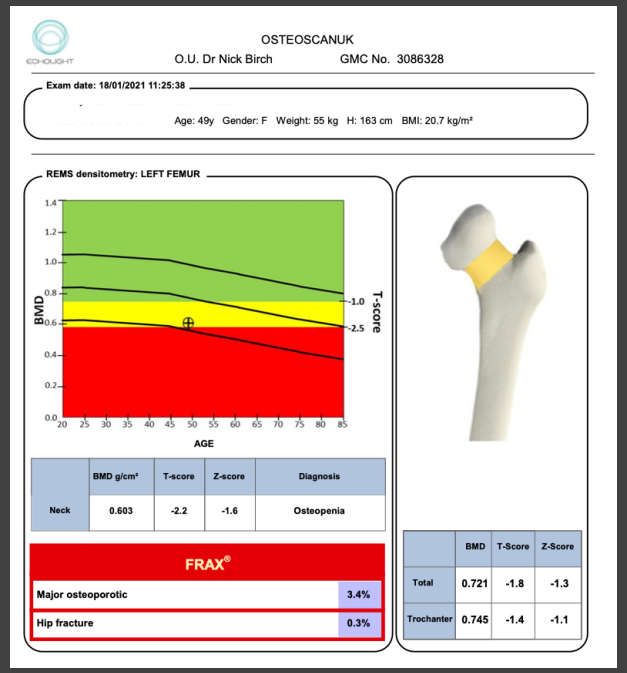
REMS represents the first clinically available method for direct non-ionizing measurement of lumbar and femoral BMD

REMS-estimated BMD is an accurate diagnostic parameter, predicting incident clinical fracture risk in a representative sample of female subjects

REMS has shown a further potential in the assessment of skeletal fragility based on bone structure quality through the Fragility Score parameter, which is independent from the densitometric evaluation

Take home message: REMS is equivalent to DEXA for BMD and TBS assessment

REMS Output



OSTEOSCANUK
O.U. Dr Nick Birch GMC No. 3086328

Exam date: 18/01/2021 11:25:38

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

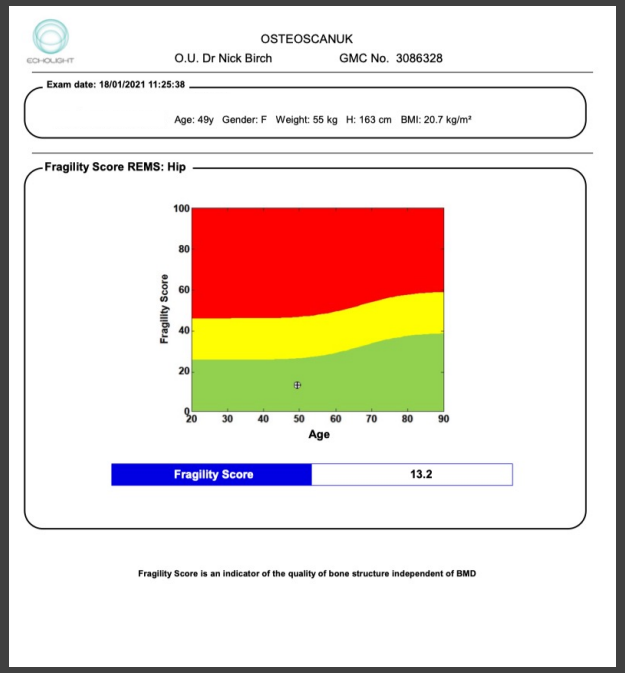
REMS densitometry: LEFT FEMUR

	BMD g/cm²	T-score	Z-score	Diagnosis
Neck	0.603	-2.2	-1.6	Osteopenia

	BMD	T-Score	Z-Score
Total	0.721	-1.8	-1.3
Trochanter	0.745	-1.4	-1.1

FRAX®

Major osteoporotic	3.4%
Hip fracture	0.3%



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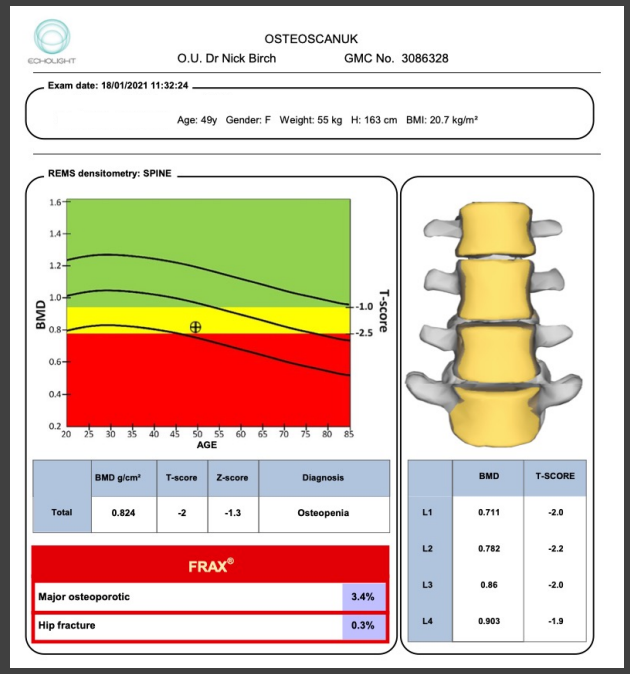
Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

Fragility Score REMS: Hip

Fragility Score	13.2

Fragility Score is an indicator of the quality of bone structure independent of BMD



OSTEOSCANUK
O.U. Dr Nick Birch GMC No. 3086328

Exam date: 18/01/2021 11:32:24

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

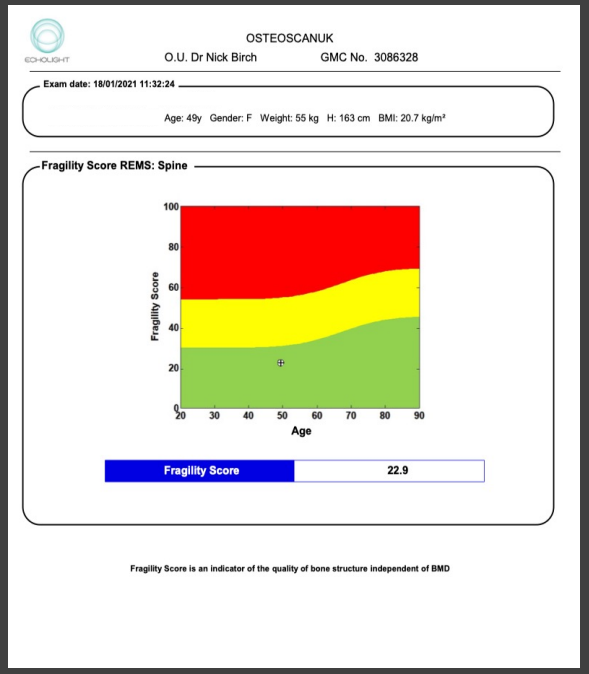
REMS densitometry: SPINE

	BMD g/cm²	T-score	Z-score	Diagnosis
Total	0.824	-2	-1.3	Osteopenia

	BMD	T-SCORE
L1	0.711	-2.0
L2	0.782	-2.2
L3	0.86	-2.0
L4	0.903	-1.9

FRAX®

Major osteoporotic	3.4%
Hip fracture	0.3%



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Exam date: 18/01/2021 11:32:24

Age: 49y Gender: F Weight: 55 kg H: 163 cm BMI: 20.7 kg/m²

Fragility Score REMS: Spine

Fragility Score	22.9

Fragility Score is an indicator of the quality of bone structure independent of BMD

BMI T-SCORE Z-SCORE BMD (g/cm²) FRAX® (> 40 years) FRAGILITY SCORE

Q & A