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Academic Psychiatry Conference 2014

Celebrating Academic Psychiatry-

35 Years On!

31 October -1 November 2014 | NUHS Tower Block Auditorium

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National University Hospital

National University of Singapore

The Lancet Psychiatry

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ANNALS
ACADEMY OF MEDICINE SINGAPORE

Academic Psychiatry Conference 2014
Celebrating Academic Psychiatry—35 Years On

The Inaugural NUS Academic Psychiatry Conference 2014 themed 'Celebrating Academic Psychiatry—35 Years On' features distinguished speakers to explore the latest perspectives, trends and clinical research in global psychiatric care and practice. We will also take time to commemorate the 35th anniversary celebration of the NUHS Department of Psychological Medicine at Yong Loo Lin School of Medicine and National University Hospital.

The agenda 'Functional Ageing and Advancements in Psychiatry' draws collaborators from Harvard and Cambridge Universities alongside of the Kent Ridge scholars and clinicians showcasing the current thinking in clinical psychiatry. The forum deliberates on neuropathologies, social perspectives of successful ageing, advances in imaging techniques, diet and mental health to better care for our patients.

As Chairman of the Organising Committee, it is my honour and pleasure to welcome my fellow colleagues to join other international scientists and clinicians to be a part of this unique opportunity to network and exchange valuable insights in academic psychiatry.

I wish you all a rich learning experience!

A/Prof Wong Chee Meng John
Head, Senior Consultant,
Department of Psychological Medicine, NUHS

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Academic Psychiatry Conference 2014
Celebrating Academic Psychiatry—35 Years On

PROGRAMME DAY 1

FRIDAY, 31 OCTOBER, 2014	
TIME	**PROGRAMME**
7.30 - 8.30am	**NUHS GRAND ROUND** Inaugural Lecture: Tan Geok Yin Professorship in Psychiatry and Neuroscience **Question of the Age – Is Dementia Preventable?** Prof Kua Ee Heok Professor & Senior Consultant Department of Psychological Medicine, NUHS
FUNCTIONAL AGEING AND ADVANCEMENTS IN PSYCHIATRY	
8.30 - 9.00 am	**CONFERENCE REGISTRATION**
9.00 - 9.15 am	**Welcome Address** A/Prof Wong Chee Meng John Head, Associate Professor, Senior Consultant Department of Psychological Medicine, NUHS
9.15 - 9.30 am	**Opening Address** Prof John Eu Li Wong Chief Executive, NUHS
9.30 - 10.05 am	**Mechanisms of Progressive Neurodegeneration in Alzheimer's Disease** Prof Bradley T Hyman John B Penney, Jr. Professor of Neurology Massachusetts General Hospital, Harvard Medical School
10.10 - 10.35 am	**Successful Ageing: Insights from the Singapore Longitudinal Ageing Studies** A/Prof Ng Tze Pin Associate Professor, Professorial Fellow Department of Psychological Medicine, NUHS
10.40 - 11.00 am	**COFFEE BREAK**
11.00 - 11.25 am	**Vascular Dementia** A/Prof Christopher Chen Associate Professor, Senior Research Fellow Department of Pharmacology, NUS
11.30 - 11.55 am	**Relationship Between the Built Environment and the Elderly** Prof Becky PY Loo Professor Department of Geography, The University of Hong Kong
12.00 - 12.25 pm	**Older Adults' Attitude and Use of Assistive Devices** Dr Hong Song-Iee Assistant Professor Department of Social Work, NUS
12.30 - 12.55 pm	**Social Perspectives on Functional Ageing** A/Prof Paulin Tay Straughan Associate Professor Department of Sociology, NUS
1.00 - 2.15 pm	**LUNCH & VIEWING OF POSTERS**
2.15 - 2.45 pm	**Five Emerging Areas of Psychiatric Research** Dr Niall Boyce Editor, The Lancet Psychiatry
2.45 - 3.15 pm	**Imaging the Maturing Brain and the Emergence of Psychopathologies** Prof John Suckling Professor Department of Psychiatry, University of Cambridge

Academic Psychiatry Conference 2014
Celebrating Academic Psychiatry—35 Years On

PROGRAMME DAY 1

TIME	PROGRAMME
3.15 - 3.45 pm	**Imaging the Ageing Brain** Dr Johnson Fam Assistant Professor, Consultant Department of Psychological Medicine, NUHS
3.45 - 4.15 pm	**Cytokines in Depressive Disorder** Dr Roger Ho Assistant Professor, Consultant Department of Psychological Medicine, NUHS
	RESULTS OF THE POSTER COMPETITION

PROGRAMME DAY 2

SATURDAY, 1 NOVEMBER 2014	
TIME	**PROGRAMME**
9.00 am	**REGISTRATION & BREAKFAST**
PUBLIC SYMPOSIUM − FOOD & THE MIND	
9.30 - 11.45 am	**Eating Behaviour and Weight Management − How our Brain Values Food** Dr Mary Chong Research Scientist, Clinical Nutrition Research Centre Singapore Institute for Clinical Sciences, A*STAR
	Diet and the Ageing Brain Dr Feng Lei Senior Research Fellow Department of Psychological Medicine, YLLSOM, NUS
	Mindful Diet and Mindful Eating Mr Wee Sin Tho Senior Advisor, Office of President, NUS
	How Not to be a Malnourished Elderly Dr Lim Su Lin Chief Dietitian, Senior Assistant Director Department of Dietitics, NUH
10.00 - 11.30 am (Concurrent session)	**Workshop on Editorial Guidance to Publishing in *The Lancet Psychiatry*** Dr Niall Boyce Editor, ***The Lancet Psychiatry***
	Q & A SESSION
	POSTERS DISPLAY (DAY 1 & DAY 2)
	EXHIBITS & BOOTHS (DAY 1 & DAY 2)

Inaugural Lecture
Tan Geok Yin Professor in Psychiatry and Neuroscience

Question of the Age—Is Dementia Preventable?

Kua Ee Heok

The rising tide of dementia is a public health concern in developed and developing countries. Besides health cost, caring for the frail elderly at home is challenging with the social transformation of the Singapore family. Some countries are piloting dementia prevention programmes and this lecture will discuss our Jurong Ageing Study (JAS). It is preventive medicine in the community, by the community, for the community. This unique programme is the joint effort of the private sector, the non-governmental organisations (NGOs), volunteers as well as academics. The modalities of intervention include health education, lifestyle change and cognitive stimulation including mindfulness practice, tai-chi exercise, music-reminiscence and art. This will be a 10-year longitudinal study and the results of the first year analysis of rates of depression, anxiety and cognitive decline will be presented. This is an Asian culture-oriented intervention programme that is tailored to the needs of community-living elderly in Singapore. The researchers will now investigate whether these interventions could also benefit elderly individuals with cognitive impairment, in 2 randomised control trials on mindful awareness practice and choral singing for the prevention of depression and dementia.

About the Speaker

Prof Kua Ee Heok is the Tan Geok Yin Professor in Psychiatry and Neuroscience in the Department of Psychological Medicine, National University of Singapore and Senior Consultant Psychiatrist with the National University Hospital, Singapore. He received his medical training at the University of Malaya and postgraduate training in psychiatry and geriatric psychiatry at Oxford University and Harvard University, respectively. Prof Kua has won numerous research prizes and has published over 200 research papers and 21 books on psychiatry, ageing, dementia, depression and addiction. He is the Immediate Past President of the Gerontological Society, Singapore and was previously CEO and Medical Director of the Institute of Mental Health.

Workshop on Editorial Guidance to Publishing in *The Lancet Psychiatry*

Niall Boyce

Niall Boyce, former Senior Editor at *The Lancet* and current Editor-in-Chief of *The Lancet Psychiatry* presents a concise, comprehensive guide to the *Lancet* family of journals, and how best to prepare, format, and submit your research to general or specialty medical journals for publication.

Five Emerging Areas of Psychiatric Research

Niall Boyce

Following the controversy surrounding the publication of DSM-5 in 2013, the time is ripe for a reappraisal of the aims and practice of psychiatry. Editor of *The Lancet Psychiatry*, Niall Boyce has selected 5 areas of mental health research that he feels will help the profession to redefine itself and move forward for the benefit of patients. These areas incorporate genetic research to define new pharmacological targets and new approaches to classification; the collection and analysis of large data sets; the study of the intersection between physical and mental health; research into global mental health; and the facilitation of patient participation.

About the Speaker

Dr Niall Boyce was trained in medicine at Oxford University and subsequently on the University College London psychiatry rotation. A member of the Royal College of Psychiatrists, Dr Boyce had joined *The Lancet* as a Senior Editor in 2010 before moving on to *The Lancet Psychiatry* in 2013. His interests include suicide research, trauma, old age psychiatry, and social and transcultural aspects of mental health.

Vascular Dementia

Christopher Chen

Stroke is a leading cause of death and disability worldwide. Despite improvements in acute stroke treatment, many patients only make a partial or poor recovery, including in terms of cognition. The concept of vascular dementia (VaD) has evolved since the 1960s, with several sets of diagnostic criteria having been published. Much ambiguity in the definition of VaD continues to beset the field, which warrants a critical examination and updating of the extant criteria. The traditional concept of vascular dementia, reflected in the earlier term multi-infarct dementia, has been expanded to include a wide range of syndromes. Nevertheless, it is increasingly recognised that the conventional definition of vascular dementia is deficient as stroke may produce a spectrum of cognitive changes, thus the emergence of "vascular cognitive impairment" as a more clinically useful syndrome. Patients with "vascular cognitive impairment" have been reported to be as common as those with Alzheimer's Disease and have a significantly higher rate of institutionalisation and death.

Indeed, a substantial proportion of patients after non-disabling stroke are cognitively impaired compared to aged and education-matched community-dwelling controls. Our group has shown that severity of baseline cognitive impairment after stroke is associated with an increased risk of incident dementia as well as poorer functional outcome.

Advances in stroke management, and the recognition of the coexistence of vascular dementia and Alzheimer's disease have opened new prospects for the prevention and treatment of post-stroke cognitive impairment and dementia.

About the Speaker

Dr Christopher Chen is a Senior Clinician-Scientist at the National Medical Research Council of Singapore, Associate Professor at the Department of Pharmacology, Faculty of Medicine, National University of Singapore, and Director of the Memory Aging and Cognition Centre, National University Healthcare System. He read for the Medical and Natural Science Tripos at Fitzwilliam College, Cambridge University, graduating in Physiology and Psychology in 1982. His clinical training was at the University of Oxford from where he graduated in 1985. In 1990, he was elected the Janssen Junior Research Fellow at Worcester College, Oxford University and was a Visiting Research Fellow at the Institute of Neurology, London.

His major research and clinical interests are the neurochemistry, molecular biology and treatment of stroke and dementia. He has published over 250 peer-reviewed papers and book chapters, serves on journal editorial boards and has been a member of several trial steering committees and advisory panels. Since returning to Singapore in 1995, Dr Chen has developed comprehensive multidisciplinary dementia programmes and collaborative research in the Asia-Pacific region and beyond through a Trials Unit focusing on stroke and dementia with extensive international collaborations.

Currently, he is Chair of the International Society for Vascular Behavioural and Cognitive Disorders Executive Committee, Secretary-General of the Asian Society Against Dementia; Member of the International Stroke Society Board of Directors and the Constitutional Committee of the World Federation of Neurology.

Eating Behaviour and Weight Management—How Our Brain Values Food

Mary Chong

Individuals differ in their propensity to maintain a healthy body weight. While some people gain excessive weight due to poor knowledge on healthy eating and/or lack of physical activity, it is increasingly recognised that the inability to regulate one's eating behaviour is a major contributor to the current high rates of obesity.

Eating behaviours can be defined by 3 factors: restraint, disinhibition and hunger. People with high dietary disinhibition tend to consume more food, are more likely to gain weight over time and are more likely to be obese. We demonstrated a neuropsychological perspective of eating behaviour and showed that neural valuation signals associated with food choice are altered in participants with high dietary disinhibition.

Weight management studies have investigated if baseline dietary behaviours and their subsequent changes upon behavioural therapy could better predict successful weight loss and long-term weight maintenance in overweight or obese people. It appears that successful long-term weight management is associated with the ability to move from strict dieting (rigid restraint) to a more flexible control of eating as one's weight management progresses. Current evidence highlights the importance of having a combination of nutritional and behavioural/cognitive therapy as part of any weight management intervention to improve self-efficacy and cognitive control of eating for successful weight loss and long-term weight maintenance.

About the Speaker

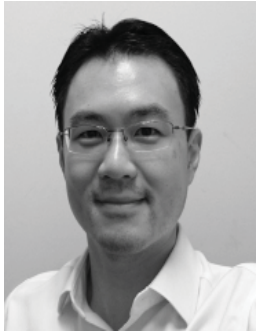
Dr Mary Chong is a clinical dietitian by training and pursued her PhD studies at the University of Oxford, UK. She did her postdoctoral training at the University of Reading, UK and returned to Singapore 4 years ago to continue her research. She is currently a Research Scientist at the Clinical Nutrition Research Centre and Singapore Institute for Clinical Sciences, A*STAR and an adjunct Assistant Professor with the Department of Paediatrics, Yong Loo Lin School of Medicine, National University of Singapore.

With clinical nutrition research in its infancy in Singapore, Dr Chong has been helping to build up the clinical nutritional research capabilities in this area and support ongoing clinical studies. She is the Nutrition Lead for GUSTO, a birth cohort study in Singapore and 2 upcoming cohort studies. She is also coinvestigator and collaborator on 3 adult weight loss dietary intervention studies. Dr Wong has a special interest in eating behaviour and appetite regulation and has been exploring this aspect in both children and adults in the GUSTO study and weight loss studies respectively.

Imaging the Ageing Brain

Johnson Fam

The ageing brain is characterised by complex structural and functional changes that are often accompanied by varying degrees of cognitive decline. Advanced age is associated with biological processes that affect both brain structure and function. Age-related changes and preclinical disease processes commonly overlap, making it difficult to define "normal" ageing, especially in the presence of subtle cognitive decline. Advances in neuroimaging have allowed us to examine these processes in ways not previously possible. Findings from various in vivo brain imaging modalities will be presented and discussed.



About the Speaker

Dr Johnson Fam is a consultant psychiatrist at the National University Hospital and Assistant Professor at the Department of Psychological Medicine, Yong Loo Lin School of Medicine, National University of Singapore. His research interests are in affective disorders, psychopharmacology, neuroimaging and neurostimulation. He is currently involved in several interventional studies. He strives for both clinical and research excellence, and hopes to improve patient outcome through active translational research.

Diet and the Ageing Brain

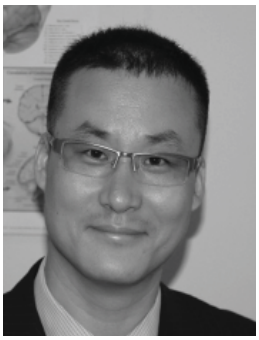
Lei Feng

Cognitive function declines with advancing age as the behavioural consequence of multiple age-related changes in the brain take place: grey matter and white matter atrophy, infarct, white matter lesions, beta amyloid deposition, etc. Impaired cognitive function limits an individual's ability to work, live and socialise, and represents a major obstacle for functional ageing. How to enhance cognitive health in ageing is an important and challenging question that requires more research with good applicability. Accumulating research data now supports that diet plays an important role in determining a person's cognitive status in late life. Limited evidence from randomised controlled trials support that dietary/nutritional intervention is a promising avenue of exploration. Based on data from the Singapore Longitudinal Ageing Study cohort, we have previously correlated cognitive function in the elderly with a range of nutritional factors such as folate, homocysteine, vitamin B12, haemoglobin, albumin, and omega-3 polyunsaturated fatty acids. Our research findings indicate that the consumption of vegetables, tea (any type), nuts and fish may help to maintain brain function in old age. In the West, a handful of studies reported association between diet patterns and cognitive status. For example, the Mediterranean diet, a dietary pattern usually consumed among the populations bordering the Mediterranean Sea, has been reported to be protective against Alzheimer's disease and cognitive decline.

Diet patterns represent the consequence of cultural and ethnic heritage, and of many environmental factors. As one would expect naturally, the eating habits of Asians would be very different from their counterparts in the West. The majority of research on dietary pattern and cognitive ageing have been conducted in non-Asian populations and Asian diet has not been well studied. Based on the Diet and Healthy Ageing Study cohort, Dr Feng and team are now

conducting the first study that systematically examines the associations between Asian diet patterns, nutrients intake, cognitive decline, and neurocognitive disorders. The project has successfully recruited and assessed over 700 community-living adults aged 60 and above from a geographically defined area in Jurong, Singapore. Dietary information are collected using a local Food Frequency Questionnaire (FFQ) and 3-day food diaries. Cognitive function is measured using standard cognitive tests that have been modified for local use. Data analysis and follow-up assessments are being planned.

In the next phase of the research, we aim to identify brain healthy dietary patterns to guide further interventional study that tests the feasibility and efficacy of dietary modification in delaying cognitive decline. The feasibility of dietary modification approach in health promotion has been proven in conditions such as hypertension and cancer but the effectiveness of dietary modification approach in enhancing cognitive function has not been systematically tested before. Although changing of dietary habits at individual level is generally believed to be difficult, informing and encouraging people to follow the brain healthy diet pattern which we aim to identify would be able to benefit a subgroup of people who have the motivation to change their dietary habits.



About the Speaker

Dr Feng Lei is currently a Senior Research Fellow at Department of Psychological Medicine, National University of Singapore. His research interests include healthy ageing, dementia and cognitive decline, and autism spectrum disorder. Dr Feng Lei obtained his Bachelor of Medicine degree from China (2000) and PhD degree from the National University of Singapore (2009). He has published more than 50 research papers on ageing, psychiatric, and neuroscience research studies. Dr Feng Lei has worked as a lecturer of medical psychology at Weifang Medical University in Shandong province, China from 2000 to 2004, where he also provided counselling and psychotherapy services. He has won numerous awards like the Pacific Rim College of Psychiatrist Research Award, 2008, Tokyo, Japan and the National University Health System (NUHS) Clinician Scientist Programme Award, June 2014, Singapore.

Cytokines in Depressive Disorder

Roger Ho

Recent research evidence indicates that depression leads to proinflammatory cytokines hypersecretion and inflammatory response system activation. In this presentation, Dr Ho would like to share his research findings. In a meta-analysis published in 2012, his team found that the blood levels of s interleukin (IL)-2R, tumour necrosis factor (TNF)-α and IL-6 were significantly higher in depressed patients than controls. In addition to well known proinflammatory cytokines, his research team also found that patients suffering from anxiety and depressive disorders showed a significantly higher IL-23 and IL-33 concentration. His research team performed a 4-month experiment to evaluate the ability of fluoxetine in altering the levels of peripheral and central IL-1β, IL-6, TNF-α and IL-17 proinflammatory cytokines and alleviating the state of depression in rats undergoing chronic mild stress (CMS), which resembles the human experience of undergoing depression. In this study, the serum levels in rats treated with fluoxetine indicated a statistically significant decrease in serum IL-1β level on Day 60 and Day 120 as compared to its baseline level on Day 0 ($P < 0.05$). His research team takes one step further to compare the effects of 8 different antidepressants (agomelatine, amitriptyline, bupropion, escitalopram, fluoxetine, moclobemide, mirtazapine, and venlafaxine) and a mood stabiliser (lithium) on peripheral and central proinflammatory cytokines in rats undergoing CMS without lipopolysaccharide induction. The results in his study revealed no significant differences observed in serum and brain TNF-α and IL-17 levels, but agomelatine, amitriptyline and escitalopram demonstrated significantly lower serum and brain levels of IL-1β, as well as brain levels of IL-6 in CMS model of depression; indicating its potential therapeutic effects in addition to alleviation of depressive symptoms.

About the Speaker

Dr Roger Ho is currently an Assistant Professor and Consultant at the Department of Psychological Medicine, at the National University of Singapore and the National University Hospital. He is the Undergraduate Education Director of the University Department. Dr Ho's research work mainly focuses on the interface between psychiatry and medicine. He has been featured in more than 40 publications covering topics in the psychiatric aspects of chronic diseases such as systemic lupus erythematosus, asthma, chronic obstructive pulmonary diseases, stroke and atopic dermatitis, as well as the immunological aspects of depressive disorder, medical complications of substance abuse and suicide methods. His articles appeared in psychiatric and medical journals such as the *American Journal of Geriatric Psychiatry, Journal of Affective Disorders, General Hospital Psychiatry, Journal of Neurology, Neurosurgery and Psychiatry, Arthritis and Rheumatism, Pediatric Allergy and Immunology,* and *Rheumatology* (Oxford), as well as case reports in top-tier medical journals such as *Lancet*. He has established National University Hospital System as a major postgraduate training centre for the MRCPsych examination. He has written 2 leading books for MRCPsych candidates, Revision Notes in Psychiatry (3rd edition), CRC Press and Revision MCQs and EMIs for the MRCPsych, Hodder Arnold.

Older Adults' Attitude and Use of Assistive Devices

Song-lee Hong

The emerging trend of older adults living alone in Singapore leads to an ecological view of systematic groundwork to assess their environmental hazards in a community. Therefore, this study attempted a systematic investigation of bio-psycho-social-environmental needs assessment for older adults living at studio apartments (SAs) specially designed for public senior housing in Singapore. Based on the Lawton's ecological model of ageing (1983), the multidisciplinary gerontological research team consisting of social workers, architects, geriatricians, and occupational therapists, has examined older adults' personal competency, environmental hazards, and their environmental adaptation. The parental study on home visits at SAs identified various environmental hazards. Based on these findings from previous home visits, the social survey was designed to investigate which adaptive strategies older adults are using to perform their daily tasks. Specifically, the current study examined to what extent older adults' attitude toward assistive devices influence their actual utilisation of assistive devices.

Face-to-face interviews with a structured questionnaire were conducted for one-and-a-half hours with SA residents (n = 925). To include all 3 ethnicities (Chinese, Malay, and Indian), the English questionnaire was translated into each of the dialects (Mandarin, Malay, and Tamil). Of the total 925 subjects, 481 had functional limitations. Using this subsample of functionally disabled, adaptive strategy was captured with 4 categories: assistive device users, personal care users, those who use both assistive devices and personal care (both users), and those who use neither assistive device nor personal care (none). Attitude towards assistive devices was measured with 8 items in the aspects of substitution of care, financial affordability, and perceived privacy and stigma on disability. Sociodemographics, self-rated health and physical function were also measured. Latent profile analysis (LPA) was used to estimate overall patterns of older adults' attitudes toward assistive devices. Multinomial logistic regression analysed the impact of older adults' attitude toward assistive devices on the polychotomous outcome of adaptive strategies.

The LPA finding showed that all 8 items were significant to distinguish 3 distinctive classes: (i) 'Positive attitude' group; (ii) 'Unwilling to pay'; and (iii) 'Negative attitude' group. Non-Chinese group was more likely to be classified as 'Negative attitude' group. 'Unwilling to pay' group showed the lowest income levels among the 3 groups. Attitude toward assistive devices differentiated older adults' adaptive strategies. As compared to those who used neither assistive devices nor personal care, 'Unwilling to pay' group was less likely to use assistive devices than 'Negative attitude' group. In contrast, 'Positive attitude' group was more likely to use assistive devices than 'Negative attitude' group. Attitude toward assistive devices was not related to the use of personal care.

The empirical findings on the significance of psychosocial factors affecting the selection of assistive strategies increase better understanding of older adults' adaptive behaviours to adjust the bad-fit between environmental hazards and their personal competency. Such tips offer practical implications in designing social services/programmes which can ensure equal distribution of technical resources for disabled older adults to facilitate ageing-in-place in the local context.

About the Speaker

Dr Hong Song-Iee (PhD) is a social gerontologist who studied in the discipline of social work. She is an Assistant Professor at the Department of Social Work, Faculty of Arts and Social Sciences, National Univeristy of Singapore.

Her research interests concentrate on older adults' capacity to enhance their well-being, including their health, productivity, life satisfaction, and independence, in the face of age-related obstacles that may require them to adapt. Specific research agenda comprises 3 areas of older adult experience: (i) Long-term care for those with chronic illnesses; (ii) Ageing policies and programmes for productive ageing; and (iii) Environmental gerontology for ageing-in-place. She is the Principal Investigator of 'Home Safety Issues for Older Adults Living Alone,' 'Multiethnic Caregivers' Help-Seeking Behaviours,' 'Ageing Simulation Games for Gerontological Social Work Students,' and 'Impact of Older Adults' Activity Patterns on Their Health and Family'.

She has published journal articles in top peer-reviewed gerontogical journals such as *Gerontologist, Journals of Gerontology, Ageing & Society*. She is currently on the Editorial Boards of *Advanced Aging Research* and *Journal of the Korea Gerontological Society*. Dr Hong has presented numerous research papers at international and local ageing conferences.

Mechanisms of Progressive Neurodegeneration in Alzheimer's Disease

Bradley Hyman

Alzheimer disease progresses clinically form mild memory problems to devastating cognitive impairments. The neuropathological correlate of this is the march of neurofibrillary tangles from memory-related medial temporal lobe structures towards the broader areas of higher cognitive function in the association cortices. The mechanism of this spread of pathology has been a mystery although it has long been noted that the affected neural circuits tend to be connected. Recent progress in uncovering the mechanism of spread has come from an animal model

designed to test the possibility that misfolded tau, a major protein component of neurofibrillary lesions, is released by neurons and taken up by adjacent nerve cells. This process bears some resemblance to the mechanism of action of prion diseases, and has raised the possibility that Alzheimer's disease and prionopathies could be attacked therapeutically in similar ways. The next challenges will be to understand how to intervene in this progressive march in order to stabilise disease progression.

About the Speaker

Dr Bradley Hyman is Director at the Massachusetts Alzheimer's Disease Research Center and a Co-Director at the MGH Memory Disorders Unit and John B. Penney Jr. Professor of Neurology, Harvard Medical School. Dr Hyman directs the Alzheimer's disease research unit at the Mass General Institute for Neurodegenerative Disease (www.mghmind.org), with the goal of understanding the neuropathophysiologic and genetic factors that underlie dementia. His laboratory studies the anatomical and molecular basis of dementia in Alzheimer's disease and dementia with Lewy bodies. Dr Hyman received his MD and PhD from the University of Iowa and he has received the Metropolitan Life Award, the Potamkin Prize, a National Institute on Aging MERIT award, and an Alzheimer Association Pioneer Award. He has been the Director of the Massachusetts Alzheimer's Disease Research Center since 2006.

How Not to be a Malnourished Elderly

Su Lin Lim

Malnutrition is common in the older adults and there are many causative factors. It is often overlooked as part and parcel of ageing as it takes time to develop. Malnutrition can lead to adverse consequences and increases one's susceptibility to infection, falls, reduced functional status and frequent admission to the hospital. This forum will present how one can recognise the early signs and risk of malnutrition and prevent the condition from worsening. This talk will highlight how to maintain a well-balanced diet, as well as discuss common feeding issues and various special considerations in diet modifications for the older adults. Practical strategies to prevent malnutrition in the elderly will also be shared.

About the Speaker

Dr Lim Su Lin is the Chief Dietitian and Senior Assistant Director of the Dietetics Department at the National University Hospital, Singapore. She is best known for her work on hospital malnutrition in Singapore. Her work has provided clear evidence that the adverse outcomes of malnutrition are not just a consequence of the disease process, but lead to substantial increases in length of hospital stay, readmission rate, mortality and hospitalisation cost. This led her to develop a nutrition screening tool called '3-Minute Nutrition Screening', which has been validated and published internationally, and is currently being used across multiple hospitals and nursing homes. She has also developed an effective nutrition intervention method for malnourished patients including the elderly, which resulted in improved nutritional status, functional status and quality of life. Dr Lim has received numerous awards on her work including the Young Investigator's Award, Singapore Allied Health Awards, Singapore National Day Award and the Singapore Public Service Excellence Award. Dr Lim received her PhD in clinical nutrition from the Queensland University of Technology in Australia.

Relationship Between the Built Environment and the Elderly

Becky PY Loo

The built environment in which people live can affect their health and quality of life (QoL). With the objective of improving the well-being of the geriatric population, there is a need to better understand how successful ageing-in-place can be achieved in neighbourhoods where the elderly live and are familiar with. The aim of this study is to explore how neighbourhood characteristics can affect geriatric QoL. Older people living in 6 different neighbourhoods in Hong Kong were included in this study. A broad array of built environment attributes were collected as potential covariates. The SF-36 questionnaire was used to assess health-related QoL, including both physical and mental well-being of the elderly. Regression analyses were performed to uncover specific characteristics of the built environment as facilitators of, or barriers to, the process of ageing-in-place. Results show that individual factors are of great importance in affecting health-related QoL issues of the elderly, but characteristics of the built environment, such as distance to community facilities and transport services, are also important. The identification of health impacts linked to the built environment have implications for neighbourhood interventions prioritising ageing-in-place to support active ageing.

Acknowledgements

The findings presented in this paper are based on research projects funded by the NUS Initiative to Improve Health in Asia (NIHA), the Postdoctoral Fellowship scheme of the University of Hong Kong, and the Sixth Government Matching Grant Scheme of the Hong Kong SAR Government.

About the Speaker

Prof Becky PY Loo is Professor at the Department of Geography of the University of Hong Kong. She is also Director of the Institute of Transport Studies, and Associate Dean of the Graduate School of the University of Hong Kong. Her major research interests are transportation, e-technologies and society. In particular, she is interested in applying spatial analysis, surveys and statistical methods in analysing pertinent

issues related to the built environment and sustainable transportation. Key issues that she has been tackling include carbon dioxide emissions from transport sources, regional transport infrastructure (including airports, ports and railways) and development, transit-oriented development and walkable communities, road safety, and the pervasive effects of e-technologies (defined as microelectronics, informatics and telecommunications) on people's everyday life. She has more than 230 research outputs and obtained more than HK$10.3 million and HK$13.0 million of research grants as the Principle Investigator (PI) and PI/Co-investigator respectively. She had won numerous awards including the Outstanding Young Researcher 2006, the Outstanding Teaching Award 2008, and the Most Outstanding Community Partnership Award 2011 (with a team led by Dr CB Chow of the Hospital Authority).

Prof Loo is Editor-in-Chief of *Travel Behaviour and Society*, and Associate Editor of the *Journal of Transport Geography and Transportmetrica A: Transport Science*. She is also on the Editorial Boards of the *International Journal of Shipping and Logistics, International Journal of Sustainable Transportation, Journal of Urban Technology, and Transportation*, among others. She has been a Distinguished Visiting Scholar of the University of Oxford (UK), a Visiting Professor at Pontificia Universidad Catolica de Chile (Chile) and the University of Montreal (Canada). She will be an Institute of Advanced Studies (IAS) Distinguished Visiting Fellow of the University of Birmingham (UK) in mid-2015.

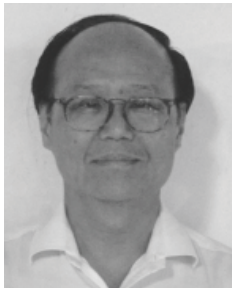
Successful Ageing: Insights from the Singapore Longitudinal Ageing Studies

Tze Pin Ng

Successful ageing is the countervision to the prospect of escalating morbidity and societal burden in the face of global population ageing. It is also variously referred to as active ageing, healthy ageing, productive ageing and positive ageing. As more people continue to live beyond their expected length of life, can they remain healthy and productive in old age? The morbidity compression theory (James Fries) says yes, that people who avoid early onset of chronic illness actually spend less time in disability before they die.

There is however, no consensus on the conceptual or operational criteria to define successful ageing. The competing views include: (i) The biomedical model of SA as the avoidance of disease and maintenance of physical and cognitive functioning; (ii) The sociological models that emphasise continued social engagement by maintaining high levels of social activity, interaction, and participation; (iii) Psychological models that variously emphasise mastery/ growth, positive adaptation, resilience, and the ability to possess and use psychological resources for coping with the challenges of the ageing process; and (iv) The lay view that successful ageing transcends physical and other limitations and includes spirituality. SA is hence recognisably a multidimensional construct, and should be viewed holistically.

In the Singapore Longitudinal Ageing Studies, we studied successful ageing within a multidimensional framework of high physical, emotional, cognitive, psychological and social functioning, and investigated its lifestyle, behavioural, biological, health, sociocultural and environmental determinants. The objective multidimensional model categorised about one-third of older persons aged 65 and above to be successful ageing, but a subjective global measure of SA on an analogue scale (1 to 10) suggested that about two-thirds of older persons actually rate themselves to be ageing successfully. Interestingly, there are ethnic cultural differences in views of successful ageing; for example, despite evidence of poorer physical and mental health, Malays express higher levels of SA and life satisfaction than Chinese. Better cognitive, mood and physical functioning and quality of life are demonstrably associated with an active lifestyle (high levels of physical, social and productive activities), dietary, nutritional and cardiovascular risk factors (haemoglobin, albumin, folate, homocysteine, omega-3 PUFA, tea intakes, and metabolic syndrome), psychological factors (in particular resilience), social network and support, spirituality, and physical characteristics of the built environment.



About the Speaker

A/Prof Ng Tze Pin (MD) is a physician epidemiologist and public health specialist. He is currently Associate Professor Fellow and Research Director at the Department of Psychological Medicine, Yong Loo Lin School of Medicine, National Univeristy of Singapore. In the Gerontology Research Programme, available at http://medicine.nus.edu.sg/pcm/grp.htm, he coordinates a programme of research on ageing and health, and is the Principal Investigator of the Singapore Longitudinal Ageing Studies (SLAS), a population-based cohort follow-up study of 6000 older Singaporeans.

He has published over 200 research papers in peer-reviewed journals and presented 120 papers in scientific conferences and meetings on dementia, depression, physical disability, frailty and successful ageing. He is on the Editorial Board of a number of scientific journals including *Dementia and Geriatric Cognitive Disorders*, *Current Translational Geriatrics & Experimental Gerontology Reports*, *Journal of Alzheimer's Disease*, and other journals.

He has provided consultancy services and was on the advisory panels and scientific working groups of a number of government and non-governmental organisations, and has conducted numerous training courses, public lectures and talks on gerontological topics at local and international meetings. He is a Visiting Scientist at the Department of Palliative Medicine, National Cancer Centre, Peking University Institute of Mental Health, and National Ageing Research Institute, Melbourne University, and Visiting Consultant at Alexandra Hospital/ Khoo Teck Puat Hospital and St Luke's Hospital.

Social Perspectives on Functional Ageing

Paulin Tay Straughan

Ageing is often viewed as a natural process, and as part of the life cycle. This often results a fairly deterministic approach towards growing old, and many do not prepare adequately for the third age. When we look at ageing issues, it is often the physiological disabilities that are highlighted. This discussion will highlight the importance of social and psychological well-being as we move from second age to third age, and the importance of deriving a consensus on what successful ageing entails. Drawing from findings of a recently concluded large scale study on ageing in Singapore, South Korea and China, we will share the construct of successful ageing and how it was derived and validated. Further, preliminary analysis showed the positive correlation between successful ageing and preventive health behaviour as well as mental well-being. We argue that a social construct of successful ageing serves to position ageing in more positive light as the aspirations of ageing successfully would motivate us to prepare adequately for the third age. In addition to individual preparedness, the construct also directs public policy on how infrastructure must be leveled up to facilitate successful ageing in our society.

About the Speaker

A/Prof Paulin Tay Straughan is Associate Professor and Deputy Head of the Department of Sociology, and Vice-Dean in charge of International Relations and Special Duties at Faculty of Arts and Social Science, National University of Singapore. Her research interests centre around sociology of family and medical sociology. She is the Principal Investigator of a recently concluded project on successful ageing in Singapore, Seoul and Shanghai which involved multiple institutions and a multidisciplinary team. A/Prof Straughan was also Principal Consultant for the Marriage and Parenthood 2012, which was commissioned by National Population and Talent Division.

She has published in both sociology and medical journals, like *Social Science and Medicine, Cancer*, and *Cancer Causes and Control*. Her books include *Marriage Dissolution in Singapore: Revisiting Family Values and Ideology in Marriage*, and *Ultra-Low Fertility in Pacific Asia: Trends, Causes and Policy Issue* (with Gavin Jones and Angelique Chan).

At the Faculty, A/Prof Straughan teaches several modules including medical sociology, sociology of the family and data analysis in social research. She also runs a very popular freshman seminar titled "Love Actually – the Social Construction of Romantic Love". She had received numerous teaching awards and has recently been placed on the ATEA Honour Roll. A/Prof Straughan was a Nominated Member of Parliament from 2009 to 2011, during which she argued for work-life balance and the nurture of a more profamily social environment. Her community involvement include serving in the Council for 3rd Age as a Board Member, Member of the Community Silver Trust (MOH), and chairing the Accreditation Council for Local Dating Industry (Social Development Network, MSF).

A/Prof Straughan is happily married to an applied mathematician, and has 2 sons.

Imaging the Maturing Brain and the Emergence of Psychopathologies

John Suckling

Along with many other scientific fields, psychiatry—and neuroscience more generally—has been transformed by the digital revolution. Brain imaging now has a central role in the development of our understanding in psychophysiological processes that are widely accepted as forming the biological substrate for the clinical phenotypes. But even in the short time since imaging became available as a research tool, there have been significant changes in thinking with regards to the sort of information that can be extracted from the large quantities of spatial and temporal data produced by a typical magnetic resonance imaging (MRI) scanner. What has become clear is that major mental illnesses as described in the current nosology are not associated with focal lesions of brain structure and function, rather they are characterised by networks aberrant in terms of their connectivity and information exchange. These observations have caused, and have been caused by, richer interpretations of results derived from an ever increasing variety of analysis techniques allied to advances in instrumentation and data acquisition protocols.

Nowhere more has brain imaging influenced our ideas of mental health disorders as neurobiological in origin than in major depressive disorder (MDD). In this presentation, we look back at the history of neuroimaging in MDD. Primarily undertaken with adult patients, these earlier studies identified structural changes that have proved to be robust across the extant literature pointing to the limbic system as a key locus indicative of current symptoms and future prognosis. Similarly, the functional connectivity of the amygdala is also aberrantly altered and sensitive to pharmacotherapy.

Affective disorders have their origins in early life with contributions to the risk of later diagnosis arising from genetics, epigenetics, and the fetal and home environments. Whilst population-based studies have established the importance of the early years to the later emergence of symptoms, knowledge is fragmentary on the ordering of neurobiological events occurring during childhood and adolescence that lead to the robust observations of brain structural and functional deficits in adulthood that accompany chronic and recurrent depression.

Recent data from studies of adolescent depression and neurotypical brain maturation are now suggesting a putative model for the onset of MDD that begins with early year's adversity placing emotional regulation under tension, manifesting as increased connectivity (heightened sensitivity) within the limbic system. Cued by puberty,

and in particular cortical thinning, this pervasive stressing causes a deviation in the trajectory of brain maturation, the emergence of symptoms, and a loss of grey matter in the anterior cingulate (via an elevated sensitivity to cortisol). The circumstantial evidence is reviewed and future experiments outlined.

About the Speaker

Prof John Suckling has been involved in imaging research for more than 25 years, initially with positron emission tomography in the monitoring of tumours during chemotherapy, and in the implementation of image reconstruction techniques for over scanner geometries. After a period working for the UK National Breast Screening Programme on the automatic detection of soft-tissue masses, he was seconded to industry to work on advanced computer graphics for the teaching of anatomy and physiology, leading to award winning multimedia content that is still in use today in over 20 countries for patient, practitioner and student education. In 2013, over half a million students learnt anatomy using this software.

Prof Suckling's interest in psychiatric imaging began in 1997 when he was employed by Guy's, King's and St Thomas' medical school to develop and undertake analysis at the Institute of Psychiatry of the then newly arrived magnetic resonance imaging technology capable of acquiring blood oxygenation level dependent (BOLD) sensitive datasets: what is now known as functional MRI (fMRI). He also developed methods for structural MRI segmentation and randomisation-based statistical methods that are still widely used in the field.

Prof Suckling has over 200 peer-reviewed articles in medical image processing and psychiatric neuroimaging, including large scale multicentre studies of autism spectrum condition, psychosis, drug addiction, and affective disorders, which is his particular interest. His current focus is on the neurobiological and neurodevelopmental bases for child and adolescent psychiatry with specific involvement of new neuroimaging techniques as a primary outcome variables for studies of normal brain development and maturation, characterisation of psychopathologies, and for clinical trials of investigational medical products (CTIMPs).

In addition to his research activities, Prof Suckling is Chair of the University of Cambridge Psychology Research Ethics Committee that approves all non-patient studies of human behaviour and cognitive neuroscience; some 200 applications each year. He also teaches research ethics to undergraduate and postgraduate students.

Mindful Diet and Mindful Eating

Sin Tho Wee

How important is diet to our health and well-being? If it is, can we change our eating habits? We all know that our diet can be a contributory cause of lifelong medical conditions like diabetes, hypertension, and high blood cholesterol. Poor diet is also believed to increase our risk of heart attack, stroke, kidney failure and many other afflictions. Yet many of us continue in our habitual ways when it comes to eating! Have you considered that a change in your eating habits can play a big part in your health and well-being? Consider 2 of our common eating habits that do not serve us well. Firstly, we eat too fast and do not pay attention to how and what we eat. Is this habit unkind to our digestion and nourishment? Secondly, many of us eat far too much and ignore what our body is telling us.

How can we change our diet and eating habits and thereby take better care of our sacred body? Eating mindfully allows us to listen to our body signals and feedback and heightens our sensitivity to how our body feels. Mindful eating trains our mind to awaken awareness of our body and creates new neural pathways. Believe that we can change our diet and eating habits, and all it takes is 3 months to decondition our taste buds. Indeed, you are what you eat!

About the Speaker

Mr Wee Sin Tho is currently Senior Advisor, Office of President, National University of Singapore. He is a certified 'Cultivating Emotional Balance' trainer. He has also received training in a brief integrative personalised therapy programme developed by a team of medical doctors and a psychiatrist from the National University of Singapore. He has conducted several workshops on mindfulness practices for professionals, managerial executives, teachers and businessmen.

Socioemotional Development of Young Children in Singapore: Preliminary Findings from the GUSTO Cohort

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Introduction

Socioemotional well-being is an important aspect of a child's growth and development. A previous study by Dr Ooi Yoon Phaik and colleagues found gender differences in internalising, externalising, and aggressive behaviours in young Singaporean children. These findings were largely similar to findings from other Asian and Western societies. Girls were more likely to have internalising problems, while boys were more likely to have externalising problems, particularly aggressive behaviours. However, the mean age of this group was 4.31 (SD = 0.70). To our knowledge, no other study in Singapore has examined socioemotional and behavioural problems in children at an earlier stage of development. This study presents an overview of socioemotional and behavioural problems amongst 24-month-old Singaporean children in the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) study. In addition, gender differences in internalising and externalising problems were explored.

Methods

A total of 385 children (male = 201, female = 184) out of the full GUSTO cohort were included in the analysis. Mothers were recruited at 11-week gestation from KK Women's and Children's Hospital (KKH), and National University Hospital (NUH). The Child Behavioural Checklist (CBCL) 1.5 to 5 years was administered to caregivers when children were 24 months old. The CBCL comprised 99 questions on children's socioemotional and behavioural problems, rated on a 3-point scale (0 = Not True, 1 = Somewhat or Sometimes True, 2 = Very True or Often True). Descriptive analyses were conducted on all syndrome scales of the CBCL. Cumulative percentages closest to 85% were used as cut-offs for high scorers for each subscale. A score above 85% has been used in other countries as a cut-off for clinical scores. Additionally, one-way ANOVAs were conducted with gender as the independent variable. Gender differences amongst high scorers were examined using chi-square analysis for all syndrome scales.

Results

As expected for a non-clinical sample, the distribution of scores was right skewed for all syndrome scales. No significant gender differences were found for all scales ($P > 0.05$). There were 64, 60, and 58 high scorers for the internalising, externalising and total problems domains respectively. For the rest of the subscales, the number of high scorers ranged from 52 to 58. The mean scores of high-scoring children were significantly different from the rest of the cohort ($P < 0.001$). There were no significant gender differences amongst the high scorers ($P > 0.05$).

Conclusion

In contrast to earlier findings in other countries and a large Singapore sample of preschool children with a mean age of 4.31, no gender differences on the CBCL syndrome subscales were found in the 24-month-old GUSTO sample. Also, high scorers that emerged for each subscale were made up of similar numbers of boys and girls. Our findings may indicate that gender differences for internalising and externalising behaviours have yet to emerge at 2 years of age. We will follow this cohort longitudinally to investigate the age at which gender differences emerge in Singaporean children.

Cyber Health and Internet Programme (CHIP) for Singaporean School Children: The Importance and Benefits of a Multi-Layered Programme

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Introduction

The concept of internet addiction has grown over time and is becoming increasingly accepted by the society. Community agencies and health providers alike are introducing programmes to address the concerns of children and caregivers. On a global view, Singapore ranks among the highest for rates of home computer ownership and internet penetration. Latest government data also show that most children access the internet at home, while marketing surveys indicate that the average Singaporean spends about 25 hours a week online. Online safety is also a growing concern.

Methods

The Cyber Health and Internet Programme (CHIP) was designed to promote safe use of the internet to students and

create awareness of internet addiction through workshops and educational talks. It also aimed to equip parents and school counsellors with a better understanding of internet addiction, in order to provide support for students who are at-risk or addicted to the internet. It was implemented in 7 Singapore schools in 2013, involving students, parents and school counsellors.

Results

The mean programme satisfaction rating was ranked 3.4, where 1 indicated "strongly dissatisfied" and 4 indicated "strongly satisfied". The programme also met most of its key performance indicators. In addition, participants saw a greater need for cyber health awareness.

Conclusion

As a multi-layered education, prevention and intervention programme, CHIP provides a comprehensive solution to the issue of internet addiction for school children. From the lessons learned, it is recommended that this comprehensive programme be made available for all primary and secondary schools in Singapore.

An Evaluative Study on the Effects of the Incredible Years (IY) Programme on Parenting Skills: A Singaporean Perspective

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[1]REACH (West), Department of Psychological Medicine, National University Hospital, National University Health System, Singapore

Introduction

REACH is a community-based service in Singapore that caters to the mental health needs of school-going children (7 to 18 years old). REACH offers the Incredible Years (IYs) programme as a group intervention for parents of children (6 to 12 years old) with disruptive behaviours in the home and classroom settings. The programme aims to improve child behaviour using positive parenting techniques. It is conducted over 12 weekly sessions and utilises videos, hand-outs and homework to impart strategies for emotional regulation, management of disruptive behaviours and social skills. The IY programme has been found to be effective in certain Western and Scandinavian countries, as well as minority cultures such as Asian-Americans.

Methods

This evaluative study examined the effects of the IYs programme on parenting skills competency, using a self-report parenting scale (measuring laxness, over-reactivity and verbosity), where a lower score on the 7-point Likert scale indicated a more competent, or skilled, parent, to give an overall parenting profile.

Results

Baseline data revealed that a majority of parents favoured a parenting style which was over-reactive and verbose in correction of disruptive behaviours. Post-intervention results showed a shift in parenting profiles, indicating an overall reduction in over-reactivity and verbosity scores, and more laxness. Parents were also able to make more use of praise and rewards. A majority of participants (94.4%) provided positive feedback.

Conclusion

Through this study, the IY programme was found to help parents adjust their parenting style toward a more balanced model. Additionally, though the programme was developed in a Western culture, the techniques appeared to be helpful for our Singaporean parents.

Impact of 6-Month Sleep on Working Memory at 4 Years

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Introduction

Cross-cultural research shows that Asian infants have significantly later bedtimes and shorter hours of sleep in comparison to infants from the West. There has been multiple studies highlighting that poor sleep quality and short sleep duration have negative impacts on the overall health and functioning of individuals. Still, most research has focused on sleep and its short-term effects on cognitive performance in children and adolescents. In contrast, limited focus has been placed on sleep at infancy and its future implications on cognitive performance. This study

investigates if an increase in time predicts an increase in future working memory (WM) capacity and whether there would be difference between the impact of day, night and total sleep. This study also explores whether sleep quality (measured by sleep latency, number of night awakenings and bedtime) predicts an increase in WM capacity.

Methods

A total of 93 mother-child dyads (males = 50, females = 43) participated in this longitudinal study, encompassing the administration of the Brief Infant Sleep Questionnaire (BISQ) at 6 months and the Random Object Span Task (ROST) at 48 months. The participants were part of the larger Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study.

Results

A significant association between total time spent sleeping during infancy and WM capacity at 4 years of age was found. Total sleep accounted for 7% of the variance in WM capacity at 4 years of age, $F(1, 91) = 7.29$, $P < 0.05$. Total sleep was a positive predictor of WM capacity, $ß = 0.01$, $P < 0.05$. The ROST seemed independent of the influence of sleep quality measures.

Conclusion

In conclusion, it appears that overall time spent sleeping is integral to infant development. The findings provide scope for further analysis on other aspects of sleep (i.e. co-sleeping and sleep position), as well as socioeconomic influence in relation to total sleep time.

Socioeconomic Status (SES) Moderates the Impact of Prenatal Maternal Anxiety on Child Behaviour Problems at 2 Years

Sarah Lam,[1], Eric Wong,[1], Iliana Magiati,[2], Helen Chen,[3], Cornelia Chee,[4], Seang Mei Saw,[5,6], Kenneth Kwek,[7], Peter Gluckman,[1,8], Yap Seng Chong,[1,9], Michael Meaney,[1,10], Anne Rifkin-Graboi,[1], Birit FP Broekman,[1,4]

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Introduction

Maternal anxiety during pregnancy has been found to affect child development profoundly. Even after controlling for postnatal anxiety, children of prenatally anxious mothers are poorer at socioemotional regulation and display more behavioural problems. However, it has been suggested that socioeconomic status (SES) would moderate the impact of prenatal maternal anxiety on early child development, such that low SES children are at higher risk of manifesting dysfunctional behaviours. This study aims to investigate if SES moderates the effects of prenatal maternal anxiety (adjusted for postnatal anxiety) on emotional and behavioural outcomes of offspring in a Singaporean sample.

Methods

A total of 204 healthy mother-child pairs from the Growing Up in Singapore Toward Healthy Outcomes (GUSTO) cohort were recruited from KK Women's and Children's Hospital and National University Hospital at pregnancy. Self-reported anxiety of mothers at 26 weeks gestation and 3 months post-pregnancy was assessed via the State-Trait Anxiety Inventory (STAI). State and Trait subscales scores were combined into a total score. Highest maternal education was used as the SES indicator, where information was collected from a sociodemographic questionnaire administered at 11 weeks gestation. Maternal education was coded as a continuous variable according to the following categories: no education, primary, secondary, GCE 'A' level or ITE Nitec, university or postgraduate. Caregiver reports of child internalising, externalising and total problems were obtained at 24 months via the Child Behaviour Checklist (CBCL) 1.5 to 5 years. Hierarchical multiple regressions were performed on CBCL internalising, externalising and total problems with the interaction term entered following pre- and post-natal anxiety, SES and gender. Where interactions were significant, tests of simples slopes were used to clarify if low or high SES was driving the effect.

Results

Interactions between prenatal anxiety and SES were significant for all three problem scales. The interaction between prenatal anxiety and SES accounted for an additional 2.2% variance of child total problems, $F(1, 198) = 4.964$, $P < 0.05$. Additional variance accounted for externalising and internalising problems were 2.6%, $F(1, 198) = 5.581$, $P < 0.05$, and 1.9%, $F(1, 198) = 4.474$, $P < 0.05$, respectively. Tests of simple effects confirmed that when maternal education was low, prenatal anxiety predicted an increase in child problems for all scales (Ps < 0.05), but not when maternal education was high.

Conclusion

Our findings show that the effects of maternal prenatal

anxiety on child emotional and behaviour problems are moderated by SES. Children exposed to maternal prenatal anxiety and low SES have a higher risk of developing emotional and behavioural problems as compared to children of prenatally anxious mothers with a high SES. This highlights the importance of studying the role of moderators in the relationship between maternal anxiety and child development. Limitations include a reliance on mother's reporting of child behavioural problems and the low variance explained. Future studies in GUSTO will explore SES moderation on child emotional and behavioural outcomes longitudinally.

An Evaluation of a School-Based Community Mental Health Service in Singapore

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[1]Department of Psychological Medicine, National University Hospital, National University Health System, Singapore

REACH is a community-based mental health programme that provides early mental health assessments for students with emotional and behavioural difficulties. This study aimed to evaluate the effectiveness of this service, according to diagnostic clusters (Internalising, Externalising, and No Diagnosis). The Strengths and Difficulties Questionnaire (SDQ)[1] Total Difficulty scores of 176 students were analysed. The cases were classified by diagnostic clusters to account for the different characteristics of the various disorders. The pre- and post-intervention SDQ scores of these students were collated, and paired samples t-tests were used to analyse the scores of each group. It was found that early REACH assessment and intervention was able to significantly improve overall functioning in students with externalising disorders, but did not result in any significant improvement for students with internalising disorders or no psychiatric disorders. The effectiveness of REACH interventions with externalising disorders was attributed to the use of evidence-based programmes that were more suitable and targeted at students with these disorders. Based on the findings, improvements to the data collection process were recommended. Future directions in research also included the analysis of the effectiveness of REACH programme across all diagnostic groups.

Intergenerational Transmission of Parenting Styles of Elderly Chinese in Singapore

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Introduction

Parenting styles (PS) have both positive and adverse downstream effects in children and their progeny. The challenge is in measuring these styles: they are dynamic, unique, not immutable, and are influenced not only by the sociocultural environment, but also by one's own parents. No study has simultaneously examined how parents were parented, how satisfied they were with their own parenting, and how this affected their own PS. This study thus first developed and examined the psychometric properties of the Personal and Parents' Parenting Style Scale (PaPPS), and second, explored the mechanisms of transmission between parental PS and personal PS in an Asian context. It was hypothesised that (i) (the perceptions of) personal PS would be positively correlated with (the perceptions of) parents' PS, and that, in line with Western studies, this would differ across (ii) genders, and be mediated by their (iii) satisfaction with their parents' parenting, and (iv) educational attainment.

Methods

The PaPPS, developed in accordance with the Delphi method, allows researchers to examine the relationship between parents' child-rearing strategies and how they were parented as children. It consists of 12 items that simultaneously asks participants how frequently (on a 5-point Likert-type scale) an agent (i.e. their mother, father, or themselves) engaged in specific behaviour to them/their children (if any), and 2 additional items that asks participants how satisfied they were with their parents' parenting. A total of 294 Chinese participants from Singapore (67.4 ± 5.9 years; 76% women; 7.0 ± 3.5 years of formal schooling), with no adverse cognitive impairments (MMSE-S score >22), completed the PaPPS and a sociodemographic questionnaire as part of a larger ongoing survey of the Singapore elderly in Jurong.

Results

PaPPS analyses suggested an internally-reliable three-factor model (Positive-Authoritative [PA], Authoritarian [AN], and Permissive [PE] PS) each for all 3 agents (father, mother, and personal). There seemed to be a distinct intergenerational transmission of parenting styles (parental parenting styles influenced individual parenting styles; *P*s <0.001), although the patterns of influence differed by gender, with men adopting their parents' preferred parenting style (*P*s <0.01) but not women. Both men and women seemed to be satisfied if their parents were PA (*P*s <0.01), or their parent of the opposite gender was more PE (*P*s <0.01). Women were also highly dissatisfied if their mothers were AN (*P* <0.001) and men felt that their fathers were more frequently AN with them ($P = 0.034$). For men, positive-authoritative mothering seemed to be strongly predictive of more years

of formal schooling (rho = 0.28, $P = 0.032$); however, this was not true for women. Across genders, neither parental satisfaction nor years of formal education were found to mediate the intergenerational transmission of parenting styles in Chinese Singaporeans.

Conclusion

This study is the first to show the intergenerational transmission of parenting in an Asian population of immigrants and children of immigrants from China living in Singapore, as well as the preliminary utility of the PaPPS. Unexpectedly, parental satisfaction and years of parenting did not seem to mediate the transmission; there may perhaps be key cultural differences that require further exploration between both Asian and Western cultures.

The Interaction Between Fetal IGF-1 rs 35767 and Prenatal Maternal Anxiety on Birth Weight and Birth Length: Findings from the GUSTO Cohort

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Introduction

Fetal growth is a complex process involving multiple environmental and genetic factors. Insulin growth factor-1 (IGF-1) is known to play a role in fetal growth. Studies have found associations between polymorphisms in IGF-1 gene, especially rs35767, and birth outcomes such as birth weight and birth length.

Prenatal maternal anxiety is another important factor that affects fetal growth. Indeed, maternal anxiety has been related to shorter birth length in the GUSTO sample. The aim of this study is to investigate if the association between maternal anxiety in interaction with IGF-1 rs35767 influences birth outcomes.

Methods

From the Growing Up in Singapore Towards Healthy Outcomes (GUSTO) study, 386 Chinese pregnant women and their offspring were included. The Spielberger State-Trait Anxiety Inventory (STAI) was administered around 26 weeks of pregnancy. Genotype data of the infants was obtained from rinsed umbilical cord at delivery. SNPrs35767 was in the Hardy-Weinberg equilibrium ($P = 0.612$). Neonatal anthropometric measurements were obtained within 24 hours of birth. Genotypes were grouped according to a dominant model into the [GG] versus the [AG] + [AA] genotype (n = 211). In a General Linear Model (ANCOVA), we adjusted for gestational age, maternal education and gender.

Results

Preliminary findings revealed no main effects of IGF-1 on birth weight and length. When STAI was used as a continuous variable, we did not find interaction effects, however, when used as a categorical variable, we did with birth weight ($P = 0.027$). Also, significant interactions were found between IGF-1 rs35767, and both continuous and categorical STAI on birth length ($P = 0.011$).

Infants with the GG genotype were taller (M = 49.14 cm, CI, 48.68 to 49.61) as compared to those with AA/AG genotype when mothers had a low STAI score (M = 48.64 cm, CI, 48.22 to 49.05). This similar trend was also seen with birth weight (M GG= 3183.49 g, CI, 3098.50 to 3268.50, M AA/AG = 3062.977 g, CI, 2987.75 to 3138.20). Infants with the GG genotype had a decrease in birth weight (95.77 g) and length (0.90 cm) when mothers had a high STAI score. However, infants with the AA/AG genotype had an increase in birth weight (114.93 g) and length (0.49 cm) when exposed to a more anxiety-related environment.

Conclusion

Our preliminary findings show interaction effects between IGF-1 rs35767 of the fetus and maternal anxiety during pregnancy on birth outcomes of Singaporean Chinese offspring. Without maternal anxiety, the AA/AG genotype is related to smaller birth size, while the GG genotype is related to increased birth size.

Mental health problems can increase maternal glucocorticoid levels, which can interfere with the IGF-1 pathway. Indeed, our findings show that infants with GG genotype have a lower birth weight and shorter birth length when their mothers were more anxious. However, on the contrary, infants with either AA/AG genotype had an increase in birth weight and length. This shows that the IGF-1 genotypes have differential sensitivity to effects of maternal anxiety. Further studies will be done to explore underlying pathways.

Externalising Behaviour During Middle Childhood: Investigating the Contributing Risk Factors Through a Structural Model

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Introduction

Externalising behaviour including hyperactivity and aggression are manifestations of maladjustment during middle childhood. Research on such behaviour is important because of its role in the development of psychiatric disorders such as attention deficit hyperactivity disorder (ADHD) and conduct disorder. Child temperament, parent personality, parenting style, and family cohesion have been found to contribute to the aetiology of externalising behaviour. Clarifying the directionality of linkages among these factors, several theorists such as Jay Belsky, and Patterson and colleagues have proposed converging models, which point to parenting style as a proximal factor directly influencing child development, while parent personality, marital relations and family functioning as distal factors indirectly influencing the child development through parenting style. Child temperament both directly and indirectly influences child development through parenting style. In this study, a model based on these theories was tested; specifically, the variables of child surgency, parental neuroticism, family context (comprising marital satisfaction and family functioning), negative parenting style and externalising behaviour were entered into the model.

Methods

A total of 216 parent-child dyads (Children: 62% boys, Mean age = 7 years, 72% Chinese; Parents: 94% married) participated in this ethics approved 2-year longitudinal study. The participating parent was the parent more familiar with the child, usually the mother (92%). Data collection—consisting both paper-and-pencil questionnaires and experimental tasks—was conducted at baseline (T1) and at 1 year (T2). This study utilised the following parent-completed instruments with their specific subscales: At T1, Children's Behaviour Questionnaire (CBQ; subscales measuring surgency), Big Five Inventory (BFI; items measuring neuroticism), McMaster Family Assessment Device (MFAD; General Functioning subscale), Dyadic Adjustment Scale (DAS; Dyadic Satisfaction subscale) and Ghent Parenting Behaviour Scale (GPBS; Discipline, Ignoring and Harsh Punishment subscales); at T2, Child Behaviour Checklist (CBCL; Attention Problem-Hyperactivity, Conduct Problem and Oppositional-Defiant subscales). In addition, data from the Laboratory Temperament Assessment Battery (LABTAB) assessing child surgency was used at T1. To test the fit of the structural model, Structural Equation Modelling using the AMOS 19 programme was conducted.

Results

Model fit indices indicated that child surgency, negative parenting and family functioning directly predicted externalising behaviour one year later. Family functioning indirectly predicted externalising behaviour, through the mediating variable of negative parenting, though the support for it is weak. Neither child surgency nor parental neuroticism predicted negative parenting. Greater parental neuroticism however, correlated to poorer family functioning.

Conclusion

In examining all the dimensions of surgency together, no relation was found between child surgency and negative parenting, suggesting differences in social desirability among dimensions. Possibly due to complex relations existing between child temperament, parent personality and parenting style, negative parenting was also not predicted by parental neuroticism, though it predicted more externalising behaviour. Weak support for negative parenting as a mediator between family context and externalising behaviour suggests that family context both directly and indirectly affects externalising behaviour. Given this understanding of the aetiology of externalising behaviour, healthcare professionals should consider both the functioning of the parent-child dyad, as well as the dynamics of the larger familial system when working with these children.

Infant Sleep Quality Predicts Toddler Cognitive, Language and Motor Abilities

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Introduction

Studies in Western populations have found that individual differences in sleep quantity and quality affect developmental functioning in children. A recent study has suggested that problems with sleep quantity and quality are highly prevalent amongst Singaporean children (Aishworiya et al, 2012). Based on the existing literature that sleep is crucial for development and that sleep problems are common in Singaporean children, this study aims to investigate if sleep plays a role in predicting developmental outcomes in Singaporean children. Previous research (Ward et al, 2010) reported that greater time spent awake after sleep onset (WASO), a measure of sleep quality, was associated with poorer (visual) cognitive processing. Most research is based on cross-sectional studies. Here we investigated whether quantity and quality of infant sleep at age 6-months predicts toddler Bayley's cognitive, language and motor performance at age 24-months.

Methods

In this study, a subset of 68 six-month-old infants were included from the larger Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study (Soh et al, 2013). Inclusion criteria were term born infants between 37 and 41 weeks of gestational age, APGAR score ≥9, normal birth weight (2500 g to 4000 g), and no maternal complications during pregnancy. The infants wore a sleep actigraph watch on their ankles for 5 to 7 days and parents were asked to keep a weeklong diary of the infant's sleep patterns. Actigraphy measures age 6-months and Bayley's cognitive, language and motor measures age 24-months were analysed using linear mixed models in SPSS, controlling for effects of gender and maternal education and trait anxiety at 26 weeks of pregnancy.

Results

Analyses highlighted significant associations between longer 6-month WASO and poorer Bayley's performance at 24-months. Bayley's cognitive scaled scores decreased by an average of 0.072 for each additional WASO minute ($t61 = -2.81$, $P = 0.007$). For the language composite, Bayley's receptive and expressive scaled scores decreased by an average of 0.069 and 0.056 respectively for each additional WASO minute (receptive: $t61 = -2.67$, $P = 0.010$; expressive: $t61 = -2.42$, $P = 0.019$). Furthermore, each additional WASO minute also predicted a 0.063 decrease in Bayley's gross motor scaled scores ($t61 = -2.60$, $P = 0.012$). There was a marginal association between WASO and Bayley's fine motor performance, where each additional WASO minute was associated with a 0.054 decrease in fine motor scaled scores ($t61 = -1.77$, $P = 0.082$).

Conclusion

Since longer WASO is a marker of poor sleep quality, results from the current study show that early measures of infant sleep quality are useful predictors of later child development across different domains (cognition, language, motor). This suggests that sleep is important for multiple developmental outcomes throughout childhood. In light of the high prevalence of sleep problems amongst Singaporean children, further studies are needed to explore potential causes these sleep problems and how individual differences in sleep affect developmental outcomes longitudinally.

A Case Control Study of Adolescent Suicide Attempters in Singapore—Family and Social Connectivity and Risk Predisposition

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Introduction

Suicide attempts are on the rise and youth dying by suicide is a tragic happening for their families and friends. It is suggested that there is a widening of family and social disconnect of youth who attempt suicide with intent to die. This research aims to investigate risk factors of adolescent suicide attempt with intent to die in Singapore. Five factor clusters include parenting practices of parents of adolescents with history of suicide attempt, adolescent's temperamental factors, their help-seeking behaviour, presence of stressors and comorbid mental disorders. This report analysed surrogate indicators of social connectivity.

Methods

A total of 60 adolescent suicide attempters between 13 and 19 years old followed up at a general hospital and 58 controls known to the same hospital for acute medical conditions were recruited for a case-control study. In total, 67 parents/main caregivers of cases and 67 parents/main caregivers of the control-group adolescents were also interviewed. Controls were matched to the cases by age, gender and ethnicity at the group level. Interviewer-administered structured questionnaires were used.

Results

Stressors

Adolescents with history of suicide attempt reported significantly higher stressors in domains of social, family, academic and financial matters compared to matched controls. When divided into younger and older adolescents, results show that younger adolescents with history of suicide attempt have more stressors compared to older adolescents especially in the domains of financial and academic matters.

Temperament

Adolescents with history of suicide attempt are found to have tendency to express withdrawn behaviours towards new persons, objects, situations or events, to be less adaptable to changes in routine and the environment, to have a general negative outlook and less jovial behaviour, and to have an irregular structure and timing of the daily sleep-wake cycle. Male adolescents who have attempted suicide tend to be more restless, fidgety and higher motor activity level compared to male adolescents from the control group.

Parenting Practices

Adolescents who have attempted suicide reported lower parental warmth, higher parental hostility, higher maternal neglect and higher maternal rejection compared to matched controls. However, there were no differences in parental control between adolescents who have attempted suicide and matched controls. Interestingly, according to parental report, only parental neglect was found to be significantly higher for parents of cases when compared to parents of controls. Parenting practices among fathers and mothers differ significantly from each other according to adolescent report for both groups of adolescents.

Mental Health Conditions

There were significant differences between adolescents who have attempted suicide and matched controls for Axis I Disorder symptoms, such as mood disorders, anxiety disorders, eating disorders and schizophrenic disorders. With regards to comorbidity, the higher numbers of comorbid Axis 1 disorder traits among cases as compared to controls were also found. Significant differences in 10 out of the 12 personality disorder traits (PDT) were also found. The most prevalent personality disorder traits among adolescents who have attempted suicide were borderline PDT, avoidant PDT and paranoid PDT.

Help-Seeking Behaviour

A higher proportion of adolescents who have attempted suicide sought help from professionals such as counsellors and psychologists. Telephone hotlines were used more as a help-seeking avenue by adolescents who have attempted suicide when compared to matched controls. However, the tendency to seek help using such hotlines is generally low when compared to other help-seeking avenues. There was a negative relationship between suicide ideation and help-seeking behaviour.

Conclusion

The study identified significant risk profile that predisposes adolescents to contemplate suicide and acted on their intent to die in this study cohort. It is recommended that a review of existing youth care policies and voluntary welfare organisation (VWO) programmes be refined to better enhance existing adolescent service networks and their approaches, to further promote the emotional wellness and psychological stability of youth at risk, as well as heighten the awareness of the need to reach out to adolescents at risk and in distress, and manage the social and family disconnect.

English and Mandarin Cognitive-Communication Screener for Early Dementia/ Mild Cognitive Impairment in Singapore

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Introduction
The prevalence of mild cognitive impairment (MCI) and early dementia in Singapore is predicted to increase rapidly over the coming years (Ministry of Health, 2013). Although screening for MCI and dementia is not advocated for at present, any benefit that can be gained through treatments is usually the most apparent in the earlier stages, suggesting a need for early detection of cognitive decline. A successful screening tool for MCI and dementia is one that is valid, sensitive, reliable and relatively easy and quick to administer in clinical settings.

Objectives
The aims of this study were to (i) develop a comprehensive cognitive-communication screener (in English and Mandarin) for detecting MCI and early dementia, (ii) collect normative data from neurologically intact Mandarin-dominant and English-dominant participants (between 40 and 70 years of age), and (iii) identify and discuss areas for improvement based on the norming process and data.

Methods
A cognitive-communication screener was developed in English after reviewing relevant literature. The assessment battery comprised 8 verbal cognitive-communication tasks with culturally relevant items (picture description, digit span, verbal fluency, delayed picture recall, new verbal learning, picture naming, story recall and comprehension and intentional delayed recall), as well as a Functional Communication Questionnaire. The screener was then translated into Chinese for use with the Mandarin-speaking population.

Results
Preliminary investigations about the screener's clinical utility and statistical robustness were examined with 60 neurologically-intact Singaporeans. Normative data for the different subtests were then tabulated from the 30 English-dominant and 30 Mandarin-dominant participants (43 females and 17 males) aged between 41 and 68 years old (M = 54.27, SD = 7.05).

Conclusion
The cognitive-communication screener has good content validity, and preliminary findings suggest that there is great potential for its utility in local clinical settings. The next step is to validate the findings against established cognitive-communication screeners and on patients with MCI or early dementia to ensure that the tool is sufficiently sensitive for clinical use.

Down-regulated TOMM40 Gene Expression Alzheimer's Disease: Potential Diagnostic Blood Marker

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Introduction
Translocase of outer mitochondrial membrane 40 homolog (TOMM40) gene has been reported in Genome Wide Association Study (GWAS) to be associated with Alzheimer's disease (AD).

Methods
We examined TOMM40 gene expression profiles in whole blood of AD patients (n = 45, mean age 76.9) versus matched healthy controls (n = 45, mean age 76.2) from 3 clinical sites (Tan Tock Seng Hospital, Institute of Mental Health, and Singapore Longitudinal Ageing Study) in Singaporeans, and longitudinally with repeated blood sampling on 27 AD patients and matched controls over a period of 2 years.

Results
TOMM40 was significantly down-regulated in blood samples of AD in one discovery and 2 validation sets, as indicated by fold change (FC); Discovery: $P = 0.035$, F = –1.21, Validation 1: $P = 0.0014$, FC = –1.37, and Validation 2: $P = 0.028$, FC = –1.12. TOMM40 gene expression remained significantly lower in AD patients at 6 months, 1 year and 2 years compared to the controls, supported by confirmatory RT-PCR results.

Conclusion
TOMM40 down-regulation in the brain in severe AD is expressed in peripheral whole blood, and is a potential diagnostic marker for AD, disease severity or progression and merits further investigation.

Depression in Older Persons: Relationships with Health Care Utilisation (Complementary and Alternative Medicine, Doctor Visits and Hospitalisation)

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Introduction

Depression and depressive symptoms are common among the elderly. The relationship between depressive symptoms and health service use among older people is not well understood. We explored the association between depression and usage of complementary and alternative medicine (CAM), doctor visits and hospitalisation.

Methods

Study 1: Cross-sectional study of depression (diagnosed by Geriatric Mental State (GMS)) and self-reported usage of CAM in the past one year in a nationally representative random sample of 1092 individuals aged ≥60 in Singapore. Study 2: A subcohort of 973 SLAS-1 participants (community-living older persons aged≥ 55) were assessed for the presence of depressive symptoms Geriatric Depressive scale (GDS) at baseline and re-interviewed at 2-monthly intervals to determine cumulated frequencies of self-reports of physician visits and hospitalisations over 1-year follow-up.

Results

Depression (OR = 1.94; 95% CI, 1.26 to 2.98) was associated with CAM use, independently of other risks factors and correlates of CAM use. The use of CAM complements rather than replaces conventional treatments. There was a bidirectional relationship between depressive symptoms and doctor visits and hospitalisation. Baseline depressive symptoms was predictive of subsequent doctor visits (RR,1.34; 95% CI, 1.05 to 1.70). Hospitalisation (OR = 6.43, 95% CI, 2.48 to 16.6) and frequent (5 or more) physician visits (OR, 10.2; 95% CI, 3.36 to 31.1) during follow-up contributed to increased risk of depression at 1-year follow-up.

Conclusion

Older persons with depressive symptoms were more likely to use CAM, but this was not related to negative beliefs or attitudes about Western-style medicine or conventional healthcare providers. Treatment of depression is warranted in order to control excessive healthcare usage among older persons.

Frailty Associated with Increased Risk of Depressive Symptoms among Older Persons: Singapore Longitudinal Ageing Studies

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Introduction

This study aimed to investigate the association between physical frailty and depressive symptoms in older persons.

Methods

Physical frailty (based on Fried criteria) was determined at baseline, and depressive symptoms (GDS ≥5) at baseline and at 2- and 4-years follow-ups among 1827 older Chinese adults aged 55 and above in the Singapore Longitudinal Ageing Study (SLAS-1).

Results

At baseline, 11.4% (n = 209) had depressive symptoms, 32.4% (n = 591) were pre-frail and 2.5% (n = 46) were frail. In cross-sectional analysis of baseline data, pre-frailty (OR =1.69, 95% CI, 1.23 to 2.33) and frailty (OR = 2.36, 95% CI, 1.08 to 5.15) were associated with depressive symptoms (*P* for linear trend<0.001), controlling for demographic, comorbidities, and other confounders. In longitudinal data analyses, prospective associations among all participants were: pre-frail: OR = 1.86 (1.08 to 3.20); frail: OR = 3.09 (1.12 to 8.50); *P* for linear trend = 0.009). Similarly, among participants free of depressive symptoms at baseline, pre-frailty (OR = 2.26, 95% CI, 1.12 to 4.57) and frailty (OR = 3.75, 95% CI, 1.07 to 13.16) were associated with subsequent onset of depressive symptoms (*P* for linear trend = 0.009).

Conclusion

Frailty plays a significant role as a risk factor and predictor of depression in older persons. Further studies should explore their dynamic and bidirectional associations and the effects of frailty reversal on depression risk.

Homocysteine and the Ageing Brain: Findings from Singapore

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Introduction

Cognitive decline, reduced brain volume and white matter hyperintensities occur in healthy elderly. Elevated homocysteine damages the brain through vascular and neurotoxic mechanisms. Elevated homocysteine has been associated with increased risk of dementia but the interrelationships between homocysteine, neurocognitive function and brain changes among non-demented older adults have not been well studied.

Objectives

This study aimed to examine the interrelationships between homocysteine, neurocognitive function, brain volumes and white matter hyperintensities among non-demented Chinese adults in Singapore.

Methods

We analysed baseline data from the Singapore Longitudinal Ageing Study (SLAS) and the Singapore Longitudinal Ageing Brain Study (SLABS). In all, 451 participants aged ≥55 years from the SLAS cohort were evaluated. Homocysteine, folate and vitamin B-12 concentrations were measured in fasting blood samples. Cognitive functions were assessed by a neuropsychological test battery. Independent associations were determined in multiple linear regression models that simultaneously controlled for potential confounders and folate. A total of 228 right-handed participants aged ≥55 years from the SLABS cohort were evaluated. Participants underwent quantitative magnetic resonance imaging (MRI) of the brain using a standardised protocol and neuropsychological evaluation. Plasma homocysteine, folate, vitamin B-12, and markers for cardiovascular risk: blood pressure, body mass index, fasting blood glucose, and lipid profile were measured.

Results

Among SLAS participants, log-transformed homocysteine was inversely associated with performance on Block Design ($\beta = -0.319$, $P = 0.006$) and the written Symbol Digit Modality Test ($\beta = -0.129$, $P = 0.031$) independent of folate and a wide range of potential confounders. Among SLABS participants, elevated homocysteine was associated with reduced global cerebral volume, larger ventricles, reduced cerebral white matter volume, and lower cognitive performance in several domains. Elevated homocysteine was associated with reduced white matter volume ($\beta = -20.80$, $P = 0.004$) and lower speed of processing ($\beta = -0.38$, $P = 0.03$) after controlling for age, gender and education. However, the association between homocysteine and lower speed of processing disappeared after controlling for white matter volume. Elevated homocysteine was not associated with white matter hyperintensity volume or with hippocampal volume.

Conclusion

Elevated homocysteine is associated with lower cognitive function and reduced cerebral white matter volume among non-demented Chinese adults.

Tea Consumption and Neurocognitive Function in Late Life: Findings from Singapore and China

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Introduction

Laboratory research suggests that tea has potential neurocognitive protective effects, but this is not established in humans.

Objective

This study aimed to examine the relation between the tea intake and neurocognitive function among older and oldest-old Chinese.

Methods

We analysed data from the Singapore Longitudinal Ageing Studies (SLAS, n = 2501) and the Chinese Longitudinal Healthy Longevity Survey (CLHLS, n = 7139). Among community-living older Chinese aged ≥55 years in the SLAS cohort, we measured tea consumption at baseline and administered the Mini-Mental State Examination (MMSE) at baseline and 1 to 2 years later. Cognitive impairment was defined as an MMSE score ≤23 and cognitive decline as a drop in MMSE score of ≥1 point. We assessed neurocognitive performance of a subgroup of SLAS participants (n = 716) using a standardised battery of neuropsychological tests; composite domain scores on attention, memory, executive function, and information processing speed were computed using raw test scores. Among oldest-old Chinese aged ≥80 years in the CLHLS cohort, current frequency of tea consumption and past frequency at age 60 years were ascertained at baseline, and baseline and follow-up cognitive assessments were performed in the years 1998 (n = 7139), 2000 (n = 4081), 2002 (n = 2288) and 2005 (n = 913) respectively. Verbal fluency (animals) test was used as the measure of cognitive function.

Results

Among SLAS participants, the total tea intake was significantly associated with a lower prevalence of cognitive

impairment. Compared with the ORs for rare or no tea intake, the ORs for low, medium, and high levels of tea intake were 0.56 (95% CI, 0.40 to 0.78), 0.45 (95% CI, 0.27 to 0.72), and 0.37 (95% CI, 0.14 to 0.98), respectively (*P* for trend <0.001). For cognitive decline, the corresponding ORs were 0.74 (95% CI, 0.54 to 1.00), 0.78 (95% CI, 0.55 to 1.11), and 0.57 (95% CI, 0.32 to 1.03), respectively (*P* for trend = 0.042). Total tea consumption was independently associated with better performances on memory (B = 0.031, SE = 0.012, *P* = 0.01), executive function (B = 0.032, SE = 0.012, *P* = 0.009), and information processing speed (B = 0.04, SE = 0.014, *P* = 0.001). Among CLHLS participants, tea consumption was associated at baseline with higher mean (SD) verbal fluency scores: daily = 10.7 (6.6), occasional = 9.2 (5.8), non-consumer = 9.0 (5.5). In linear mixed effects model that adjusted for age, gender, years of schooling, physical exercise and activities score, the regression coefficient for daily tea consumption (at age 60) and occasional consumption was 0.72 (*P* <0.0001) and 0.41(*P* = 0.01) respectively. Tea consumers had higher verbal fluency scores throughout the follow-up period.

Conclusion

Regular tea consumption is associated with better neurocognitive function among older and oldest-old Chinese.

Apolipoprotein E(APOE) ε4, PONS1 and Cognitive Ageing: Findings from the Singapore Longitudinal Ageing Studies

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Introduction

The genes for both APOE ε4 and Paraoxonase 1 (PON1) are responsible for regulating lipoprotein and other metabolisms related to the risk of cardiovascular disease and stroke. APOE ε4 is a known genetic risk factor for Alzheimer's disease (AD) and dementia, but the roles of PONS1 and its interaction with APOE ε4 in dementia risk is not well studied.

Objectives

This study aims to examine: (i) The association of APOE ε4 allele and dementia; (ii) The association of PON1 gene 192Q/R polymorphism with clinical manifestations and disease severity of dementia among patients with AD and mixed dementia; and (iii) The association between PON1 gene 192Q/R polymorphism and the risk of dementia and the interaction between APOE ε4 status and PON1 gene 192Q/R polymorphism.

Methods

Chinese participants in the Singapore Longitudinal Ageing Study-1 (SLAS-1) and Chinese patients with confirmed diagnosis of dementia from Alexandra Hospital were investigated in case control studies.

Results

There were significant differences in the prevalence of APOE ε4 allele between AD patients and cognitively normal controls (35.6% and 17.2% respectively, *P* = 0.005). Odds ratio (OR) of the association adjusted for education was 2.41, 95% CI, 1.10 to 5.28, *P* = 0.028. No significant association of APOE ε4 allele with VaD/mixed dementia was found. The PON1 R allele was significantly associated with more neuropsychiatric symptoms among dementia patients overall. In the mixed dementia subgroup, the R allele was significantly associated with 3-fold increased NPI(S) scores (9.01 vs. 3.11, *P* = 0.039) and NPI (CD) scores (9.09 vs. 2.33, *P* = 0.006), CDR (sum of boxes) score (8.57 vs. 5.89, *P* = 0.042), GDS/FAST score (4.84 vs. 4.11, *P* = 0.007) and BADLS score (6.99 vs. 1.00, *P* <0.001). The total distribution of PON1 192Q/R genotype was significantly different between non-AD dementia and matched controls (29 R/R, 33 Q/R, 4 Q/Q; 32 R/R, 22 Q/R, 12 Q/Q respectively, *P* = 0.042), and the presence of at least one R allele (R/R or Q/R) was significantly different (93.9 % and 81.8% respectively, *P* = 0.033). Among APOE ε4 non-carriers, the presence of at least one R allele (R/R or Q/R) was significantly different between non-AD dementia patients and matched controls (95.6% and 80.0% respectively, *P* = 0.024). However, we did not find a significant association between PON1 gene 192Q/R polymorphism and the risk of AD/non-AD dementia.

Conclusion

These studies indicated that multiple risk factors related to lipid metabolism are involved in dementia risk and presentations. The complex relationships between lipid-related factors, cognitive decline and dementia should be recognised and investigated systematically in future research.

Singapore Longitudinal Ageing Study and the International Collaborative COSMIC Study: Comparison of Mild Cognitive Impairment Prevalence

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Introduction

Changes in mild cognitive impairment (MCI) criteria over time and differences in populations studied, operationalisation and measurement have led to a 10-fold range of prevalence estimates (3.2% to 35%). The Singapore Longitudinal Ageing Study has recently collaborated with University of New South Wales to apply uniform diagnostic criteria to cohort studies of cognitive ageing among older people in the Cohort Studies of Memory in an International Consortum (COSMIC) study.

Methods

Cross-sectional analyses of 12 longitudinal population-based studies of cognitive ageing (total n = 24,888) from 3 studies in USA, 4 in Europe, 3 in Asia and 2 in Australia. After excluding dementia, data were harmonised for demographics, cognitive complaints and functional impairment. Neuropsychological data were standardised against study-specific normative values. International Working Group criteria for MCI and its amnestic (aMCI) and non-amnestic (naMCI) subtypes were applied, and prevalence estimates using Mini-Mental State Examination (MMSE) scores and Clinical Dementia Ratings (CDRs) were also obtained.

Results

In COSMIC, the range of estimated prevalences of MCI in individuals aged 60 to 90 was less than that previously published: 3.2% to 10.8% for crude prevalences and 3.1% to 9.9% for age- and sex-standardised prevalences. The overall prevalence was about 6%. Prevalence for the age groups of 60s, 70s and 80s were 4.0%, 5.7% and 7.1% for men and 4.8%, 5.8% and 7.1% for women. There were no sex or White-Chinese differences, but lower education was associated with greater likelihood of MCI. The prevalence of naMCI was about twice as high as aMCI. In the SLAS cohort, when MMSE scores 24 to 27 were used as the criterion, the crude prevalence was 6.5% (5.5% to 7.6%) and the age- and sex-standardised prevalence estimates were 6.7% (5.5% to 8.0%); when the MCI diagnosis was based on CDR, the crude prevalence was 13.6% (11.3% to 16.3%) and the standardised prevalence was 13.9% (10.5% to 17.3%). For the prevalence of MCI subtypes, the crude prevalence of aMCI was 2.0% (1.4% to 2.9%) and of naMCI 3.2% (2.4% to 4.2%), and the standardised prevalences of aMCI and naMCI were 2.2% (1.3% to 3.1%) and 2.8% (1.7% to 3.9%), respectively.

Conclusion

Applying uniform criteria to harmonised data greatly reduced the variation in MCI prevalence internationally, but differences remained, the reasons for which need to be explored. The consistently higher prevalence of naMCI has implications for approaches to screening and prevention.

An Integrative Model for Memory Clinic: A Review

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The elderly population in Singapore has grown significantly from 3.4% in the 1970s to 7.2% in 2000 and 9.9% in 2012. One in 5 Singaporeans will be aged 65 years and above by 2030. The increasing life expectancy is associated with a rising prevalence of dementia. The Psychological Medicine Department established the first Memory Clinic in Singapore in 2007. This was the front-runner to the enhanced Memory Clinic funded as part of community mental health programmes by the Ministry of Health since 2012. The enhanced Memory Clinic now integrates care by specialists in psychiatry, geriatric medicine and neurology.

The enhanced Memory Clinic model focuses on service delivery by a multidisciplinary team. All referrals with memory complaints are triaged to ensure that patients are referred to the specialist most effective in managing their needs. Broadly, those with predominantly geriatric problems (falls, incontinence, delirium, frailty) and cognitive disturbances are assigned to a geriatrician, those with behaviour and mood symptoms associated with cognitive disturbances are seen by a psychiatrist and those younger patients or those with neurological conditions (stroke, Parkinson's disease) are seen by neurologists. Allied health professionals such as clinical psychologists, occupational therapists, medical social workers and pharmacists provide the necessary assessments of daily functioning, social and economic needs and disability levels and neuropsychological assessments to support the diagnostic evaluations and recommended management plans. The one-stop service also permits investigations such as blood investigations and neuroimaging to be arranged in the clinic. Care coordinators provide some basic assessments

and the educational component for patient and caregivers enabling the patient to access support services and care in the community.

The service provision in the enhanced Memory Clinic targets adult and elderly patients with memory and cognitive complaints requiring specialist reviews for diagnosis and management, those with cognitive disturbances and mild to moderately severe behavioural problems, those with complicated dementias with comorbid medical and/or psychiatric conditions, capacity assessments and those with prodromal syndromes such as subjective memory impairment, mild cognitive impairment and dementia. It aims to ensure every new patient has a comprehensive assessment, diagnosis and management plan established. Patients are also right-sited in the community when their condition and treatment response is stabilised and community care is secured. The objectives of the enhanced Memory Clinic are to (i) optimise evaluations for a definitive diagnosis and individualised care through early and accurate assessments, the use of a triage system a collaborative effort by a team of specialists and the introduction of a Care Pathway for seamless care from the ambulatory setting to the community for the patient and the caregiver; (ii) educate and support the patient and his/her family; (iii) improve clinical outcomes; (iv) effective care coordination; and (v) provide training opportunities. The number of new cases has increased 40% more than that projected in the last financial year and the programme has led to quality improvement in service delivery and enhanced care for the elderly.

Pilot Trials of EEG-Based Brain-Computer Interface (BCI) Training System for Improving Cognitive Performance in Older Persons

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Introduction

A novel EEG-based brain-computer interface (BCI) training system that has previously been found useful for improving symptoms of attention deficit hyperactivity disorder is evaluated for use to improve cognitive performance among healthy older persons. The safety, usability and acceptability of the BCI system among elderly users, and efficacy estimates for future Phase III trials were evaluated in 2 pilot studies, one on English-speaking elderly and the second on Chinese-speaking older persons.

Methods

Study 1: Thirty-one English-speaking healthy older persons were randomised into Intervention (n = 15) and Waitlist Control arms (n = 16). Study 2: Thirty-nine Chinese-speaking older persons were randomised into Intervention (n = 21) and Waitlist Control arms (n = 18). In both studies, intervention consisted of an 8-week training comprising 24 half-hour sessions. Usability, acceptability were assessed by questionnaire at the end of training and adverse events after every session. Efficacy was measured by the change of total score from the Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) before and after training.

Results

In both studies, feedback on the usability and acceptability questionnaire was positive. Adverse events: Study 1: No adverse events were reported. Study 2: Ten (30.3%) participants reported a total of 16 adverse events (headache, dizziness, others), all of which were graded "mild" except for one graded "moderate". Efficacy Study 1: The median difference in the RBANS change scores between arms was not statistically significant. The effect size of 0.6 SD reflects potential clinical utility according to Simon's randomised Phase II trial design. Using pooled data from both arms, the median change in total scores pre- and post-training was statistically significant (median = 4.0; P <0.001), specifically, in immediate memory (P = 0.038), visuospatial/constructional (P = 0.014), attention (P = 0.039), and delayed memory (P <0.001) scores. Study 2: The median difference in the change scores pre-and post-training of the modified RBANS total score was 8.0 (95% CI, 0.0 to 16.0, P = 0.042) higher in the Intervention arm than Waitlist Control, while the mean difference was 9.0 (95% CI, 1.7 to 16.2, P = 0.017).

Conclusion

Our BCI system shows promise in improving cognition in both English- and Chinese-speaking elderly, and it appears to be safe, user-friendly and acceptable to senior users. Further evaluation in a large-scale Phase III trial is underway.

Resilience, Stressful Life Events, and Depressive Symptomatology among Older Chinese Adults

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Introduction
The association between exposure to stressful life events (SLEs) and late-life depression is well documented. Empirical data that convincingly demonstrated the role of resilience as a buffer against the adverse mental health effects of SLEs in late life is lacking. We investigated the interactive effect of resilience and its underlying dimensions with SLE in moderating the relationship between SLEs and depressive symptomatology in older Chinese adults.

Methods
A population sample of 385 community-dwelling older Chinese adults aged ≥60 years responded to questionnaires on resilience (Connor-Davison Resilience scale), depressive symptomatology (Geriatric Depression Scale, GDS-15) and an 11-item SLEs inventory. The associations between the number of SLEs and resilience and depressive symptomatology (main effects and interaction) were explored in multiple regression analyses.

Results
Increased numbers of SLEs ($\beta = 0.343$, $P < 0.001$) and lower levels of resilience ($\beta = -0.137$, $P < 0.001$) were significantly associated with higher levels of depressive symptomatology. There was a significant interaction of resilience and number of SLEs on depressive symptomatology ($P = 0.003$). The sense of personal competence and optimism was the principal underlying resilience dimension moderating the relationship for both the young-old (aged 60 to 69) and the old-old (aged 70 and above).

Conclusion
The finding of significant interaction supported the role of resilience in moderating the adverse effect of SLEs in terms of depressive symptoms among older Chinese adults.

Digital Mobile Phone Use and Cognitive Decline: Singapore Longitudinal Ageing Studies

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Introduction
The widespread use of digital mobile phones has raised questions of the deleterious effects of electromagnetic field (EMF) exposure on the cognitive health of users. To date, there are no reports of the association between long-term mobile phone use and global and domain-specific cognitive functioning that carefully controlled for multiple confounding factors. We investigated the long-term effects of frequency of digital mobile phone use on cognitive performance in older persons.

Methods
The study involved 871 non-demented community-dwelling older Chinese participants in the Singapore Longitudinal Ageing Studies cohort. Frequency of digital mobile phone use, neuropsychological tests performance and confounding variables were assessed at baseline. Neuropsychological tests performance was re-assessed at the 4-year follow-up.

Results
Digital mobile phone users were typically self-selected to possess characteristics favouring better cognitive functioning and concomitantly demonstrate better performance on cognitive tasks. Longitudinal analyses also suggested that digital mobile phone users tend to show more favourable changes in cognitive performance and lower risks of cognitive decline, particularly with MMSE and attention and working memory, although the results were statistically non-significant.

Conclusion
There was no significant deleterious effect of digital mobile phone use on cognitive functioning in older people. Findings suggest, however, that digital mobile phone use may have an independent facilitating effect on global and executive functioning among older persons.

Insomnia among Older Persons: Prevalence and Risk Factors in the Singapore Longitudinal Ageing Studies

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Introduction
Insomnia is a common sleep-related complaint in older adults. The prevalence of insomnia symptoms of difficulty initiating sleep (DIS), difficulty maintaining sleep (DMS) and early morning awakening (EMA), as well as their possible risk factors and correlates are explored in older Singaporean men and women.

Methods

Information on self-reported insomnia symptoms and their potential correlates were obtained from 2763 adults, aged 54 to 94 years, who participated in the Singapore Longitudinal Ageing Studies second wave cohort.

Results

The prevalence of insomnia complaints was similar in both males and females (20.1% vs. 23.4%). Tiredness during the day was associated with self-complaint of insomnia in both males (OR = 7.3, 95% CI, 2.9 to 18.1), and females (OR = 3.9, 95% CI, 2.1 to 7.1). Additionally, in females, excessive daytime sleepiness was also associated with insomnia complaints (OR = 2.4, 95% CI, 1.3 to 4.6). History of medical conditions such as stroke, cardiovascular diseases, as well as respiratory problems and depression did not appear to be associated with insomnia symptoms in females, but males were twice as likely to report a history of high cholesterol (95% CI, 1.2 to 3.8). For specific insomnia complaints, DIS was associated with living alone (95% CI, 1.1 to 3.3) and reporting a history of kidney failure (95% CI, 2.0 to 19.3) in females, while EMA correlated with being retired (95% CI, 1.1 to 2.9) and having a history of atrial fibrillation (95% CI, 1.0 to 9.9). In males, those reporting DMS and EMA were more likely to report a history of atrial fibrillation (95% CI, 1.3 to 16.7, and 1.0 to 18.2, respectively). Males reporting EMA were also 6.2 times more likely to have a history of depression (95% CI, 1.0 to 37.2).

Conclusion

From our data, complaints of insomnia symptoms were correlated with aspects of daytime functioning and health in older adults. EMA was associated with having a history of atrial fibrillation in both male and female older adults. Older men with EMA were additionally more likely to report a history of depression. The previous observation of the association of EMA with depression and vascular health appears to hold true for our sample.

Memory Aging & Cognition Centre (MACC)

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With a rapidly ageing population in Singapore, the prevalence of dementia is expected to increase to reach an estimated 20% of those aged 65 and above by 2030. The MACC aims to develop novel scientific insights and advances in the understanding of dementia and cognitive impairment leading to interventions that can prolong independent community function, delay institutionalisation and therefore lower healthcare expenditure for patients suffering from dementia.

Since its establishment in 2010, the MACC has made considerable progress to identify an Asian phenotype for cognitive impairment and dementia. One example is the association of intracranial stenosis in community dwelling Chinese with a higher risk of cognitive impairment. The MACC currently maintains at least 400 well characterised subjects with Alzheimer's disease, vascular dementia and mild cognitive impairment and corresponding control subjects, in addition to over 900 community-dwelling Chinese, Malays and Indians. The MACC has also embarked on health services research by collaborating with primary healthcare providers in validating case finding tools for cognitively impairment and dementia in the elderly population.

The members of MACC have competed successfully for NMRC, MOH and industry funding. The MACC is currently working with industry partners such as GSK, TauRx, Lundbeck, Danone and Nutricia to develop and test new drugs, add-on treatment to treat dementia as well as novel biomarkers and nutritional indicators.

MACC members consist of clinician scientists as well as basic scientists and we look forward to developing further collaborations. The MACC serves as a centre for training and research. It focuses on training basic science and translational medicine researchers (including specialists and specialists-in-training) to build up the skills needed to manage dementia. Hence, students and clinicians in training are welcome to enquire about projects and training opportunities.

Singapore Frailty Intervention Trial: Effect of Frailty Reversal on Reducing Depressive Symptoms

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Introduction

We have previously shown that physical frailty in old age is associated with new and persistent symptoms of depression. This study investigated whether reversing physical frailty had the effect in reducing depressive symptoms.

Methods

Eligible and consented elderly (aged 65 years and above) recruited in the community were assessed to be frail or pre-frail using Cardiovascular Health Study (CHS) criteria (Fried et al, 2001). A total of 250 elderly were randomly allocated to one of five lifestyle interventions (50 per each intervention): nutritional supplementation, cognitive training, physical training, combination intervention, and usual care control each of 24 weeks duration. Geriatric Depression Scale (GDS) 15 was used for assessment of depressive symptoms at 0-month, 3-month, 6-month and 12-month. (Singapore Frailty Intervention Trial: Clinical Trial Registration: NCT00973258.)

Results

Compared to the control group, the nutrition, cognitive, physical and combination intervention groups all showed lower mean GDS scores during the follow up, with statistically significant differences at 12-month for nutrition versus control (–0.46, $P = 0.016$), at 6-month for cognitive versus control (–0.39, $P = 0.021$), at 6-month for physical versus control (–0.37, $P = 0.026$), and at 6-month (–0.43, $P = 0.020$) and 12-month (–0.51, $P = 0.005$) for combination versus control.

Conclusion

Reversing physical frailty among older persons is effective in reducing concomitant symptoms of depression.

The Elderly Friendly Built Environment and Successful Ageing: Neighbourhood Environment Characteristics and Transportation Physical Activity among Older Persons

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Introduction

The physical characteristics of the neighborhood built environment play an important intervening role in supporting or limiting mobility and functional independence of elderly people living in their community. This study examined the independent associations of both perceived and objective measures of the neighbourhood environment characteristics with transportation physical activity (e.g. walking to the grocery store) among community-dwelling elderly in Singapore.

Methods

Trained research nurses interviewed 402 elderly participants (aged 55 years and above) on individual perceptions of their neighbourhood environment in one study area (Brickworks) using Neighborhood Environment Walkability Scale (Sallis et al, 2006). Geographic Information Systems (GIS) was used for objective measurements of the built environment. Hierarchical multivariate logistic regression models were used to estimate the odd ratios of association of subjective and objective measures of residential density, street connectivity, land-use mix, walkability, accessibility and other characteristics with transportation physical activity.

Results

Base model variables significantly ($P < 0.05$) associated with a higher level of transportation physical activity were: female sex [AOR = 0.52, younger age (<65 years) (AOR = 2.26)], residence in higher end housing (AOR = 2.12). In the final full model controlling for base model variables, significant independent subjective and objective measures of neighbourhood environment associated with a higher level of transportation physical activity were subjective measures of land use mix (diversity) (AOR = 1.74, $P = 0.04$), and safety from crime (OR = 4.55, $P < 0.001$), and objective measures of medium (AOR = 2.75, $P = 0.03$) and high accessibility index (AOR= 2.77, $P = 0.04$).

Conclusion

Closed proximity to neighbourhood amenities, crime safety and accessibility positively influence the elderly to engage in physical activities for transportation. Our findings provide supporting evidence for urban planning to improve features of neighbourhood environment for active living in the community neighbourhood.

Reduction in Depressive Symptoms was Associated with Greater Functional Independence among Older Persons Treated in the Community

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Introduction

Although the presence of depression or depressive symptoms have been shown to be associated with physical functional disability among older people, few studies have shown that improvements in the level of depressive symptoms result directly in greater independent functioning in daily activities.

Methods

Older persons aged 60 years and above with depressive symptoms (n = 267) who were treated in a primary care treatment programme were followed up for 12 months. Geriatric Depression Scale (GDS-15), and instrumental and basic activities of daily living (IADL and ADL) were measured at baseline and at 12-month follow-up. Multiple regression analyses examined the degree to which GDS change scores and conversion to non-depressed status were associated with ADL and IADL change scores, controlling for baseline covariates including chronic medical comorbidity and Mini Mental State Examination (MMSE).

Results

An improvement in GDS scores was significantly associated with improvement in ADL ($\beta = 0.355$, $P < 0.001$) and IADL scores ($\beta = 0.165$, $P = 0.018$) after adjusting for baseline functional status, MMSE, medical comorbidites and other variables. Remission of depression (GDS reduced to ≤ 4) was associated with an improvement in ADL change scores ($\beta = 0.281$, $P = 0.019$).

Conclusion

Depressed older persons treated for depression in the community who showed improvements in depressive symptoms experienced greater independence in performing daily living activities.

CEPIS (Community-based Early Psychiatric Intervention Strategy) Project: Community Screening and Primary Care Treatment of Depressive Symptoms among Older Persons

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Introduction

Depression among older persons is highly prevalent and disabling, but is under-recognised and under-treated. The Community-based Early Psychiatric Interventional Strategy (CEPIS) programme is developed as a community outreach, screening and primary care intervention programme aimed at overcoming system and personal barriers to care to improve access and outcomes of mental health services. Trained community nurses routinely screened seniors in social service centres for depressive symptoms, and provided psychoeducation and referral for primary care treatment by trained general practitioners with treatment algorithms, case manager and nurse educator support, and psychiatric referral support.

Methods

Participants were screened using the Geriatric Depression Scale and independently assessed using Structured Clinical Interview for DSM-IV diagnosis. A randomised, controlled, parallel-group interventional trial (Clinical Trial Registration NCT00430404) examined the effectiveness of a structured, multidisciplinary collaborative care versus usual care for the primary care management of depression.

Results

A total of 4633 individuals aged 60 years and above were screened in 42 social service centres, 18 special needs services, 12 sheltered and welfare home facilities and 4 nursing homes. Depressive symptoms were detected in 370 (8%) older persons including 214 (57.8%) with a diagnosis of a mental disorder(s). Pre-outreach treatment seeking was 10.3%. The programme resulted in 73.8% being successfully referred to GP treatment. Compared with individuals who were not treated (n = 120) for their depressive symptoms, or individuals who were treated under usual care (UC, n = 112), depressed individuals treated in the collaborative care (CC, n = 102) experienced significantly greater depression symptom reduction and improved quality of life.

Conclusion

The CEPIS programme represents a feasible and effective programme for community screening and primary care treatment for depression among older persons in Singapore.

Ethnic Differences in Cognitive Impairment and Dementia Prevalence in Singapore

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Introduction
This study aimed to examine ethnic differences in cognitive impairment and dementia prevalence among Chinese, Malays and Indians in Singapore.

Methods
In 2003, the modified Mini Mental State Examination (MMSE) and Geriatric Mental State (GMS) were administered to a nationally representative population sample (n = 1092) of community-living elderly, comprising Chinese, Malays, and Indians in Singapore.

Results
Mean MMSE scores among Malays (23.6) and Indians (25.0) were significantly lower than that of Chinese (26.2), but only in non-educated subjects. These differences remain unchanged after adjusting for differences in age, sex, cardiovascular risk factors, comorbidities, levels of physical, social and productive activities. No ethnic differences in MMSE were observed in higher educated subjects.

There was commensurately higher prevalence of dementia among Malays (9.4%) and Indians (8.8%) than that of Chinese (4.2%). Ethnic differences in dementia prevalence were not explained by differences in gender, age and education (adjusted OR = 3.11, Malay vs. Chinese; OR = 4.30, Indian vs. Chinese). There were modest contributions to the observed differences by cardiovascular factors, depression or leisure time activities, but the ORs remained significantly different. Differences in MMSE scores contributed the most to explaining the ethnic differences

Conclusion
Ethnic non-equivalence in MMSE test performance especially in less educated older persons should be taken into account in dementia screening. Cognitive functional reserve accounted for much ethnic differences in dementia prevalence has implications for the detection and treatment of dementia in Singapore.

Living Alone and Mortality Risks: Singapore Longitudinal Ageing Studies

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Introduction
In Singapore, the proportion of older persons (aged 65 and above) living alone is expected to grow 2.4 fold from 8% in 2005 to 19% in 2030. The number of elderly people living alone will increase to 83,000 by 2030—up from the current 35,000. Source: http://www.straitstimes.com/BreakingNews/Singapore/Story/STIStory_787940.html Elderly individuals living alone are especially vulnerable to poverty, social isolation, and adverse psychological and health outcomes.

Methods
The mortality risk associated with living alone among 2553 older adults in the SLAS cohort from 8 years follow-up (September 2003 to December 2011) was analysed.

Results
There were 189 (7.4%) SLAS participants who lived alone. They were significantly older, more likely to be women, had depressive symptoms, and living in low-end (1 to 2 rooms) HDB apartments, but had similar levels of medical comorbidities and (instrumental activities of daily living) IADL- (activities of daily living) ADL disability than their counterparts. A total of 227 (8.7%) participants died. Living alone was associated with higher mortality (HR = 1.80; 1.16 to 2.78) after adjustment for age, sex and housing type. The estimated OR was not significantly changed by adding health factors (HR = 1.84, $P = 0.007$), but was significantly reduced by adding marital status (HR = 1.47, $P = 0.099$, (Sobel's test, $P = 0.002$).

Conclusion
Among older persons, living alone was associated with increased mortality. Marital status supersedes health factors as the major contributor.

ApoE-e4 and Cognitive Function: Gene-Environmental Interactions Observed in the Singapore Longitudinal Ageing Studies

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Apolipoprotein E-epsilon 4 (APOE-e4) is the major genetic risk factor for Alzheimer's disease (AD). APOE polymorphism modulates susceptibility to AD and cardiovascular diseases in a context-dependent manner. We investigated the interaction of APOE-e4 with environmental factors in determining the risk and presentation of cognitive decline and neurocognitive disorder.

In the Singapore Longitudinal Ageing Studies, a population-based cohort of 2800 older persons aged 55 years and

above was assessed at baseline in 2004 and their cognitive outcomes at follow-ups 2 and 4 years after baseline.

The inverse association of leisure time physical, social and productive activities with cognitive decline was significantly modified by APOE-e4. (Interaction with social activity, $P = 0.039$; productive activity, $P = 0.095$; and physical activity, $P = 0.015$). Cognitive decline associated with low activity was worse among APOE-e4 carriers and vice versa.
Depressive symptoms at baseline were associated with subsequently greater cognitive decline and this was particularly observed among APOE-e4 carriers (P for interaction = 0.013).

Lower serum albumin level was associated with increased cognitive decline, and this was more pronounced among APOE-e4 carriers (P for interaction = 0.049). Lower serum vitamin B-12 was associated with poorer performance in MMSE (P for interaction = 0.016), and attention and working memory (Digit Span Backwards) (P for interaction = 0.013) and immediate recall (Rey Auditory Verbal Learning Test) (P for interaction = 0.005) in APOE e4 carriers but not in APOE e4 non-carriers.

Metabolic syndrome was associated with amnestic mild cognitive impairment (OR = 1.75, $P = 0.013$), but this was most pronounced among APOE-e4 carriers (OR = 3.35, $P = 0.044$), and young (<65 years) APOE-e4 carriers (OR = 6.57, $P = 0.046$).

The APOE-e4 allele not only exaggerates the risk of AD or earlier age at onset of AD, but also of cognitive impairment associated with lifestyle, cardiometabolic and nutritional factors. APOE modulates susceptibility to both atherosclerosis and AD through its pleiotropic and context-dependent effects on plasma lipoprotein metabolism, coagulation, oxidative processes, macrophage, glial cell and neuronal cell homeostasis, central nervous system (CNS) physiology, inflammation, and cell proliferation.

Physical, Social and Productive Activities is Associated with Decreased Risks of Cognitive Decline in Older Persons: Singapore Longitudinal Ageing Studies

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Introduction
We contributed to the literature documenting the beneficial effect of an active lifestyle in slowing the rate of cognitive decline in late life. We also evaluated the combined and differential effects of physical, social and productive activities on cognitive decline and the modifying effect of APOE-e4 allele.

Methods
Physical, social and productive leisure activities were assessed at baseline among 1635 community-dwelling Chinese older adults aged 55 years or older in the Singapore Longitudinal Ageing Study, and cognitive decline (at least one point drop in Mini Mental State Examination (MMSE) scores between baseline and follow-up) after 1 year.

Results
Medium (OR: 0.60, 95% CI, 0.45 to 0.79) and high levels of overall leisure time activity (OR: 0.62, 95% CI, 0.46 to 0.84) were associated with decreased risk of cognitive decline, controlling for age, gender, education and other risk factors. The strongest association was shown for productive activity (OR = 0.36), compared to physical (OR = 0.78) and social activities (OR = 0.85). There were more pronounced effects (statistically significant interactions) among those with APOE-e4 allele.

Conclusion
Increased leisure time activity, especially productive activities more than physical or social activities, was associated with a decreased risk of cognitive decline. APOE-e4 genotype individuals appeared to be more vulnerable to the effects of low and high levels of leisure activities.

Ethnic Differences in Depressive Symptomatology among Older Persons in the Singapore Longitudinal Ageing Studies (SLAS)

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Introduction
Somatic and other non-affective symptoms of depression are factors for under-diagnosis especially among older persons. Heterogeneity in non-affective presentation of depression across different ethnic groups and its health and functional significance are also not well studied in Asian populations. We hypothesised that Chinese, Malay and Indian older persons demonstrated important differences in non-affective symptomatology of depression, possibly due to differences in sociocultural perceptions.

Methods

In a nationally representative population-based random sample of older adults aged 60 and above (n = 1092) in 2003, non-affective items in depressive symptomatology in the Geriatric Mental States (GMS) examination and functional outcome measures were compared in Chinese, Malay and Indian.

Results

Depressed Malays were more likely to endorse symptoms of appetite loss (OR = 4.35), sleep disturbances (OR = 2.39), disabling pain (OR = 3.82), psychomotor slowing (OR = 3.43) and anergia (OR = 4.79), at the same time reporting poorer general health status and greater role limitations resulting from their mental and emotional problems (OR from 2.56 to 3.36). These differences were not explained by anxiety, dementia or physical comorbidity.

Conclusion

There were striking differences in the somatic and non-affective symptomatology of geriatric depression among Chinese, Malay and Indian groups. Somatic symptoms in depression have large health and functional significance and have important implications for the diagnosis and management of depression among older persons in Singapore.

Subsyndromal Depression Shows Similar Clinical Significance and Health Impact as Syndromal Depression among Older Singaporeans

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Introduction

Subsyndromal depression is defined as 2 or more symptoms of depression, for most or all of the time in a 2-week period, in persons who do not otherwise meet Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) criteria for a current major depressive disorder or dysthymia. Prior studies suggested that subsyndromal depression share similarities with syndromal depression in increased risk of suicide, limited role functioning, poor quality of life, excessive use of services, and increased economic costs due to disability days. We examined the clinical significance and impact of subsyndromal depression among older Singaporeans.

Methods

In a nationally representative population survey conducted in 2003, a total of 1092 respondents aged 60 and above, subjects were examined for depression using Geriatric Mental State Examination (GMS). DSM-IV diagnosis of case level or syndromal depression was denoted by diagnostic confidence levels of 3 to 5, and subcase or subsyndromal depression by diagnostic confidence levels of 1 to 2.

Results

Respondents with subcase depression showed higher levels of cognitive impairment, anxiety, and measures of poor mental, physical and functional status compared to non-cases and were similar to or worse than syndromal cases (all P <0.001). Both subsyndromal and syndromal depression cases were significantly associated with more medical comorbidities, diagnoses of comorbid dementia and anxiety, lower MMSE score, self-reported mental health problem, functional disability and poor health status, controlling for age, gender, ethnicity, education, and several other sociodemographic factors (odds ratios range from 2.45 to 12.5, all P <0.001).

Conclusion

Among older Singaporeans, subsydromal depression showed the same clinical significance and health impact as syndromal depression.

Subjective Cognitive Impairment in Elderly Chinese Singaporeans: Roles of Cognitive Functioning, Affective Symptoms, Health, and Lifestyle Variables

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Introduction

Subjective cognitive impairment (SCI) has been identified as a possible prodrome to mild cognitive impairment (MCI) and subsequent dementia. While SCI has been consistently associated with increased risk of future decline, its relationship with current cognitive functioning is not as well established. Furthermore, studies on how affective symptoms influence this relationship have produced conflicting results.

Objective

This study aims to examine how SCI is associated with

objective cognitive functioning, demographic, affective, health and lifestyle variables.

Methods

This sample was derived from a community-based study, 'The association between diet and health status in Asian elderly: a cross-sectional study' conducted by the Department of Psychological Medicine at the National University Health System in Singapore. Data from 392 Chinese Singaporeans aged 60 and above was used. Demographic, lifestyle, self-rated health and medical information were collected. SCI was assessed using the Perceived Deficits Questionnaire (PDQ; Sullivan et al, 1990). Cognitive functioning was assessed using the Mini-Mental State Examination (MMSE; Folstein & McHugh, 1975), Repeatable Battery for the Assessment of Neuropsychological Status (RBANS; Randolph et al, 1998) and Montreal Cognitive Assessment (MoCA; Nasreddine et al, 2005). Depressive symptoms were measured using the Geriatric Depression Scale (GDS; Yesavage & Brink, 1983) and anxiety symptoms using the Geriatric Anxiety Inventory (GAI; Pachana et al, 2007). A chi-square test was first used to test for independence between subjects classified as SCI/no SCI and cognitively impaired/not impaired. Data of cognitively unimpaired subjects were then analysed using univariate logistic regression analyses, with the categorical variable absence or presence of SCI regressed against each variable. Significant predictors were then entered into a multivariate logistic regression model to account for shared variance and investigate each variable's unique predictive ability.

Results

SCI was not significantly associated with cognitive impairment [$\chi^2(1, n = 392) = 0.03$, $P > 0.05$]; only 49.5% of subjects with SCI were found to have objective cognitive impairment. In subjects without cognitive impairment, those who rated their current health as poor [$\chi^2(1, n = 192) = 13.07$, $P < 0.01$, OR = 2.84 (95% CI, 1.61 to 5.01)], or worse-off compared to the previous year [$\chi^2(1, n = 192) = 4.65$, $P < 0.01$, OR = 1.61 (95% CI, 1.04 to 2.48)] were more likely to report SCI. Those older [$\chi^2(1, n = 192) = 3.66$, $P = 0.06$, OR = 1.06 (95% CI, 1.00 to 1.12)], with fewer years of schooling [$\chi^2(1, n = 192) = 5.28$, $P < 0.05$, OR = 0.91 (95% CI, 0.83 to 0.99)], suffering from more medical problems [$\chi^2(1, n = 192) = 4.93$, $P < 0.05$, OR = 1.31 (95% CI, 1.03 to 1.67)], and who participated in fewer cognitively demanding activities [$\chi^2(1, n = 192) = 4.70$, $P < 0.05$, OR = 0.79 (95% CI, 0.64 to 0.98)] were also marginally more likely to report SCI. No effects were found for gender, or anxiety and depressive symptoms. After multivariate analyses, only poorer self-rated health [$\chi^2(1, n = 192) = 4.37$, $P < 0.05$, OR = 1.98 (95% CI, 1.04 to 3.77)] significantly predicted presence of SCI.

Conclusion

SCI is associated with poorer perception of physical health, rather than current cognitive impairment in elderly Chinese Singaporeans. This has important implications for the utility of SCI as an indication of cognitive impairment, and how such perceived impairment should be responded to in clinical settings.

Influence of Maternal Mental Health on Emotional Regulation of Fear in 4-Year-Olds

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Introduction

Earlier studies have shown that maternal mental health affects birth outcomes, such as birth weight (BW) and birth length (BL), comprising indices of quality of pregnancy. Birth outcomes have also been found to impact on children's emotion regulation (ER). ER is achieved through the autonomic nervous system (ANS), specifically through signals from the excitatory sympathetic ANS and inhibitory parasympathetic ANS. Changes in heart rate (HR), influenced by these ANS signals, are represented by heart rate variability (HRV). HRV has been used as a neurophysiological measure to assess the ability to regulate emotions. Depending on whether a given stimulus is considered as arousing or not, the HRV pattern during a breathing cycle will indicate whether a person can regulate their emotions in an adaptive manner.

We hypothesise that the toddlers' change in HRV in response to a stressor will be affected by the quality of pregnancy, reflected on birth outcomes, and maternal mental health as measured by the Spielberger State-Trait Anxiety Inventory (STAI). In order to study the above-mentioned hypothesis, a fear task was administered to 42-month-old children while their HR data were recorded.

Methods

Maternal anxiety was measured with STAI at 26 weeks of pregnancy. Both STAI-Trait (STAI-T) and STAI-State (STAI-S) scores were used in our analyses. Gestational age (GA), BW and BL of newborns were obtained within 24 hours of birth by the attending hospital nurse or physician. To assess fear response we used the Laboratory Temperament Assessment Battery (LABTAB). During this task, the research coordinator encouraged children to touch a toy lizard. The lizard would jump at them when they were about to touch it to elicit a fear response. Subsequently, behavioural coding was done based on signs of bodily fear, withdrawal, etc. Neurophysiological responses were obtained by attaching an ambulatory HR monitoring device (Vu AMS) to the child. The recorded HR throughout the entire task is processed using a data management suite. The difference in HRV during baseline and the fear phase was calculated and expressed as δ-RSA. Regression analyses were performed with GA, BW, BL and STAI-T as predictors and δ-RSA scores as the dependent variable.

Results

Our preliminary data is based on a sample of 32 participants with a mean age of 42 (SD = 1.27) months; a gender ratio of 50:50, and an ethnicity ratio of 84:13:3 for Chinese, Malay and Indian. Mean age of pregnant mothers was 31.7 (SD = 5.1) years. Regression analyses showed that BW was a significant predictor (P = 0.01) of δ-RSA while STAI-T was not significant (P = 0.07). BL and GA did not predict ER accurately. Analysis was also performed on STAI-S, however, results were not significant.

Conclusion

BW can predict ER in response to fear task in children of 42 months when adjusted for GA. A limitation is the small sample size, which could be a reason for insignificant relationship between prenatal maternal anxiety traits and children's ER, although they appear to exhibit a similar trend to BW. We will further investigate this relationship with larger sample size in an effort to confirm the present findings.

Type and Timing of Maternal Mental Health Matters: The Impact on Child Internalising and Externalising Problems

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Introduction

Past research has shown that maternal mental health problems are one of the many factors that affect children's socioemotional development. However, little research has examined the impact of different kinds of maternal mental health symptoms (anxiety or depression) and the timing of their occurrence (pre- or post-natal) on child outcomes within the same study. Here, we are interested to examine the unique contribution of maternal pre- or post-natal anxiety and depressive symptoms on children's socioemotional development within the context of Singapore.

Methods

Mothers were recruited from KK Women's and Children's Hospital and National University Hospital during pregnancy, as part of the Growing Up in Singapore towards Healthy Outcomes (GUSTO) cohort study. Maternal anxiety (n = 118) and depressive (n = 113) symptoms were assessed at 26 weeks gestation and 12 months post-pregnancy using total scores on the State-Trait Anxiety Inventory (STAI) and Beck's Depression Inventory-II (BDI-II) respectively. At 24 months, caregivers rated child internalising, externalising and total problems on the Child Behavioural Checklist (CBCL) 1.5 to 5 years. Information on socioeconomic status (SES), indexed by highest maternal education, ethnicity, gender, maternal exposure to smoke and alcohol consumption, maternal age at delivery and delivery mode were used as covariates. Only healthy term-born infants with birth weight ≤ 2500 g and ≥ 4000 g, gestational age ≥ 37 weeks and <42 weeks, 5-minute Apgar score ≥ 9 and with no birth complications were included in the study. The independent effects of pre- or post-natal anxiety or depression on child internalising, externalising and total problems were evaluated through multiple regressions. Specific maternal affective factors were entered into hierarchical regressions after controlling for other maternal mental health factors, delivery mode and sociodemographic confounders.

Results

Prenatal maternal anxiety, when adjusted for postnatal anxiety and depression, was found to independently predict internalising behaviours in children at 24 months, explaining additional 6.3% of the variability, F change (1, 103) = 8.464, $P = 0.004$. Higher levels of prenatal maternal anxiety were associated with more internalising problems ($\beta = 0.345$, t(103)= 2.909, $P = 0\ .004$), but not for postnatal maternal anxiety. Postnatal maternal depression, when adjusted for prenatal depression and postnatal anxiety, was also found to independently predict externalising behaviours in children at 24 months, accounting for additional 3.8% of the variability, F change (1, 99) = 4.695, $P = 0.033$. Higher levels of postnatal maternal depression were associated with more externalising problems ($\beta = 0.314$, t(99) = 2.167, $P = 0.033$), but not for prenatal maternal depression.

Conclusion

Our findings suggest that the timing and type of maternal mental problems influence children's socioemotional development such that prenatal anxiety was found to be associated with children's internalising behaviours, whereas externalising behaviours were predicted by postnatal depression. Limitations of this study are possible over-adjustments (as anxiety and depressive symptoms are often comorbid) in our analyses and the use of subjective self-report measures. Our planned studies in GUSTO also aim to investigate important moderators or mediators such as maternal sensitivity and parenting styles.

Sample Characteristics of Single Mothers Supported by Women's Emotional Health Service (WEHS)

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Introduction

This study explores the role of age, ethnicity and psychosocial problems in single mothers in Singapore, who were screened and referred to the Women's Emotional Health Service (WEHS).

Methods

We included single mothers of the WEHS programme. WEHS is a programme in the National University Hospital that has been established since April 2008 to provide emotional and psychological support to perinatal patients. In total, 1524 perinatal patients have been included since then. Variables like age, ethnic composition and psychosocial problems were examined.

Results

A comparison of age between married and single mothers revealed that the age of single mothers (M = 22.92, SD = 6.045) are significantly lower than that of married mothers (M = 31.01, SD = 5.433). Further examination of the age of single mothers revealed that the majority of single mothers supported by WEHS are between the ages of 19 and 21. This age range is lower than the age at which most females in Singapore get married (25 to 29 years) and give birth (30 to 34 years) in 2013. The ethnic composition of single mothers supported by WEHS was also compared with the ethnic composition of females in Singapore. It was found that the ethnic composition of single mothers in WEHS is significantly different from the ethnic composition of females in Singapore, $\chi^2(3, n = 138) = 203.637$, $P < 0.001$. It was found that, compared to the national statistics, Chinese single mothers are 54.4% under-represented, Malay single mothers are 306.5% over-represented, Indian single mothers are 25% over-represented and single mothers from other races are 57.4% under-represented. An examination of the types of psychosocial problems generally faced by single mothers enrolled in WEHS revealed that the 3 most commonly cited problems were financial problems (48.7%), interpersonal issues with their support persons (32.3%) and emotional support from their partners (30.4%). One of the top 3 problems faced by married mothers supported by WEHS involved their partners' emotional support (27.8%) too. However, in comparison, the other 2 commonly cited problems by married mothers are unsupportive work environments (21.4%) and pregnancy and childbirth-related issues (22.1%).

Conclusion

Our findings show that there are significant differences between single perinatal mothers and married perinatal mothers in age (with single mothers being younger, also when compared to the general population in Singapore) and in psychosocial problems (with single mothers experiencing more financial issues and interpersonal issues). At the same time, both single and married perinatal mothers commonly face lack of emotional support from their partners. There are also significant differences between single perinatal mothers and the national female population in ethnicity (with Malay single mothers grossly over-represented in WEHS as compared to national statistics). Further studies should explore the mental health issues faced by single mothers and the protective and risk factors associated with these mental health issues.

Is Infertility Counselling a Must or Just a Luxury?

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Introduction

The Women's Emotional Health Service (WEHS) was set up in 2008 at the National University Hospital. One of the main objectives is to enhance the holistic care of perinatal patients. WEHS has been providing pre-IVF counselling since September 2012. In this study, we explored the satisfaction of first-time IVF patients and their partners with a single pre-IVF counselling session that they attended as part of the requirement before they embarked on IVF treatment at NUH. Interest in follow-up care was probed. Additionally, the patients' and their spouses' well-being was also assessed using the Depression, Anxiety and Stress Scales, 21-item version (DASS-21).

Methods

The IVF counselling session for the couple was usually arranged on the same day as their administrative appointment with the fertility clinic staff to enroll into IVF treatment. Participants were given the DASS 21 to complete at the waiting area, before their counselling session. The sessions were conducted by 2 trained clinical psychologists who computed the DASS 21 before the sessions began. The focus of the sessions was mainly on risk assessment, psycho-education, and enhancement of coping. Follow-up sessions or external referrals were arranged, if required, based on the needs of the individual or the couple. At the end of the counselling session, all patients and their partners were given an anonymised feedback form to complete. We included data from September 2012 to December 2013.

Results

The sample consisted of a total of 657 patients, of whom there were 346 women and 311 men. Of the female patients, 89.9% of them attended session together with their spouse; the remaining attended the session alone. The participation rate was 93.5%. Among them, 88% of participants found that attending the session better prepared them for the IVF treatment procedure; 88% of participants found that attending the session equipped them with skills to cope better with the procedure; 84% of participants found that attending the session helped them to better communicate their needs to their spouse or to support their spouse better; 88% of participants found that attending the session was useful;

98% of participants found that the therapist was supportive. Also, 65% of participants expressed interest in attending a support group. However, the take-up rate for follow-up sessions was less than 1%. The DASS 21 showed that 25% of participants reported having anxiety symptoms, and 16% reported depression and stress symptoms.

Conclusion

The results showed that most participants are satisfied and found it useful to attend the single pre-IVF counselling session. There was expressed interest in follow-up support, but the take-up rate for individual follow-up sessions was less than 1%. There were significant levels of depression, anxiety and stress in this population on an objective self-report measure. In summary, the single pre-IVF session was well received by the participating couples, and it served its goals of enhancing coping with treatment and improving communication between spouses. It is worth exploring the reasons for the low take-up for follow-up sessions, so that follow-up psychological intervention services may be customised to cater to the needs of IVF patients.

Factors that Influence the Motivation of Perinatal Patients to Seek Psychiatric Support

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Introduction

This study explores factors that may influence the motivation to seek psychiatric support in perinatal women with mental health problems. In particular, we explore the role of referral sources, income and race in perinatal women who seek psychiatric support versus those who do not.

Methods

Inclusion criteria were all enrolled perinatal patients in the Women's Emotional Health Service (WEHS) with psychiatric problems (n = 1126). The WEHS is a screening and support programme in the National University Hospital (NUH), established since April 2008. The relationship between variables such as patients' referral sources, income, race, and whether they sought psychiatric treatment were investigated using chi-square analyses.

Results

Among the patients, 27.2% of them saw a psychiatrist. Referral sources, income and race were significantly associated with psychiatric consultation: (x^2 (5) = 213.340, P = 0.000), (x^2(6) =13.355, P = 0.038), (x^2 (3) =27.750, P = 0.000) respectively.

Within each referral source, patients referred from inter-hospital sources had the highest percentage of patients who saw a psychiatrist (82.4%) followed by self-referrals (66%) and intra-hospital referrals (62.9%). Although the proportion of patients referred by the WEHS screening programme who eventually saw the psychiatrist is lowest (12.9%) compared to other referral sources, the WEHS screening process detected 612 patients with psychiatric conditions, which accounts for 54.4% of the entire sample size. Of all patients who saw a psychiatrist, 37.6% were referred by the O&G department of NUH while 25.8% were referred by WEHS screening.

Also, 33% of patients in the lowest income group (monthly household income <1k) and 30.3% of patients in the highest income group (monthly household income > 5k) saw the psychiatrist. Among the other income groups, the proportion of patients who saw the psychiatrist was lower (17.8% to 24.4%).

Chinese patients had the highest proportion of patients who saw a psychiatrist (34%) followed by those classified as Others (31.4%). The Indian and Malay races had an equal proportion of patients who saw a psychiatrist (19.1% and 19.5% respectively).

Conclusion

Our findings illustrate the importance of screening, which detected a significant number of perinatal patients with mental health issues and enrolled them in a specialised service for follow-up and review.

We found that inter-hospital referrals, being Chinese and income levels below $1000 and above $5000 influence perinatal patients' motivation to seek psychiatric support. Possible explanations could be that patients referred from other hospitals might be more severe cases. The role of income can be explained by possible financial subsidies for psychiatric consultations for patients in the lowest income group, while patients in the highest income group can afford consultations. That more Chinese patients saw a psychiatrist can be a reflection of Chinese being the majority of the country's population.

Previous international studies indicated that perinatal women frequently seek help from informal sources, such as friends and family, and significant potential barriers to treatment were lack of time and stigma. This suggests that further public education is needed about perinatal mental

health problems. Further studies should explore personal reasons of perinatal patients in Singapore for declining psychiatric support.

Correlates of Good Mental Health in Elderly Chinese Women

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Introduction

In Singapore, 9.3% of the population was aged 65 years and above in 2011 and projected to increase to 19% by 2030. By the WHO's definition of an aged society (as one where 14% or more of the population is aged 65 years and above), Singapore is forecasted to become an aged society in less than 5 years. Feminisation of the aged population is an additional problem. For women, the estimated life expectancy in 2012 is 86.2 years compared to 81.47 years for males, with more females than males in every age group amongst the elderly. The sex ratio among Singapore residents aged 65 and over was 795 males per 1000 females in 2009. It becomes more skewed amongst those 85 years and older with 495 males per 1000 females. Despite the additional life years, elderly women are not necessarily assured of a healthy or quality life; they experience higher rates of disability and adverse social sequelae and not much is known of their mental health. This study aimed to: (i) develop a comprehensive profile of elderly Chinese women in Singapore, (ii) determine their mental health status, and (iii) examine the correlates of cognitive and emotional health in this cohort.

Methods

Participants were cohort members in the Singapore Longitudinal Ageing Study (SLAS), a 4-year prospective study of ageing and health among community-dwelling older Chinese women residing in the Southeast region of Singapore, aged 60 years and above (n = 1226). Baseline information on demographic, biological, clinical, psychosocial, and behavioural characteristics were collected.

Results

The mean age of the cohort was 68.5 ± 6.56 years. Two-thirds had formal education and two-thirds were in public housing (≤5 rooms). ADL disability was low in only about 7% but disability in IADL was present in about a fifth of participants. Cognitive impairment (MMSE ≤23) was noted in 17.8% with depressive symptoms (GDS ≥5) in 13%. A total of 228 (18.6%) of the elderly women met the criteria for "good mental health" and were significantly "younger" (P <0.001) and had significantly higher social support (P <0.001). They also had significantly less disability in ADL and IADL, higher leisure time activity score, lower life satisfaction score reflecting greater satisfaction with their life and fewer medical comorbidities (P <0.001). High life satisfaction (OR = 0.68; 95% CI, 0.62 to 0.75) was positively associated with good mental health, while older age (OR = 0.97; 95% CI, 0.94 to 0.99), ADL (OR = 0.26; 95% CI, 0.08 to 0.86) and IADL disabilities (OR = 0.41; 95% CI, 0.24 to 0.70) were associated with lower likelihood of good mental health. Other variables such as education, social support and leisure time activities were not associated with good mental health. The associations with good mental health only persisted for life satisfaction and IADL disability across different age groups.

Conclusion

The findings indicate that for elderly women in Singapore, the absence of disability and satisfaction with life play important roles in their mental well-being and also provide a baseline understanding of the interactions between cognitive and emotional health, social and leisure activities in elderly women.

Association of Premenstrual Syndrome with Mental Health Issues in the Perinatal Population

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Introduction

Premenstrual syndrome (PMS) is a diagnosis for noticeable emotional and physical symptoms that occur consistently in luteal phase of the menstrual cycle. PMS can affect the mental health of women due to symptoms of depression, anxiety, mood lability, headaches, stomach cramps and others, which vary in the extent they impact functioning. It has been suggested that hormone changes, associated chemical alterations in the brain as well as lifestyle factors contribute to the symptoms.

The perinatal period represents a transitional stage in life that is associated with increased stress and vulnerability. Mental health in the perinatal period is of concern because of its impact on the development of offspring and influence on parenting.

The current study aims to investigate the relationship between presence of self-reported PMS and mental health issues in the perinatal population.

Methods

Self-reported presence of PMS symptoms, socioeconomic variables of race and employment status and diagnoses of mental disorders were extracted from the Women's Emotional Health Service (WEHS) database. The WEHS programme screens and provides supportive follow-up for distressed perinatal patients in the National University Hospital of Singapore. The sample consists of 1518 patients enrolled into the service from its initiation in 2008 till June 2014. Pearson's chi-square test was utilised to investigate the relationship between self-reported PMS and mental disorders. In addition, hierarchical logistic regression was performed to control for the socioeconomic factors of race and employment status.

Results

In the current sample, 45.4% (n = 634) patients reported symptoms of PMS. Majority (75.0%; n = 1124) of the patients were diagnosed with a psychiatric disorder: half (63.2%; n = 710) were diagnosed with adjustment disorder, 22.1% (n = 248) had major depressive disorder (MDD) and 6.6% (n = 74) had anxiety-related disorders. Chi-square test showed that self-reported PMS associated significantly with the presence of psychiatric disorder, $x^2(1, n = 1383) = 5.26$, $P = 0.022$. Also, being of Chinese ethnicity was associated with a psychiatric diagnosis ($x^2(3, n = 1499) = 22.93$, $P = 0.000$) but employment status was not ($x^2(1, n = 1453) = 0.229$, $P > 0.05$). Logistic regression analysis indicated that the full model, consisting of the presence of PMS, against a constant and control variables model was statistically significant ($x^2(1) = 6.401$, $P < 0.011$). The presence of PMS reliably distinguished between patients with and without a psychiatric diagnosis ($P = 0.012$). The odds that the presence of a psychiatric diagnosis can be predicted increased by a factor of approximately 1.4 times when self-reported PMS was presented (Exp(B) = 1.395).

Conclusion

In this study, PMS revealed itself as a potential risk factor of mental health issues in this population. While mental health issues in the perinatal population are associated with a myriad of influences, the presence of PMS might serve a cautionary role even before any concerns arise. As the current employment of self-reported PMS might be subjected to recall bias, further research should consider various techniques in recording the presence of PMS. In addition, interventions targeted to support this group of patients could be explored.

Providing Occupational Therapy Parenting Services for Perinatal Women: A Service Description and Evaluation

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Introduction

This paper aimed to describe the profile of patient referrals to an occupational therapy (OT) parenting service provided within a perinatal mental health service in a Singapore acute hospital. Patients receiving obstetric care are routinely screened with the Edinburgh Postnatal Depression Scale (EPDS) by a multidisciplinary team. Those scoring 13 and above on the EPDS are considered to be at risk for perinatal mood disorders are contacted by a case manager for a brief psychological state assessment. Patients citing parenting-related stressors are referred for OT parenting services.

Methods

A retrospective study was conducted to investigate the prevalence and profile of patients referred. Data collected included patients' demographics and para status, and information of their other children. Data such as referral reasons, time of referral with reference to delivery dates and interventions received were also analysed.

Results

A total of 133 patients were referred between January 2012 and December 2013. Among them, 47% of these patients were first time mothers (primiparas), of which 60% were referred for help to adjust to their newborns. Twenty patients were referred prenatally while 16 patients were referred within the first month of birth. A total of 47% of referrals for the non-primiparas were for managing their other children; 25% of these children were aged above 72 months (25%) and 21% between 25 and 36 months. Also, 82% of all referrals received at least one phone-based consult. Another 27% attended clinic-based sessions, of which 55% were first time mothers.

Conclusion

Most patients who were referred for OT parenting services have been shown to require parenting support and their needs appear to depend on their para-status. Henceforth, perinatal services should consider providing parenting services in the prenatal period for patients who are first time mothers, or with young children and children entering formal education. Future studies should explore in-depth analysis of referral reasons and effectiveness of the occupational therapy interventions.

A Cross-sectional Investigation into the Bidirectional Relationships of Body Image and Anxiety, Depression, and Quality of Life in Newly-Diagnosed Asian Cancer Patients

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Introduction

Medical advances have resulted in better prognoses and survival rates for cancer patients; however, current treatment modalities still cause drastic and permanent physical changes, often resulting in patients' dissatisfaction with their body. Body image, or the perceptions and attitudes of individuals toward the attractiveness of their body, is a multidimensional construct that has been found to not only influence, but also be influenced by, psychosocial factors such as anxiety, depression, and quality of life (QOL). Much of these associations, however, is derived mainly from studies involving the specific cancer populations in the West, and is inconclusive as to the direction of causality between body image and psychosocial factors. The present cross-sectional study thus sought to investigate the bidirectional relationships between body image and anxious and depressive symptomatology, and QOL in a sample of newly-diagnosed mixed-cancer patients in Asia.

Methods

A total of 185 cancer patients (median age = 50.4 ± 9.63 years; age range, 21 to 64 years; 67.3% female; 62% ethnically Chinese; response rate: 70.6%) from a national cancer centre in Singapore, with a range of cancer diagnoses (within 3 months; 35.7% breast cancer; 16.8% gastrointestinal cancer; 12.4% haematologic cancer; 10.8% head and neck cancer; 10.8% gynaecological cancer) and no history of mental illness, participated in this ethics-approved study. Participants completed measures of body image dissatisfaction (Body Image Scale), anxious and depressive symptomatology (Hospital Anxiety and Depression Scale), and QOL (Euroqol Visual Analogue Scale).

Results

Preliminary analyses revealed that body image dissatisfaction did not significantly differ between the main cancer diagnoses (i.e. breast, gastrointestinal, haematologic) amongst this cohort of Singapore patients; other case-mix variables were controlled for, where relevant. Multivariate regression analyses revealed that body image dissatisfaction was only significantly influenced by ($F[3,181] = 19.58$, $R^2 = 0.245$, $P \leq 0.001$), and significantly influenced ($F[2,182] = 27.124$, $R^2 = 0.230$, $P \leq 0.001$; over and above having gone for surgery), anxious symptomatology. While body image dissatisfaction was not significantly influenced by either depressive symptomatology and QOL, it was found to significantly influence QOL ($F[1,183] = 12.549$, $R^2 = 0.064$, $P = 0.001$) but not depressive symptomatology.

Conclusion

The findings of this study suggest that body image dissatisfaction significantly influences, and is significantly influenced by anxiety, preliminarily supporting an equally-viable bidirectional model between these two variables in newly-diagnosed cancer patients (both models account for about 25% of variance). These results are in line with previous studies and suggest that anxious symptomatology may heighten negative perceptions about the body, which further fuel anxious symptomatology in a downward spiral. Interventions focused on reducing anxiety levels may thus be helpful in alleviating body image dissatisfaction and arresting the cycle. It is, however, somewhat surprising that body image dissatisfaction was not influenced by either depression or QOL and did not influence depression, as predicted in other studies. This warrants further investigation in a longitudinal model before conclusions can be drawn, especially given that body image dissatisfaction seems to influence QOL to some degree.

Late Life Depression Predicts Mortality among Long-Term Cancer Survivors

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Introduction

This study aimed to investigate whether depression among older cancer survivors predicted subsequent 8-year mortality.

Methods

In a nationally representative survey of mental disorders among 1062 older adults aged 60 years and above in Singapore in 2004, by using the Geriatric Mental State (GMS) Schedule to make diagnoses of threshold and sub-threshold depression, we confirmed from the National Cancer Registry that 61 individuals with cancer diagnosed prior to the survey, and determined their subsequent mortality outcome over an 8 years of follow-up period.

Results

The 61 cancer survivors at baseline had had a cancer diagnosis made approximately 11.3 years before baseline diagnostic assessment of their depression status, and were followed up for 7.7 years. Their prevalence of depression overall at 23.0% (threshold 6.7%, sub-threshold depression 16.4%) was about twice as high as the prevalence of depression at 14.0% (threshold 3.5%, sub-threshold 10.5%) among non-cancer participants. Among cancer survivors, depression (threshold and sub-threshold) was significantly associated with increased mortality hazard (HR: 2.38, 95% CI, 1.03 to 5.46, $P = 0.041$), controlling for demographic factors, social-economic condition, smoking history and medical comorbidity. Both sub-threshold and threshold depression were similarly associated with increased mortality hazards. The mortality risk associated with depression among long-term cancer survivors who did not die within 5 years after cancer diagnosis remained substantially high (adjusted HR: 4.69, 95% CI, 1.76 to 12.5, $P = 0.002$). In particular, depression was associated with increased mortality in female breast cancer survivors (HR: 11.6, 95% CI, 0.69 to 194.1, $P = 0.089$).

Conclusion

Older long-term cancer survivors, 11 years after first diagnosis were twice as likely to be depressed than non-cancer counterparts. Depression significantly shortened life expectancy over 8 years, and is a prognostic marker of cancer survival.

Poor Mental Health Status and Cancer Risk from Six Years of Follow-up of the Singapore Longitudinal Ageing Studies Cohort

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Introduction

There is widespread perception, but with limited and contradictory evidence, that psychological factors play a role in the development of cancer. We investigated whether self-reported poor mental health status was associated with cancer incidence risk in a Singapore elderly population.

Methods

In this prospective cohort study, 2620 cancer-free subjects aged 55 years and above were followed up for 6 years. Poor mental health status at enrolment was determined by lowest tertile of SF-12 Health Survey mental component summaries (SF-12 MCS) and the 15-item Geriatric Depression Scale (GDS ≥5) hazard ratio (HR) and 95% confidence interval (95% CI) of association, with incident cancer evaluated using Cox proportional hazards regression.

Results

Poor self-reported mental health (SF-12 MCS), not GDS, was significantly associated with an elevated risk of overall cancer incidence (HR: 1.42, 95% CI, 1.02 to 1.97), in female breast cancer (HR: 2.96, 95% CI, 1.07, 8.16), and in male lung cancer (HR: 3.45, 95% CI, 1.03 to 11.51) controlling for demographic factors, smoking history, medical comorbidity and BMI.

Conclusion

Further studies should establish the validity of using the SF-12 MCS as a prognostic marker of the risk of cancer development in different patient and population groups. Psychological support intervention to improve the mental health of the elderly may possibly be protective against development of cancers in late-life.

How Does Spirituality in Oncology Patients Help Them and Their Family Caregivers Cope with the Illness?

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Introduction

Cancer diagnoses have detrimental, life-altering effects on the psychosocial well-being of both the patient and their nuclear families (especially primary family caregivers). Both oncology patients and their caregivers experience a higher incidence of psychological distress and consequent increases in depressive symptomatology. However, studies have shown patients who utilised religious-coping were able to cope better with the cancer diagnosis in a positive and purposeful way. Spirituality may, therefore, offer an avenue to cope with the fear, helplessness, and existential crises associated with cancer, enabling patients to better adjust to their experiences by improving their optimism and resilience. Improvements in patients' (care recipients') suffering behaviours and distress have been hypothesised to alleviate their caregivers' distress, and physical and psychological morbidity (Monin & Schulz, 2009). The present exploratory study therefore sought to determine if the beneficial buffering effect of spirituality against patient distress may also extend to caregivers. It was hypothesised

that patients' spirituality would influence caregivers' positive adaptation (PA) and burden, and that this relationship would be mediated by patient optimism and resilience.

Methods

A total of 82 patient-caregiver pairs (≤5 months from diagnosis) from a national cancer centre in Singapore participated in this ethics-approved cross-sectional study. Patients (25.6% male; 59.8% Chinese; median age = 48.79 years) completed measures of spirituality (FACIT-Sp-12; parsed into 2 subscales: meaning-making and faith), optimism (LOT-R), and resilience (RAS-14); their family caregivers (51.2% male; 56.1% Chinese, median age = 42.53 years) completed measures of QOL, specifically, burden and PA (subscales of CQOLC).

Results

Mediation analyses revealed that patient spirituality did not account for variance in either caregiver PA or burden. However, further investigations revealed that, having controlled for significant case-mix variables (e.g. caregiver ethnicity, gender), patients' meaning-making, but not faith, accounted for 11.8% variance in caregiver PA (R^2 model = 29.4%, F[4,79] = 7.82, $P \leq 0.001$). This relationship was further mediated by patient resilience, which accounted for an additional 7.2% variance (Sobel's z = 2.21, $P = 0.027$); however, although patient optimism was related to patient resilience (r = 0.375, $P = 0.001$) and spirituality (r = 0.360, $P = 0.001$), it was not related to any caregiver variables.

Conclusion

The findings suggest that the buffering effect of patients' spirituality, in particular meaning-making, is extended to caregivers' PA, and that this is influenced primarily via their resilience; however, contrary to our hypotheses, neither patient optimism nor spirituality (and in particular, faith) influenced caregivers' PA and burden. Focusing on meaning-making of religious/spirituality-focused psychosocial interventions may therefore benefit not only patients by improving resilience and coping, but by also assisting their family caregivers in positively adapting to the caregiving experience. These results also further underscore the importance of the dynamic patient-caregiver dyad. Future research should attempt to model these relationships that also involve patient and caregiver distress in order to obtain a more comprehensive overview of the impact of spirituality for patients with cancer and their often underserved family caregivers.

What are the Specific Differences in the Quality of Life of Family Caregivers of Cancer Patients in Ambulatory and Home Hospice Care Settings in Singapore?

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Introduction

The benefits of home hospice services to patients are well documented; however, less is known about its effects on caregiver outcomes. Studies in the US have suggested that caregivers of cancer patients receiving hospice care have a diminished quality of life (QOL); these studies, however, did not control or adjust for the stage of the patients' cancer, and, given the multi-dimensional nature of QOL, did not examine the specific differences in the facets of QOL between these 2 groups. Further to the best of our knowledge, virtually no studies on ascertaining these differences have been conducted outside of a Western population. Therefore, in the present study, we sought to identify the specific differences in the different facets of QOL between caregivers of patients receiving care in a home hospice and those of patients receiving care in a hospital ambulatory outpatient setting in Singapore.

Methods

We pooled data from 2 studies conducted between 2011 and 2013 on 258 caregivers of advanced-stage cancer patients. The sample included 182 caregivers of patients receiving care in 4 home hospice organisations (70% female; median age = 41 to 50 years, 60% caring for a parent; stage IV cancers), and 76 caregivers of cancer patients receiving treatment at a national cancer centre (59% female; median age = 41 to 50 years, 47% caring for a parent; stage III/IV cancers). All participants had filled in the Caregiver Quality of Life Index–Cancer (CQOLC) and a basic sociodemographic form. Item 4 on sexual functioning was sensitive and excluded from subsequent analyses (42% declined to answer); we ran analyses of covariance (ANCOVA) on the remaining 34 items of the CQOLC controlling for significant case-mix differences (e.g. age, gender, education, race, and relationship with patient).

Results

ANCOVAs revealed that home hospice caregivers reported

significantly lower scores (and therefore had better QOL) than those of ambulatory patients (F[1,255] = 8.1, P = 0.005). There were specific advantages for home hospice caregivers on the following items: 6 ("I am under financial strain."), 7 ("I am concerned about insurance coverage."), 9 ("I fear my loved one will die."), 13 ("It bothers me, limiting my focus day to day."), 19 ("I feel nervous"), 24 ("It bothers me that I need to chauffeur my loved one to appointments."), 25 ("I fear the adverse effects of treatment on my loved one.") and 33 ("I feel discouraged about the future."). We observed no other significant differences (Ps >0.05).

Conclusion

Understandably, these findings reveal a QOL advantage for caregivers of patients in hospice care relative to those treated in tertiary care, contrary to the work done in the US. Given the nature of home hospice care in Singapore, this advantage was understandably in the domains of finances and convenience of care. It is, however, interesting that this advantage was extended to their emotional well being, in contrast to previous findings of Asian caregivers that have suggested QOL impairments with patient disease progression and hospice care. This preliminary work expands previously-documented patient benefits of home hospice service to their caregivers, although more work is still required to unravel the reasons behind these effects.

A Mixed-Methods Investigation into the Efficacy of a Psychoeducational Support Group Therapy for Family Caregivers of Cancer Patients: The COPE Study Overview

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Introduction

Family caregivers of cancer patients are an underserved population not just in Singapore but globally. They are not only faced with the trauma of their loved one's cancer diagnosis, but are expected to provide liaison and support tasks that extend across the physical, psychological, spiritual, and emotional domains. These multiple roles give rise to stressors that affect both their physical and psychological well-being, which, in turn, reciprocally influence the well-being of their care recipients. Given the detrimental consequences associated with caregivers' poor quality of life (QOL) and the general lack of available psychological interventions targeted at this population, this study sought to investigate the efficacy of a brief psychoeducational support group therapy intervention on family caregivers of cancer patients receiving ambulatory outpatient care at the National University Cancer Institute, Singapore.

Methods

This case-control quasi-experimental study has ethics approval from NHG DSRB-A (Reference: 2013/00662) and is a registered clinical trial (NCT02120183). A target number of 80 caregivers of any gender, aged between 21 and 74 years, caring for and living with a family member diagnosed with any type of cancer, will be recruited into the waitlist (control) or the intervention arm of the study. All participants are quantitatively assessed; those in the waitlist group are assessed for a baseline measure, while those in the intervention arm are assessed pre-intervention and post-intervention, and at 4-weeks and 8-weeks post-intervention. Participants will be assessed on: (i) QOL (35-item Caregiver QOL Index–Cancer; CQOLC); (ii) stress (10-item Perceived Stress Scale; PSS); (iii) depressive and anxious symptoms (14-item Hospital Anxiety and Depression Scale; HADS); (iv) basic psychological needs (12-item Basic Psychological Needs Scale; BPNS); (v) contextual autonomy support (5-item Healthcare Climate Questionnaire; HCCQ); (vi) appraisal support (4-item Interpersonal Support Evaluation List; ISEL); and (vii) perceived competence (4-item Perceived Competence Scale; PCS). As part of the mixed-methods approach, a subset of 20 participants in the intervention arm are also assessed qualitatively through semi-structured face-to-face interviews. Participants in the intervention arm will attend 4 weekly hour-long sessions of about 6 to 8 caregivers each. Facilitated by a trained psychologist, sessions are based on brief integrative psychological therapy (BIPT), involving both didactics and group sharing. Each session considers one of the following themes: coping with the cancer diagnosis and dealing with uncertainty, stress management and self-care, cultivating positive and challenging negative thinking habits, and handling emotional reactivity. Efficacy will be assessed qualitatively and quantitatively, and mechanisms of efficacy will be interpreted through the lens of Self-Determination Theory (Ryan & Deci, 2000).

Conclusion

This study is the first in published literature to investigate the efficacy of a brief psychoeducation group therapy on the well-being of family caregivers. Drawing on the strength of its mixed-methods approach, it enables identification of caregivers for whom the intervention is effective, as well as the mechanisms through which the intervention improves caregivers' adjustment to their role and ultimately QOL. These findings will assist local and regional institutions

in developing culturally-relevant supportive care plans and interventions to support the ones who support cancer patients.

The Relationship between Hope, Resilience, Optimism and Psychiatric Comorbidities in Cancer Patients: The HOPE Study Overview

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Introduction

Cancer incidence in Singapore has grown with 10,579 new cases diagnosed in 2009 alone and cancers now contributing to the second highest cause of hospitalisation (5.5%). Cancer patients suffer from significant psychological distress and psychiatric morbidity, particularly anxiety and depression. Innate traits such as hope, optimism, resilience and other psychosocial resources determine how individuals cope with the diagnosis, illness progression, and familial and social consequences. Few studies, however, have focused on these issues amongst Asians, much less in Singapore, or studied the dyadic interactions of patients and their caregivers. This prospective cohort study investigates these in newly-diagnosed cancer patients (n = 222) and their caregivers (n = 120) receiving ambulatory outpatient care at the National University Cancer Institute, Singapore.

Methods

The study has ethics approval from NHG DSRB-A (Reference: 2013/00294). Participants provide self-reports over 1 year (patients: baseline, 3, 6 and 12 months; caregivers: baseline, 6, and 12 months) comprising trait measures, physical and psychological outcomes, and psychiatric comorbidity for patients, and distress, burden of care, and quality of life (QOL) for caregivers. The following trait measures are collected for patients: (1) hope (12-item Adult Trait Hope Scale; AHS); (2) optimism (10-item Revised Life Orientation Test; LOT-R); (3) resilience (14-item Resilience Scale; RS-14); (4) rumination (22-item Rumination Responses Scale; RRS); (5) mindfulness (24-item Short Form of the Five-Facet Mindfulness Questionnaire; FFMQ-SF); and (6) emotion regulation (10-item Emotion Regulation Questionnaire; ERQ). Physical outcomes are assessed via the (7) clinical profile of physical symptom severity (10-item Revised Edmonton Symptom Assessment System; ESAS-R), and psychological outcomes are assessed via (8) QOL (5 Level and 5 Dimension EuroQOL QOL Measure; EQ-5D-5L); (9) subjective well-being (5-item Satisfaction with Life Scale; SWLS); and (10) general distress (1-item Distress Thermometer [DT] and accompanying Problem List [PL]. Finally, psychiatric comorbidities are also determined: (11) anxiety and depression (14-item Hospital Anxiety and Depression Scale; HADS); (12) dysfunctional attitudes (40-item Dysfunctional Attitudes Scale Form A (DAS-A); and (13) body image dissatisfaction (10-item Body Image Scale; BIS). Medical records are also reviewed to determine diagnoses and treatment progression. Caregivers complete measures of (i) distress (21-item Depression, Anxiety, and Stress Scale; DASS-21), (ii) burden of care (22-item Zarit Burden Inventory; ZBI), and (iii) QOL (35-item Caregiver QOL Index–Cancer; CQOLC). All participants also completed a basic sociodemographic questionnaire at baseline. Changes in measured variables will be tracked in relation to sociodemographic variables such as age, gender, education, marital status and the illness (cancer diagnosis, treatment, illness duration, metastases), and caregiver burden of care and QOL will be studied in relation to family members cancer illness and psychological issues.

Conclusion

This study seeks to establish the relationship of cancer patients' psychosocial resources on physical, psychological, and psychiatric outcomes. It will help identify those at risk of chronicity with psychological sequelae, as well as those who are resilient and cope well. These findings will assist local and regional institutions in developing culturally-relevant care plans and supportive interventions for both patients and their caregivers.

Improving the Quality of Life and Care of Medical Oncology Patients: A Quality Improvement Project

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Introduction

Newly diagnosed patients with cancer have high levels of distress, anxiety and depressive symptomatology. Amongst patients at the National University Cancer Institute, Singapore (NCIS) (n = 99), distress levels were found to be 3.31 (± 2.89) on the Distress Thermometer (DT), and levels of anxiety at 5.01 (± 4.71) and depression at 5.05 (± 4.67) on the Hospital Anxiety Depression Scale (HADS). In a Ministry of Health Quality Improvement and Innovation Project (HQI2F), various measures were introduced ranging from early screening to intervention to manage emotional distress and psychiatric sequelae in newly diagnosed cancer patients.

Methods

Programmes were introduced in the following areas: (i) Staff Training, (a) to help them recognise symptoms of distress, anxiety, and depression, and (b) to escalate for specialist attention, (c) staff were also provided training in psychoeducation and basic psychosocial care; (ii) Early identification of distress, anxiety, and depression, (a) that involved introducing an appropriate screening tool, (b) implementing screening at patients' initial visit and at appropriate intervals to reduce psychiatric complications; (iii) Patient Care, (a) preparation of psychoeducation materials and (b) provision of psychological interventions for outpatients; and (iv) Enhancement of Clinical Service, (a) establishing psychiatric and psychologist clinics at NCIS, (b) establishing a work-flow for appropriate specialist psychiatric care, (c) support for Cancer Line nurses, (d) development of nurse-led psychosocial clinics, (e) identifying caregiver needs, and (f) starting a caregiver support group.

Results

The DT was found to be an appropriate tool for our patients and cut-off scores were established; the DT will be part of vital sign screening when patients come to NCIS. Distress and psychosocial needs were high in patients even at an early stage of treatment: 82% had psychosocial needs with an average of 2.72 ± 2.29 problems; emotional concerns formed the top 4 psychosocial needs. Findings also revealed that psychiatric complications could be effectively reduced through early detection. Staff skills and competencies to deal with emotional and psychological issues were enhanced by the training provided to them. Knowledge, attitudes and practice behaviours (KAPb) of NCIS nurses improved in domains of applied knowledge ($P = 0.002$), attitudes ($P < 0.001$), and practice behaviours. Patients who received psychoeducation and psychosocial support from nurses had significantly lower distress, anxiety, and depression scores and higher scores on quality of life (QOL; Ps <0.05). Patients who felt they could cope and did not need support unfortunately showed an increase in anxiety and depressive symptoms.

Conclusion

The project achieved international standards in screening for distress and early identification of psychological issues in cancer patients at NCIS. All nurses have been trained to recognise psychological symptoms and to provide basic psychosocial interventions thus contributing to holistic care. The project also resulted in greater collaborative efforts in providing psychological interventions in the form of support groups for patients and caregivers. Caregivers' needs should also not be neglected; their needs and burden of care should be identified and addressed in care plans for patients. Preliminary findings from an ongoing investigation of caregivers' needs, QOL, and psychiatric sequelae are beginning to reveal the dynamic relationships between patient and caregiver well-being.

Wanting to Give Care Increases Positive Adaptation to Caregiving: Results of a Mixed-Methods Analysis of a Psychoeducational Support Group for Cancer Caregivers

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Introduction

Caregivers are healthy individuals whose lives undergo drastic change as they take over caregiving duties for their loved one. For caregivers of cancer patients in particular, they not only have to deal with the emotional trauma of a diagnosis, but also take on a new social role that they have to make sense of and gain competency in. Despite a long tradition of research in Western populations linking individual motivations to psychological well-being, local caregivers' motivations for giving care have, to our knowledge, not been researched. As part of an ongoing support group intervention efficacy study held at the National University Cancer Institute, Singapore, this study sought to understand how motivations for caregiving are impacted through the course of the intervention, and its impact on caregivers' quality of life (QOL). Self-determination theory (SDT; Ryan & Deci, 2000) was used as a conceptual framework.

Methods

Employing a mixed-methods framework, this quasi-experimental study received ethics approval from NHG DSRB-A (Reference: 2013/00662) and is a registered clinical trial (NCT02120183). The current sample (n = 15) was recruited through convenience sampling of participants scheduled to begin the intervention. At baseline and post-intervention, participants completed a questionnaire and participated in a face-to-face semi-structured interview. Motivations for caregiving were assessed during the interview with the question, "Why do you give care?". Based on a thematic analysis following the SDT framework, motivations were coded on a scale of 1 (external regulation) to 5 (intrinsic motivation), and later recoded as a categorical variable of 1 (intrinsic motivation)

and 0 (extrinsic motivation). QOL was assessed with the self-reported 35-item Caregiver Quality of Life–Cancer scale (CQOLC).

Results

More autonomous motivations at baseline was correlated with higher QOL at baseline ($r = 0.55$, $P = 0.023$) and at post-intervention ($r = 0.60$, $P = 0.018$). A paired-samples t-test reported a significant increase in autonomous motivations at post-intervention compared to baseline, $t(13) = -2.59$, $P = 0.022$. Finally, a 2-way mixed analysis of variance (ANOVA) found a significant interaction of motivation and time on the positive adaptation subscale of QOL, $F(1, 15) = 9.50$, $P = 0.008$, with a main effect of motivation, $F(1, 15) = 7.82$, $P = 0.014$; intrinsically motivated caregivers had higher positive adaptation (mean = 22.42, SD = 1.36) than extrinsically regulated caregivers (mean = 29.42, SD = 2.11). Post-hoc tests found a significant decrease in positive adaptation amongst extrinsically motivated caregivers, $t(11) = -2.70$, $P = 0.021$.

Conclusion

The intervention appeared to facilitate autonomous motivations for caregiving. However, caregivers who were extrinsically motivated at baseline became less positively adapted to caregiving. It is possible that a lag time occurs between changes in motivation and QOL as caregivers contemplate the change in lifestyle, or that caregivers with extrinsic motivation at baseline face caregiving challenges outside the scope of psychoeducational support. Future research that explores the treatment and demographic factors associated with motivations for caregiving may enable a more targeted intervention.

Psychosocial Support Offered to Gynaecological Oncology Patients by the Women's Emotional Health Service at the National University Hospital

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Introduction

Established in 2008, the Women's Emotional Health Service (WEHS) works in collaboration with the Obstetrics and Gynaecology (O&G) Department at the National University Hospital (NUH) to provide personalised psychosocial support and psychological interventions to gynaecological oncology patients with emotional distress. All gynaecological oncology patients who are admitted to NUH will be screened by WEHS case managers and will be subsequently referred to psychiatrists, psychologists, nurses, occupational therapists, and medical social workers within the team when necessary. Patients will also be referred to other relevant community support services as required.

Methods

Upon giving informed consent, 452 gynaecological oncology patients were screened using the Hospital Anxiety and Depression Scale (HADS) from January 2010 to May 2014. The interviews and assessments were conducted in English, Chinese, Malay, and Tamil, based on the patient's language preference. Patients were followed up and screened again for psychosocial distress 6 months after the initial admission via clinic visits and telephone contact. At the post 6-month screening, patients who were found to have continuing psychosocial problems received further support from the WEHS team till necessary.

Results

A total of 69% of the HADS scores at intake were low with a score between 0 and 10. Nevertheless, 22% of the patients obtained a score between 11 and 20, 7% between 21 and 30, and 1% between 31 and 40. The last 1% of the patients were not screened as they were too sick to do the HADS. At post 6-month screening, the percentages for each score group had decreased: 62% obtained a score between 0 and 10, 6% between 11 and 20, and 1% between 21 and 30. However, 31% of the patients were not screened, as they were either uncontactable, too sick to do the HADS, or deceased. The group of screened patients had the following oncology diagnosis: 39% had ovarian cancer, 20% were categorised as endometrium with 17% for cervix, and 8% for uterus. A large majority of the patients had undergone surgery (79%). This was followed by radiotherapy in 12% and chemotherapy in 4% of the cases, while the remaining 5% did not receive treatment. More than half (54.8%; n = 243) of the patients had no mental illness while 36.7% (n = 166) were diagnosed with adjustment disorder with anxiety or depressed mood, and 5.3% (n = 24) fulfilled the criteria of major depressive disorder. Only a small proportion of patients had other diagnoses such as schizophrenia, anxiety disorder, obsessive compulsive disorder, panic disorder, mixed anxiety depressive disorder and dysthymia. And very few had issues related to frontal lobe syndrome, anger management, acute situational crisis and claustrophobia. In terms of psychosocial problems, 347 patients had 0 to 1 issues, 73 had 2 to 3 and 32 had 4 or more issues. Finally, 46% of the patients rated the service provided as "very good", 18% as "good" and 5% as "fair".

Conclusion

WEHS has successfully screened and enrolled gynaecological oncology patients. Our records show that most patients had no mental illness or and adjustment disorder. Also, most of the patients had less then 2 psychosocial issues. Overall, the majority of the patients valued the service and gave good ratings during post 6-month screening.

Burden of Care in Family Caregivers of Newly Diagnosed Cancer Patients

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Introduction

A cancer diagnosis has psychosocial implications not only for patients, but also for family members, who often shoulder the heavy responsibility of caregiving both directly and indirectly, at least in Asian societies like Singapore. Caregiving involves diverse roles from cognitive/informational, emotional, and financial, to daily activity, communicating with medical professionals and assisting in maintaining social relationships. Caregiving activities for cancer patients in particular are emotionally stressful, and family caregivers often experience high levels of burden and psychological distress, including anxiety and depression, that may affect the quality of care provided. These emotional issues may be most pronounced in the immediate period following diagnosis, when the caregiver transits into the new caregiving role. This exploratory study examines the caregiving burden amongst caregivers of newly diagnosed cancer patients in Singapore, and, in line with studies in Western populations, examines burden in terms of caregiver demographic variables.

Methods

A total of 107 family caregivers (53% male, median age range, 41 to 50 years, 59% Chinese) of newly diagnosed cancer patients (within 5 months) receiving outpatient chemotherapy treatment at the National University Cancer Institute, Singapore, participated in this cross-sectional study. Ethics approval was from the National Healthcare Group Domain Specific Review Board (NHG DSRB) (Ref: 2013/00294). Caregivers completed a sociodemographic survey and the Zarit Burden Interview (ZBI). Individual items on the ZBI were summed up to give a total score, with higher scores indicative of greater burden. Based on established score interpretation guidelines, a total score of ≤20 indicated an absence of, or little burden, while ≥21 indicated the presence of burden. Chi-square analyses examined the association between demographic variables and burden severity.

Results

A total of 64% of caregivers reported experiencing little or no burden. Generally, caregivers who were better educated ($\chi^2[3,100] = 7.63, P = 0.054$), from higher income households ($\chi^2[11,103] = 24.69, P = 0.01$), and staying in more affluent or larger housing ($\chi^2[5,103] = 12.10, P = 0.033$) were more likely to report little or no burden. No other demographic factors were significantly related to burden.

Conclusion

The pattern of demographic influence among Singaporean caregivers found in this study is a departure from previous research findings. Western studies have identified caregivers who are younger, female, and are spouses of the care recipient to be at higher risk of experiencing psychological distress; this profile of vulnerability did not emerge for Singaporean caregivers. Instead, income earned, housing type, and educational level were found to be risk factors. Presuming these 3 factors are linked, and reflect the financial resources possessed, the results suggests that burden in Singaporean caregivers arises significantly from their financial position. This has implications for both healthcare professionals and health policymakers. These risk factors prompt identification by healthcare professionals, who can subsequently provide financial counselling or make the necessary referrals to relevant agencies for financial assistance. At the governance level, directing policies towards easing the costs of cancer treatment would help alleviate the financial burden on caregivers.

Distress, Anxiety and Depressive Symptoms in Asian Cancer Patients

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Introduction

Distress has been recognised as the 'sixth vital sign' in cancer. International clinical guidelines recommend routine screening and intervention for distress in cancer patients. The aim of this study is to describe the prevalence of psychological distress in a sample of mixed-cancer patients receiving outpatient treatment in Singapore, over a follow-up period of 5 months. Characteristics of patients with clinically significant psychological distress were examined.

Methods

This longitudinal observational study was a retrospective analysis of data obtained from an outpatient psychosocial screening programme for cancer patients. Cancer patients attending the clinic for the first time were invited by trained oncology nurses to participate. Demographic and disease-related information was collected. The measurement tools used were the Distress Thermometer (DT), Hospital Anxiety and Depression Scale (HADS) and EuroQol Five Dimensions Questionnaire (EQ-5D). Measurements were repeated at specified time points over a 5-month follow-up period.

Results

A total of 106 mixed-cancer patients completed the first psychosocial assessment. In this sample, 62.3% were female and 36.8% had breast cancer. At the first assessment, 46.2% of the participants had clinically significant DT scores of 4 and above, 29.2% had HADS anxiety scores above the clinical cut-offs, and 23.6% had clinically significant HADS depression scores.

The majority of patients with significant psychological distress were middle-aged Chinese females with breast cancer, at least secondary level education and living with family members. There was no statistically significant relationship between specific demographic factors, cancer diagnosis and psychological distress, likely due to the small sample size. Overall, there was a reduction in the median DT and HADS subscale scores from the first to the fifth assessment.

Conclusion

Psychological distress in cancer patients is common. Regular screening of cancer patients for psychological distress could provide opportunity for early intervention.

The Quality of Life of Family Caregivers of Cancer Patients Receiving Ambulatory Outpatient Care in Singapore

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Introduction

Cancer is a widespread, debilitating illness with severe implications on both patients' and family caregivers' quality of life (QOL), and with cancer now considered a chronic illness and care shifting to homes, it is essential to understand and support these family members on their caregiving journey. This is of great concern in Singapore—a society that, while cosmopolitan and Westernised, still holds strongly to entrenched Asian values of filial piety, which may exacerbate caregiver role strain; however, little is known about the QOL issues of this underserved population. This exploratory cross-sectional study sought to address this lacuna by comparing caregiver QOL levels in Singapore with other regional and international countries and identifying sociodemographic predictors of QOL impairments in these family caregivers in Singapore.

Methods

Data from 257 family caregivers of cancer outpatients receiving ambulatory care (median age = 41 to 50 years; 59% women; 67% Chinese; 57% postsecondary education; 42% caring for parent; 49% advanced stage mixed cancers) were pooled from 2 cross-sectional NHG DSRB ethics-approved studies conducted in Singapore. All participants completed a basic sociodemographic questionnaire and the locally validated Caregiver Quality of Life Index–Cancer (CQOLC), a 35-item measure that assesses the QOL specific to caregivers of cancer patients; higher scores denote better QOL. Data were first compared to reported CQOLC scores from other countries, and then analysed using the Singapore-specific factor structure (CQOLC-S25; Mahendran et al, 2014) to explore possible demographic predictors of QOL impairments.

Results

The mean CQOLC score for this Singapore sample was 83.5 ± 19.1 (range, 22.3 to 131 out of 140). In comparison, US (t[389] = 11.8, P <0.0001; Weitzner et al, 1999) and Canadian caregivers (t[446] = 9.0, P <0.0001; Wadhwa et al, 2013) reported significantly higher scores, while Korean caregivers seemed marginally more impaired (t[276] = –1.9, P = 0.064; Rhee et al, 2005). On the CQOLC-S25, caregivers generally reported the lowest scores on the emotional reactivity subscale followed by physical/practical concerns, burden, self needs, and social support subscales (ts[257] = 14.4 to 19.6, Ps <0.001). Men reported lower scores on physical/practical concerns (P = 0.004) and self needs (P = 0.032). Ethnically Chinese (vs. non-Chinese) caregiver as well as those caring for their parents (vs. spouses) reported lower social support scores (Ps = 0.007 and 0.024 respectively). Caregivers of advanced-stage patients were more burdened than those of early-stage patients (P = 0.038). No other demographic variables were associated with QOL impairments.

Conclusion

Findings of this study suggest that caregivers in Singapore are more similar to those in Korea than the North Americas, which may hint at cross-cultural issues playing a significant

role in the caregiving experience. Additionally, the impaired emotional QOL in this sample is consistent with that reported in other Asian societies, and are a large cause for concern given the stigma against mental illness and generally low help-seeking intentions for non-somatic symptoms, especially amongst men. Interestingly, age, education, and income did not seem to be significantly associated with QOL; however, further longitudinal and dyadic studies are necessary to delineate the effects of these cultural differences and the influence of patients in the caregiving experience.

The Relationships between Emotional Work, Mental Resilience, and Distress in Singapore Oncology Nurses

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Introduction

Healthcare workers, especially those in supportive care like nursing and those in demanding fields like oncology, are expected to provide a high level of patient support through emotional work (EW): showing care, concern, and empathy to manage and improve both their patients' and caregivers' well-being. Unfortunately, often, little attention is paid to emotional wellness, resulting in emotion exhaustion, burnout, an aversion to EW, and increased levels of social isolation. Nurses' personal psychosocial resources, like mental resilience, have been identified as protective and key to buffering job stress and demands; however, few studies, have examined this empirically in nurses practicing in oncology settings, and none yet in Asia. This study therefore sought to investigate the relationships between EW performed, distress, and mental resilience in theses nurses to ascertain the importance of mental resilience as a protective factor for their distress. It was hypothesised that nurses' mental resilience would moderate the relationship between their EW and well-being and the relationship between these variables would be affected by nurse demographic variables such as specialty training, seniority, years of service in an oncology setting, and present work setting (inpatient versus ambulatory).

Methods

A total of 172 female oncology nurses (40% ethnic Chinese, 76% registered nurses, 45% with oncology specialty training, 65% working in inpatient settings; 97% response rate) from a national cancer centre in Singapore participated in this ethics-approved cross-sectional study (NUS IRB: 1529). Participants completed the General Health Questionnaire (GHQ-12), the Resilience Scale (RS-14), and a measure of EW developed specially for this population via the Delphi method (EW-6).

Results

There were no differences in the amount of EW performed by all the nurses in the unit (whether enrolled nurses, or registered nurses with or without specialty training in oncology). The EW nurses performed however was significantly related to mental resilience ($r = 0.23$, $P = 0.003$) but not their distress; moderation analyses were unable to be carried out. Registered nurses scored significantly lower on mental resilience ($P < 0.001$) and significantly higher on distress ($P = 0.007$). Those with prior specialty training in oncology also had significantly higher levels of distress ($P = 0.018$). There were no significant differences in any of the variables across the number of years of work in an oncology setting, or between participants working in inpatient or ambulatory settings. Overall, a third of the oncology nurses experienced distress symptomatology above the GHQ-12 clinical threshold.

Conclusion

It seems that mental resilience is crucial to the well-being of oncology nurses and is a buffer against the EW performed; it is also heartening the EW performed by these nurses did not seem to affect their levels of distress, suggesting a certain level of professionalism and compartmentalisation. It is, however, somewhat worrying that nurses charged with more emotionally demanding and distressing responsibilities (i.e. registered nurses and those with specialty training) experienced significant levels of distress, which may potentially adversely affect daily performance and the delivery of quality patient care. These findings highlight areas for further work to inform future policies, intervention, and educational efforts to improve nurses' welfare, and, ultimately, patient care.

Neuropsychiatric Symptoms in an Asian Population with Increasing Severity of Cognitive Impairment

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Introduction
We investigated the presence of neuropsychiatric symptoms (NPS) in an Asian population with varying severity of cognitive impairment. We hypothesised that not only would the presence of NPS increase with worsening cognitive impairment, the types of NPS subsyndromes would also differ.

Methods
A total of 599 subjects aged ≥60 years from the ongoing Epidemiology of Dementia in Singapore (EDIS) study were recruited. All subjects underwent a comprehensive clinical examination, neuropsychological testing and assessment of NPS using the Neuropsychiatric Inventory (NPI). Diagnosis of no cognitive impairment (NCI), cognitive impairment no dementia (CIND) and dementia were made in accordance with accepted criteria. Chi-square analysis, tests for trend and logistic regression models were used to compare the presence of NPS across different categories of cognitive impairment.

Results
At least one NPS was present in 17.5% of NCI subjects. There was a similar proportion in the CIND group (20.2%, $P = 0.4$) and a significantly higher proportion in demented subjects (53.3%, $P < 0.001$). Logistic regression models showed that CIND-moderate patients were significantly more likely to have hyperactivity (OR: 1.9, 95% CI, 1.0 to 3.7, $P = 0.048$) and affective (OR: 2.5, 95% CI, 1.0 to 5.9, $P = 0.045$) subsyndromes than NCI/CIND-mild subjects. CIND-moderate/dementia subjects were also significantly more likely to have apathy (OR: 3.3, 95% CI, 1.2 to 9.5, $P = 0.023$).

Conclusion
The presence of NPS is significantly higher in demented subjects, but not in CIND compared with NCI. However, CIND-moderate subjects were more likely to have hyperactivity and affective subsyndromes compared with NCI/CIND-mild, whereas CIND-moderate/dementia subjects were also more likely to have apathy.

Chronic Kidney Disease and Cognitive Decline among Older Persons: Singapore Longitudinal Ageing Studies

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Introduction
End-stage chronic kidney disease (CKD) (stage 5, estimated glomerular filtration rate (eGFR) <15 mL/min per 1.73 m^2) is associated with a high prevalence of cognitive impairment. Few population-based prospective studies have evaluated the role of impaired kidney function in older persons with mild to moderate CKD as an independent risk factor for cognitive impairment. We investigated the association between kidney function and the risks of cognitive decline.

Methods
This is a prospective study with 4 years of follow-up of 1315 participants in the Singapore Longitudinal Ageing Studies I (SLAS-I). Baseline data included eGFR levels, presence of CKD (eGFR <60 mL/min per 1.73 m^2), and known confounders. Cognitive decline was defined as a drop of 2 or more points on the Mini-Mental State Examination (MMSE) and functional decline as a drop of 2 or more points in IADL score.

Results
Decreasing levels of eGFR and the presence of CKD was associated with increased odds of cognitive decline at follow-up, controlling for confounding risk factors in multivariate analyses: estimated 14% increment in odds of cognitive decline per 10 mL/min/1.73 m^2 decrease in eGFR, and OR: 1.94, 95% CI, 1.23-3.05; $P = 0.004$ for CKD versus non-CKD. Similar associations were found among a subgroup who were cognitively normal (MMSE >23) at baseline.

Conclusion
Impaired kidney function and chronic kidney disease in older persons were significantly associated with cognitive and functional decline.

Depression and Cognitive Impairment among In-patients of Hip Fracture Rehabilitation: Impact on Care Outcomes

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Introduction

Depression and cognitive impairment are commonly seen among older patients with prolonged hospitalisation such as for hip fracture. We examined the impact of co-occurring depressive symptoms and cognitive impairment on care outcomes among hip fracture inpatients in a rehabilitative care facility.

Methods

In-patients (n = 146, response rate, 90%) receiving rehabilitative care in St Luke's Community Hospital were assessed at baseline, 6-months and 12-months. Depressive symptoms were determined using Geriatric Depression Scale (GDS), cognitive function using Mini-Mental State Examination (MMSE), functional status using Modified Barthel Index (MBI) and functional walking categories (ambulatory status), and quality of life using SF-12.

Results

The concurrence of depressive symptoms and cognitive impairment was associated with lower MBI score ($\beta = -10.92$, $P = 0.007$), lower SF-12 MCS ($\beta = -8.35$, $P = 0.0006$), and less improvement in ambulatory status ($\beta = -0.62$, $P = 0.0003$).

Conclusion

Cognitive and mood impairment negatively impact on care outcomes in patients with prolonged in-patient rehabilitative care. Routine screening, assessment and treatment of depression and cognitive impairment should be integral in the care and management of hip fracture patients.

Depressive Symptoms and Chronic Kidney Disease: Burden, Correlates and Impact

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Introduction

Patients with end-stage renal disease commonly have depression which contributed to increased risks of mortality, hospitalisation and poor dialysis adherence and poorer quality of life. There is a lack of population-based and longitudinal studies of older persons with earlier stage chronic kidney disease (CKD) not on dialysis therapy.

Objectives

We investigated the prevalence of depressive symptoms, their impact on mortality and quality of life, and correlates of depressive symptoms.

Methods

Prospective cohort study of 362 older adults with CKD (stage 3 and 4 assessed from estimated glomerular filtration rate, eGFR) in the Singapore Longitudinal Ageing Studies cohort, followed up to 4 years. Geriatric Depression Scale (GDS) scores and the prevalence of depressive symptoms (GDS $\geq$5) and other variables were assessed at baseline, and SF-12 quality of life (at 2 years) and mortality determined from 4 years of follow-up.

Results

Depressive symptoms were present in 13% of the participants at baseline, and were correlated with baseline cognitive impairment, functional disability and other chronic illness, but not with eGFR. Depressive symptoms were associated with poorer follow-up SF-12 QOL scores (30% point differences). Depressive symptoms were associated with increased mortality risk (OR: 3.17, 95% CI, 1.17 to 8.61, $P = 0.023$), but not statistically significant when controlled for confounding variables. (OR: 2.62, 95% CI, 0.77 to 8.89, $P = 0.13$).

Conclusion

A better understanding of the burden, correlates and impact of depression in elderly populations with CKD has important implications for reducing morbidity and mortality, and improving quality of life.

Metabolic Syndrome and the Risk of Cognitive Decline and Amnestic Mild Cognitive Impairment: Singapore Longitudinal Ageing Studies (SLAS)

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Introduction

Metabolic syndrome (MetS), a cluster of vascular risk factors that predicts increased risk of diabetes, cardiovascular disease and stroke is strongly implicated in the etiopathology of Alzheimer's disease and vascular dementia, via insulin resistance and/or inflammatory mechanisms. However,

few studies have established its link with cognitive decline and/or amnestic mild cognitive impairment (aMCI) in the pre-dementia stage.

Objectives

(i)This study aims to determine the association of MetS with risk of incident cognitive decline. (ii) It also aims to determine the association of MetS with aMCI and the effect of APOE-e4 and younger age in modulating this association.

Methods

Study 1: Prospective cohort study of 1352 community-living Chinese older adults without cognitive impairment (Mini-Mental State Examination, MMSE >23) and without cardiovascular disease and stroke, with baseline MS (International Diabetic Federation Criteria). Cognitive decline was predefined as at least 2-point drop in MMSE score at follow-up 1 to 2 years after baseline assessment. Study 2: Nested case-control study of participants with aMCI (n = 98) and cognitively normal controls (n = 802) identified from baseline data in second wave SLAS-2 cohort of older subjects aged 55 and over in 2009/2010.

Results

Study 1: MetS was significantly associated with the risk of cognitive decline (OR: 1.42, 95% CI, 1.01 to 1.98), controlling for age, gender, education, smoking, alcohol drinking, depressive symptoms, APOE-e4 status, level of leisure activities, baseline MMSE, and length of follow-up.

Study 2: MetS was associated with an elevated risk of aMCI (OR: 1.79, 95% CI, 1.15 to 2.77), controlling for age, gender, education, current smoking, alcohol drink, leisure time activities score, Geriatric Depression Scale score, APOE-e4, and heart disease or stroke. This association was particularly stronger among participants with APOE-e4 allele (OR: 3.35, 95% CI, 1.03 to 10.85) and younger (<65 years) participants with APOE-e4 (OR: 6.57, 95% CI, 1.03 to 41.74).

Conclusion

The MS was associated with increased risk of cognitive decline and amnestic mild cognitive impairment in Chinese older adults.

Pulmonary Function and Cognitive Impairment among Older Singaporean: Singapore Longitudinal Ageing Studies

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Introduction

Cognitive impairment associated with chronic obstructive pulmonary disease (COPD) is well documented, but the cognitive effect of low lung function on cognitive ability among community-living older persons is not well studied. We investigated the relationship between pulmonary function and cognitive performance in a population-based cross-sectional study of older persons in the Singapore Longitudinal Ageing Studies (SLAS-1).

Methods

Spirometry and assessment of formance on a comprehensive battery of neuropsychological tests, Mini-Mental State Examination (MMSE), and cognitively demanding instrumental activities of daily living (IADL) among 2450 participants. Cognitive impairment was defined by MMSE <23.

Results

Consecutive 10% increase in forced expiratory volume in 1 second (FEV1) was positively and significantly (P <0.05) associated with 0.18 points increase in MMSE and 0.04 points increase in executive function. Pulmonary restriction was associated with greater risk of cognitive impairment (OR: 1.98, 95% CI, 1.26 to 3.11, P = 0.003) and cognitive IADL disability (OR: 2.43, 95% CI, 1.31 to 4.53, P = 0.005). Moderate to severe airway obstruction (OR: 2.04, 95% CI, 1.11 to 3.74, P = 0.022) was positively associated with cognitive IADL disability.

Conclusion

Among community-living older persons, there was measurable effect of low pulmonary function on cognitive function and associated functional restrictions of instrumental daily activities.

Obesity and Mental Health: A Study on Anxiety, Depression and Metabolic Syndrome in Multi-ethnic Asian Obese Patients

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Introduction

The aims of this study were to (i) estimate the prevalence

of anxiety and depressive symptoms, and (ii) compare the anxiety or depressive symptoms among obese Asians with different components of metabolic syndrome (MetS).

Methods

Cross-sectional data were collected among 83 multi-ethnic obese Asians (36 men and 47 women) attending the Weight Management Clinic at the National University Hospital, Singapore between January 2010 and November 2011. Obesity was graded based on the World Health Organization (WHO) international classification of obesity. Levels of anxiety and depressive symptoms were measured using the Hospital Anxiety and Depression Scale (HADS).

Results

The prevalence of anxiety symptoms was about 5-fold higher than depressive symptoms (27.7% vs. 5.6%) in obese Asians. There was no major socioeconomic difference in obese participants with and without anxiety or depressive symptoms. There were no increasing levels of anxiety or depressive symptoms with increasing number of components of MetS. After adjustment for age, ethnicity, education, marital status, housing and employment, female participants with diabetes had a higher mean depression score than female participants without diabetes.

Conclusion

Anxiety symptoms are more common than depressive symptoms in obese Asians. The double burden of depression and diabetes may place Asian obese women at a greater risk of mortality. Early detection, pharmacological and psychological interventions should be implemented to reduce the severity of anxiety and depressive symptoms in obese Asians.

Arterial Thickening and Stiffness and Cognitive Function: Singapore Longitudinal Ageing Studies

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Introduction

Cardiovascular ageing exacerbated by cardiovascular risk factors is marked by increased carotid intima-media thickness (IMT) and arterial stiffness. Previous studies suggested these vascular markers could be associated with cognitive decline and cognitive impairment.

Objective

In this population-based study, we determined the association between markers of vascular health and cognitive performance, and explored the differential associations of specific vascular indices on individual cognitive domains.

Methods

Cross-sectional analysis of 354 participants from the community-based sample of older persons without heart failure who were controls in the Singapore Heart Failure Outcomes and Phenotypes (SHOP) study. Cognitive function was measured by the Mini-Mental State Examination (MMSE) and a comprehensive neuropsychological test battery that assessed a wide range of cognitive domains. Arterial stiffness was measured by pulse wave velocity (PWV), augmentation index (AI), elasticity modulus (Ep), beta stiffness (β) and arterial compliance (AC). Arterial thickening was measured by carotid IMT. Multiple linear regressions were performed with controlling of potential confounders (age, gender, education, and cardiovascular risk factors: hypertension, diabetes, dyslipidemia, smoking and BMI).

Results

The mean age of the study participants was 63.3 ± 6.1 years, 45.2% were females and 39.3% had 6 or less years of education. In the total sample of 354 participants, there was a significant association between Ep and MMSE ($\beta = -0.127$, $P = 0.017$) in the multivariate analysis. In the subgroup of 170 subjects with detailed neuropsychological data, central AI was associated with verbal memory domain after adjustment for cardiovascular risk factors ($\beta = -0.231$, $P = 0.002$). All indices of arterial stiffness were associated with executive function in the unadjusted model, with higher stiffness associated with longer time taken to complete colour trails test [Ep ($\beta = 0.244$, $P = 0.002$), β ($\beta = 0.24$, $P = 0.002$), peripheral AI ($\beta = -0.169$, $P = 0.031$), femoral-carotid PWV ($\beta = 0.311$, $P < 0.001$) and Aix ($\beta = 0.183$, $P = 0.019$)]. Following adjustment for demographics and education, only femoral-carotid PWV remained significantly associated with executive function, albeit attenuated ($\beta = 0.151$, $P = 0.044$). This association was not significant following adjustment for cardiovascular risk factors.

Conclusion

Different indices of vascular health were associated with different aspects of cognitive performance. High carotid stiffness was associated with impaired global cognition, aortic stiffness was inversely associated with verbal memory, and endothelial dysfunction was associated with reduced visuospatial ability. A larger study is necessary to confirm and refine our findings. In addition, extending this into a longitudinal study would allow us to correlate these indices of vascular health with the trajectories of cognitive decline, if any.

Insomnia and Cognitive Function in the Singapore Longitudinal Ageing Studies

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Introduction
This study aimed to investigate daytime domain-specific neuropsychological performance deficits associated with the insomniac complaints of difficulty initiating sleep (DIS), difficulty maintaining sleep (DMS), and early morning awakening (EMA) in older adults.

Methods
We studied 859 older adults, aged 65 and above (mean, 71.9 years), in the Singapore Longitudinal Ageing Studies second wave cohort who completed a sleep survey questionnaire and a battery of neuropsychological tests (Digit Span, Rey Auditory Verbal Learning Test, Story Memory, Brief Visuospatial Memory Test-Revised, Boston Naming Test, Color Trails Test (1 and 2) and Block design).

Results
Insomnia symptoms were present in 18% (n = 155) of participants. Controlling for the presence of other insomnia symptoms, psychosocial and medical variables and depression, EMA was independently and significantly associated with worse executive functioning (P = 0.031). DIS and DMS were not independently associated with any daytime cognitive domain performance deficits.

Conclusion
Performance in tasks measuring executive function is poorer in older adults with EMA, after taking into account psychosocial and medical factors, other insomnia complaints, as well as depression. It may be important to differentiate between self-reported insomnia symptoms as they may not have similar associations with daytime cognitive performance.

Psychiatric Comorbidity in Asthma: The Contribution of Psychological Stress

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Introduction
Asthma and several chronic disorders are notably associated with higher comorbidity with mental disorders. However, the relative contributions of psychological stress to their respective psychiatric comorbidities and impaired functioning are not well documented.

Methods
Cross-sectional analysis of a nationally representative sample of Singaporean adults aged 20 to 59 (n = 2847), with data on life events, psychiatric morbidity and daily functioning (LTEQ, GHQ, SCAN, SF-12) assessed in individuals categorised by self-reports of asthma, other chronic medical conditions, and no chronic medical condition.

Results
Asthma and other chronic disorders were associated with similar odds of association (2- to 4-fold) with mental disorders (including major depressive disorders and general anxiety disorder), controlling for confounding variables. However, individuals with asthma were more likely to report stressful life events compared to individuals with other chronic disorders (OR: 4.33, 95% CI, 2.09 to 8.95) or without chronic disorders (OR: 7.64, 95% CI, 3.87 to 15.06). Life event stress contributed significantly towards increased psychiatric morbidity and worse SF-12 MCS scores of impaired functioning among individuals with asthma compared to those with other chronic medical conditions.

Conclusion
Excessive stressful life events is a significantly greater contributor to psychiatric comorbidity and functional impairment in asthma than in other chronic medical conditions.

Comorbid Depression and COPD: Role of Chronic Inflammation in the Singapore Longitudinal Ageing Studies

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Introduction
Depression is commonly observed among patients with chronic obstructive pulmonary disease (COPD). We investigated the independent association of depression and COPD, the effect of depression on physical functional impairment and quality of life among COPD individuals,

and explored the role of proinflammatory cytokines in the common pathophysiological mechanism underlying the comorbidity.

Methods

We analysed data in a population-based sample (n = 2402) of older adults aged 55 and above in the Singapore Longitudinal Ageing Study (SLAS) which included spirometric measurements (FEV1% and FEV1/FVC%), Geriatric Depression Scale (GDS -15≥5), activities of daily living (ADL), SF-12 quality of life, and serum levels of interleukin-6 (IL-6) and C-creative protein (CRP). Chronic obstructive pulmonary disease (COPD) was defined as presence of characteristic symptoms of chronic cough, sputum or breathlessness, and airflow obstruction of FEV1/FVC <0.70.

Results

Depressive symptoms were more frequent among 189 respondents with COPD (22.8%) than among 2213 respondents without COPD (12.4%), OR: 1.86 (95% CI, 1.25 to 2.75) after controlling for confounding risk factors. Among respondents with COPD, those who were depressed (n = 43), compared to those not depressed (n = 146), were more likely to report ADL disability (OR: 2.89), poor or fair health (OR: 3.35), lower SF-12 PCS (OR: 2.35) and MCS (OR: 4.17) scores. Among individuals free of obstructive pulmonary diseases and with available laboratory data (n = 2077), high IL-6 and high CRP, individually and in combination, were independently associated with decreased FEV1% of predicted and FEV1/FVC% in multivariate analyses controlling for potential confounders. The association of depressive symptoms and pulmonary obstruction was reduced by the addition of IL-6 and CRP in hierarchical models.

Conclusion

Depressive symptoms were independently associated with COPD and worse health and functional status among individuals with COPD. The comorbid association of depression and pulmonary obstruction in older adults may be partly explained by inflammatory mechanisms.

Neuroticism and Perceived Stress Contribute to Increased Psychiatric Morbidity in Asthma

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Introduction

Comorbid anxiety and depression is reported to be common among adolescents with asthma, but little is known about its underlying psychological factors. This study determined the profile of anxiety and depressive comorbidities among adolescents with well controlled and poorly controlled asthma and the contribution of neuroticism and perceived stress.

Methods

The Revised Child Anxiety and Depression Scale, Neuroticism subscale of Big Five Inventory, Perceived Stress Scale, Asthma Control Test were administered to 198 adolescents (12 to 19 years) with well controlled (n = 137) or poorly controlled asthma (n = 61) and to 171 healthy neighbourhood controls.

Results

Adolescents with poorly controlled asthma, compared with well controlled asthma and healthy controls, had higher symptom scores of depressive ($P = 0.006$), panic ($P = 0.002$), total anxiety ($P = 0.038$) and total internalising disorder ($P = 0.017$), after adjusting for gender, age, ethnicity, smoking status and family housing type. Adolescents with asthma also had higher neuroticism ($P = 0.025$), perceived stress ($P = 0.022$), body mass index ($P = 0.006$) and lower self-rated health ($P < 0.001$) than healthy controls. No significant differences in psychiatric disorders were observed after allowing for differences in psychological factors and their correlates. Among asthma patients, increased asthma control was associated with decreased symptom scores of psychiatric disorders ($P < 0.01$), but the association was not significant after allowing for decreased neuroticism and perceived stress.

Conclusion

Asthma and the degree of asthma control in adolescents were associated with comorbid psychiatric disorders, which were likely due to increased neuroticism and perceived stress, especially in poorly controlled asthma.

Metformin Use and Risk of Cognitive Decline among Older Adults with Diabetes: Singapore Longitudinal Ageing Studies (SLAS)

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Introduction
Insulin resistance plays an important role in cognitive decline and dementia risk. This suggests that insulin sensitisers may protect against cognitive decline in diabetic and pre-diabetic individuals. We investigated whether long-term use of metformin among diabetic persons was associated with lowered risk of cognitive decline.

Methods
Older persons aged 55 years and over in the population-based Singapore Longitudinal Ageing Study (SLAS) with diabetes (n = 365) were followed up over 4 years. The association of metformin use (n = 204) up to 6 years (n = 114) and more than 6 years (n = 90) versus non-use (n = 161) with cognitive impairment (MMSE ≤23) were evaluated in cross-sectional and longitudinal multivariate analyses.

Results
Controlling for age, education, diabetes duration, fasting blood glucose, vascular and non-vascular risk factors, metformin use was significantly associated with lower risks of cognitive impairment in longitudinal analysis (OR: 0.49, 95% CI, 0.25 to 0.95). There were significant linear trends of association across duration of metformin use in cross-sectional and longitudinal analyses ($P = 0.018$ and $P = 0.002$ respectively), with metformin use for more than 6 years significantly associated with lowest risk of cognitive impairment in both cross-sectional analysis (OR: 0.30, 95% CI, 0.11 to 0.80) and in longitudinal analysis (OR: 0.27, 95% CI, 0.12 to 0.65).

Conclusion
Long-term treatment with metformin may reduce the risk of cognitive decline among individuals with diabetes.

Clinical Impact of Comorbid Depressive Symptoms among Patients with Chronic Obstructive Pulmonary Disease

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Introduction
Depressive symptoms are common among patients with COPD. We evaluated the impact of comorbid depression on COPD mortality, readmission, smoking behaviour, respiratory symptom burden and physical and social functioning.

Methods
We followed up 376 consecutive patients with COPD hospitalised for acute exacerbation for 1 year, and evaluated the association of baseline comorbid depression (Hospital Anxiety and Depression Scale scores ≥8) to mortality, readmissions, length of stay (LOS), persistent smoking, and quality of life [St George Respiratory Questionnaire (SGRQ)] from follow-up, controlling for chronicity and severity of COPD, comorbidities, behavioural, psychosocial and socioeconomic variables in multivariate analyses.

Results
Depression was present at baseline among 44.4% of the patients. During follow-up, 57 patients died (15%), and 202 patients were readmitted at least once (58%). Depression was significantly associated with mortality (hazard ratio, HR: 1.93, 95% CI, 1.04 to 3.58), longer index LOS (mean, 1.1 more days, $P = 0.023$) and total LOS (mean, 3.0 more days, $P = 0.047$), persistent smoking at 6-months (OR: 2.30, 95% CI, 1.17 to 4.52) and 12% to 37% worse Symptoms, Activities, Impact and Total SGRQ at index hospitalisation and 1 year,

Conclusion
Comorbid depressive symptoms in COPD patients impact clinical outcomes. Mental health intervention may potentially improve outcomes for COPD patients.

Low Blood Pressure and Depressive Symptoms among Older Persons in the Singapore Longitudinal Ageing Studies

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Introduction

The relationship between low blood pressure and depression or depressive symptoms is controversial. We investigated whether low blood pressure is associated with depressive symptoms among older persons, including those who were treated and untreated for hypertension.

Methods

Depressive symptoms were assessed using the 15-item Geriatric Depression Scale (GDS ≥5), and systolic blood pressure and diastolic blood pressure were measured among 2611 Chinese older adults aged 55 and above who participated in the Singapore Longitudinal Ageing Studies (SLAS), including those with treated (n = 1088), untreated (n = 545) or no hypertension (n = 978).

Results

Systolic blood pressure and diastolic blood pressure were negatively associated with GDS scores, controlling for the use of antihypertensive and depressogenic drugs and other co-variables. Low systolic blood pressure (OR: 1.54, 95% CI, 1.07 to 2.22), low diastolic blood pressure (OR: 1.67, 95% CI, 0.98 to 2.85), and low systolic blood pressure and/or diastolic blood pressure (OR: 1.55, 95% CI, 1.10 to 2.19) were independently associated with depressive symptoms. In particular, low systolic blood pressure was observed to be associated with depressive symptoms among treated hypertensive participants (OR: 2.13, 95% CI, 1.13 to 4.03), and low diastolic blood pressure was observed to be associated with depressive symptoms among untreated or non-hypertensive participants (OR: 2.42, 95% CI, 1.26 to 4.68).

Conclusion

The association between low blood pressure and depressive symptoms among older persons suggests a co-occurrence that could be due to common underlying neural regulatory mechanisms which should be further investigated.

Is Orthostatic Hypotension and Hypotension a Marker of Pre-dementia?

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Introduction

This study aims to examine the association of orthostatic hypotension (OH) with cognitive impairment and decline in a cohort of Chinese elderly, and its effect modification by blood pressure (BP) status at baseline.

Methods

In the Singapore Longitudinal Ageing Studies (SLAS-1) cohort, 2321 community-living older adults aged 55 and above (mean age, 65.5 years), free of cardiovascular disease and stroke were categorised hypotensives, normotensives or hypertensives based on their baseline BP measurements. Cognitive decline (decrease in MMSE by ≥1) was assessed from 1- to 2-year follow-up for 1347 participants without baseline cognitive impairment.

Results

OH was present at baseline in 381 (16.6%) participants. OH was not associated with cognitive impairment at baseline overall. However, among hypotensives, OH increased the odds of cognitive impairment (OR: 4.1, 95% CI, 1.11 to 15.1), while hypertensives with OH showed reduced odds of cognitive impairment (OR: 0.48, 95% CI, 0.26 to 0.90). Among cognitively intact participants, OH was not associated with cognitive decline overall or in BP subgroups.

Conclusion

These findings suggest that hypotension with OH maybe an early comorbid marker of a primary incipient dementia.

Ethnic, Social and Cultural Dimensions of Successful Ageing in the Singapore Longitudinal Ageing Studies

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Introduction
There is limited research on cross-cultural dimensions of successful ageing (SA), and these have underscored the importance of not using Western templates to study SA. We sought to understand the ethnic dimensions of SA by exploring how various factors associated with SA are given distinctive emphases by different ethnic groups. The objective was to understand ethnic dimensions of SA, by exploring ethnicity-based differences in beliefs, opinions and attitudes and behaviour towards SA in Chinese, Malay and Indian Singaporean seniors. These included ageing perceptions, mortality salience, spirituality/religiosity, health status, life satisfaction, self-rated SA and opinions about salient factors for successful ageing.

Methods
This was a cross-sectional study. Data were collected from 500 community-dwelling Singaporeans aged 65 and over. Self-rated SA on an analogue scale from 1 to 10 (1 = least successful to 10 = most successful) was correlated to ageing perceptions, mortality salience, spirituality/religiosity, health status, life satisfaction, self-rated SA and opinions about salient factors for successful ageing.

Results
Malays and females expressed themselves to be ageing more successfully than Chinese ($P = 0.017$) despite all evidence of poorer general health such as facing more limitations in performing physical functioning activities ($P < 0.001$) and more diagnoses of chronic diseases and illnesses ($P = 0.048$). Compared to Chinese and Indian seniors, Malays had the highest life satisfaction ($P = 0.009$) and were clearly more satisfied with their life, relationship with friends and relatives ($P = 0.002$). Malay seniors evidently showed greater religiosity and spirituality than the Chinese ($P < 0.001$). Malay seniors view fulfilling and satisfying relations as being very important to SA; at the same time, they showed a greater consciousness about the spiritual dimensions of SA. Indian seniors view financial security as very important to SA, even more so than physical health. Chinese on the other hand tended to view physical health as paramount to SA. Both culturally universal and specific elements of SA were evidenced in this study.

Conclusion
Distinct ethnic cultural differences in perceptions of successful ageing, ageing process, beliefs and attitudes are observed among Chinese, Malay and Indian seniors in Singapore.

Community Screening for Dementia and Depression

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Introduction
Geriatric Psychiatry Out-Reach Assessment, Consultation and Enablement (G-RACE) is a community-oriented programme that provides a broad spectrum of services, ranging from education and early detection to stabilisation of mental health conditions, with the aim of helping the elderly age-in-place. One of the key objectives is to work in collaboration with the community partners to enhance awareness and facilitate early detection of mental health conditions in community-living elderly.

Early screening and detection of mental health conditions in community remain controversial. At least half of the elderly who have been identified as having mental health issues do not meet the diagnostic criteria and/or the elderly refuse further evaluation following a positive screening. This paper aims to evaluate the feasibility of using paraprofessionals in community screening as well as the help-seeking behaviour of the elderly in the Singapore context.

Methods
G-RACE provides educational training for community partners' paraprofessionals to enhance their understanding of elderly dementia and depression and the use of a screening tool. From October 2013 to date, 111 paraprofessionals have been trained by G-RACE.

The first phase of the screening involves the use of AMT and EBAS-DEP by paraprofessionals. For elderly who were screened positive, a G-RACE team member would conduct a semi-structured interview as well as an assessment using MMSE and MADRS. This would be followed by a consensus meeting conducted by the multidisciplinary team, to determine if the elderly has probably dementia or depression. The outcome of the consensus meeting would be communicated both to the elderly and community partners with recommendation to seek professional help at their clinic of choice.

Results

A total of 102 elderly aged 65 years and older have been screened from October 2013 to August 2014 with the mean age of 77 years.

Feasibility of Community Screening

Of the 102 elderly screened, 57 (55.9%) were determined to have probable depression or dementia and 4 elderly refused further interview or assessment by G-RACE. In total, 56 elderly were interviewed and assessed, including 3 elderly who were screened negative at the first stage due to request either by family or community worker's observation. Also, 69.6% of the elderly were determined to have either probable dementia or depression and needing further assessment.

Help-Seeking Behaviour of Community Elderly

In our study, 61.5% of the elderly were agreeable for a formal consult and further investigations and 86.7% of them did turn up for the specialist appointment arranged.

Conclusion

This study has demonstrated the feasibility of using paraprofessionals in community screening. It is encouraging to learn that our community partners are able to accurately identify 69.6% of the elderly in the community that may otherwise not be identified. The help-seeking behaviour of the elderly was also encouraging; consisting of 61.5%, higher than other studies. One of the limitations of this study is the small sample size. A bigger scale of study pertaining to this area is warranted in order to make community screening a better success. It is also worthwhile to look into how to reduce the false positive rates.

Help-Seeking for Psychological and Psychiatric Symptoms in Singapore

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Introduction

Delays in seeking help for psychological and psychiatric symptoms may result in dire, and sometimes even fatal, consequences. These delays are particularly pertinent in Asian societies like Singapore, where the stigma of mental illnesses are particularly significant, and where psychiatric issues are often not considered less important than somatic ones. Undergraduate students are often a subset of the population that are not only educated but also at the prime juncture in their lives to internalise attitudes and behaviours likely to continue into adulthood; however, little has been done locally or regionally to understand their help-seeking behaviours and intentions (HSI) for such mental sequelæ. This exploratory observational study therefore seeks to address this lacuna by exploring the HSI of undergraduate students in Singapore toward physical and a range of mental illness, and the sources from which they sought help. It was hypothesised that the levels of HSI would parallel the perceived severity for the issues: physical, psychiatric, and emotional.

Methods

A total of 158 undergraduate students (63% women; Mage = 21.7 years, Age range = 19 to 25 years; 89% Chinese; 67% affiliated with a religion) from the National University of Singapore participated in this ethics-approved study. Participants completed a basic sociodemographic questionnaire and the General Help-Seeking Questionnaire Vignette Version (GHSQ-V; Wilson et al, 2005), which comprised 7 vignette items measuring help-seeking intentions for physical (heart disease), psychiatric (suicidal ideation, substance abuse, psychotic), and emotional (stress, and anxious and depressive) symptoms across 10 avenues of help-seeking ranging from family and friends, healthcare professionals, to alternative avenues (traditional and spiritual medicine, religious leaders, and others).

Results

Contrary to the predicted trends, paired t-tests revealed that help-seeking intentions were highest for physical symptoms, followed by emotional symptoms, and then psychiatric symptoms (ts[157] = 4.8 to 13.4, *P*s <0.001); these were replicated across all avenues of help-seeking. Individuals consistently seemed to seek help from their family and friends before healthcare professionals, and were least likely to approach alternative avenues (ts[157] = 9.0 to 25.9, *P*s <0.001).

Conclusion

The findings of this exploratory study suggest that the undergraduate population in Singapore is perhaps health literate and cognizant of the various symptoms that would require some external assistance. As expected, help was sought most for physical symptoms, which is understandable given the stigma against mental illness in Singapore; however, it was surprising that help would be sought more for emotional as opposed to psychiatric symptoms. This may perhaps be due to the familiarity of emotional symptoms versus psychiatric ones, and the inability for participants to empathise with the symptoms presented.

Regardless, this underlines the importance of mental health literacy amongst an undergraduate population, especially given the availability of avenues to increase psychological-mindedness in college education. This study also found that, understandably, individuals' first line of support were family and friends, which, in line with other studies, suggests the importance of social networks especially in more collectivistic societies like Singapore. More work, however, needs to be done to ascertain if this social help was terminal, which may themselves enact barriers to seeking and perhaps even receiving help.

Evaluation of G-RACE Programme over a 2-year Period

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Introduction

Geriatric Psychiatry Out-Reach Assessment Consultation and Enablement (G-RACE) was established in August 2011. The aim of this programme is to provide outreach psychiatric assessment and treatment for elderly with psychiatric disorders and living in the Western region of Singapore, so that they can continue living in their own homes and within the community. We are a multidisciplinary team (MDT) of healthcare professionals comprising of: (i) Doctors, led by psychogeriatricians, who diagnose and formulate the psychiatric and medical treatment plans. They conduct regular assessment and review of the elderly and modify the treatment plans according; (ii) Case managers who are experienced nurses (nurse clinician/ senior staff nurse), conduct holistic assessment (physical, medical, psychological, and social), which includes areas of mental state examination, psychoeducation of illness and medication, suicide risk and caregiver stress. They formulate individualised nursing care plans through regular home visits and/or phone calls. They also support patients and their caregivers through liaison with the appropriate community services e.g. day care and day rehabilitation service; (iii) Occupational therapists assess and maximise patients' functional abilities, conduct individualised caregiver training, prescribe assistive devices, and advise on home environmental modification; and 4) Psychologists conduct psychological therapy to resolve or reduce symptoms of psychiatric disorders, neuropsychological assessment to determine the patients' cognitive functioning when indicated. After each home visit, the assigned case managers or occupational therapists will update the MDT members the findings of the home visit and follow-up on the action plan agreed by all members. With the help of our MDT, we aim to achieve patient-centred care; reduce unnecessary hospitalisation related to psychiatric disorders and reducing the length of stay in the hospital; improve quality of life of the elderly in the community; and alleviate stress of caregivers.

Methods

The following assessments were used to analyse the result: Montgomery-Asberg Depression Rating Scale (MADRS), Neuropsychiatric Inventory with Caregiver Distress Scale (NPI-D), 22 items Zarit Burden Interview, Modified Barthel Index (MBI), Client satisfaction Questionnaire (CSQ-8) and number of psychiatric recent admission and psychiatric length of stay 6 months before acceptance and 6 months after acceptance. Assessments were done on acceptance and upon discharge from the programme.

Results

A total number of 264 patients were accepted into the programme and 148 patients were successfully discharged from the programme from January 2012 till March 2014. From the result, there is a reduction of 34% in MADRS (depression) and 43% in NPI (dementia) in the elderly upon discharge from the programme. The number of days of psychiatric admission(s) before acceptance and 6 months after acceptance into the programme was 55% reduction, with an overall average length of stay reduction from 28 to 18 days; 40% reduction in caregivers distress (NPI-D) and 26% reduction in caregivers' burden (Zarit) which resulted in 93% of caregivers being satisfied with the G-RACE programme at the point of discharge. They rated the overall services at more than 80%, based on a total score of 32 for CSQ-8.

Conclusion

Through the G-RACE programme, there were significant improvements in the elderly's psychiatric condition, physical function and reduction in frequent admissions and visits to hospitals' emergency departments. It has also helped to reduce associated caregiver burden and resulted in caregivers being highly satisfied with the programme upon discharge. Overall, the G-RACE programme does benefit both the elderly and their caregivers, and we have achieved our objective of empowering our elderly to continue living in their own homes and within the community.

A Psychogeriatric Domiciliary Service in the Western Region of Singapore

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Introduction

A rapidly ageing population in Singapore and a push to move from hospital-based care to community or home-based care have led to the development of various services targeting the elderly. Domiciliary visits have a long history in the care of older patients and there have been mixed views thus far.

Objectives

A psychogeriatric domiciliary service was established in the Western region of Singapore with the aim to describe the clinical outcomes and client satisfaction measures of this programme.

Methods

Patients above 65 years of age, with a mental health condition, and who are not community ambulant were referred to this service. A multidisciplinary team assessed patients at home and formulated individualised treatment plans including pharmacological and non-pharmacological interventions. Standard psychiatric rating scales including Mini Mental State Examination (MMSE), Montgomery Asberg Depression Rating Scale (MADRS), Neuropsychiatric Inventory (NPI), Zarit Burden Interview (ZBI), Modified Barthel Index (MBI), Clinical Global Improvement (CGI), EQ-5D and Client Satisfaction Questionnaire (CSQ-8) were administered at regular intervals by trained clinical staff.

Results

From August 2013 to May 2014, 20 out of 35 patients referred to this service were accepted. Caregiver refusal was the main reason for not being accepted into the service (n = 9). The mean age was 74.8 ± 10.1 years. There were 12 male and 8 female patients and the majority were ethnic Chinese (n = 16). The most common diagnosis was dementia (n = 15). NPI scores (mean ± SD) reduced significantly from 19.9 ± 12.5 at baseline to 7.6 ± 5.4 at 6 months (P <0.05). ZBI scores (mean ± SD) reduced from 28.3 ± 15.2 at baseline to 15.2 ± 11.7 at 6 months (P <0.05). There was no significant change in MMSE and MBI scores. Carer's satisfaction with the service was reflected in consistently high client satisfaction questionnaire (CSQ-8) scores.

Conclusion

Past criticisms of home visits include high cost, poor outcomes and waste of resources. While still in its infancy, this domiciliary care programme for psychogeriatric patients has shown promising results. Further evaluation is underway to determine the cost benefit of this service.

A Naturalistic Study of Psychosocial Interventions for Older Adults with Subsyndromal Depression and Anxiety

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Introduction

Subsyndromal depression (SSD) and anxiety (SSA) are common in the elderly and if left untreated, contributes to a lower quality of life, increased suicide risk, disability and inappropriate use of medical services. Innovative approaches are necessary to address this public health concern. A team from the National University of Singapore collaborated with voluntary organisations to establish a psychogeriatric training and research centre in the community, focusing on prevention and early intervention for dementia, depression and anxiety. A longitudinal community programme began in March 2013. We describe the mental health outcomes for an elderly cohort a year after participation in this programme.

Methods

Elderly participants with SSD and SSA, as assessed on the Geriatric Depression Scale and Geriatric Anxiety Inventory, were included. Intervention groups include Tai Chi exercise (TCE), art therapy (AT), mindfulness awareness practice (MAP) and music reminiscence therapy (MRT). In the initial 12 weeks, participants attended a single intervention of their choice weekly. For the remaining 40 weeks, as participants were keen to try other interventions, the programme evolved to tailor to this preference; participants attended a programme involving all 4 interventions. Outcomes were measured with the Zung Self-Rating Depression Scale (SDS) and Zung Self-Rating Anxiety Scale (SAS) at baseline and weeks 4, 10, 24 and 52. The programme had ethics board approval.

Results

A total of 101 subjects (25 males, 76 females; mean age = 71 years, SD = 5.95) participated. In the initial single intervention phase, SDS and SAS scores fell significantly (P <0.001). In the combined intervention phase, participants maintained these improvements. SDS and SAS scores were significantly lower in the 24th (P <0.05) and 52nd week (P <0.001) relative to baseline.

Conclusion

The planned interventions were effective in reducing SSD and SSA symptoms over a 1-year period. This simple approach can be readily replicated in other communities and may be a viable model for helping and supporting older adults with subthreshold symptoms even before the onset of full blown disease and alleviating the psychosocial and financial burden.

Outcomes of Mild Cognitive Impairment: A Community Study of Elderly Singaporeans

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Introduction

There is a paucity of data on conversion rates from mild cognitive impairment (MCI) to dementia in Singapore. We aim to compute the conversion rate in a community-dwelling sample and compare biological and psychometric measures between individuals with MCI who convert to dementia and those who do not.

Methods

Participants who were diagnosed with MCI were identified from a community- based study, the Singapore Longitudinal Ageing Study. Psychometric tests (CDR, MMSE, MoCa, GDS), venous sampling for biomarkers (B12, Folate, Homocysteine) and genotyping (ApoE) were performed for these subjects. A follow-up assessment was subsequently conducted.

Results

Forty-six participants were followed up for a mean duration of 3.5 ± 1.0 years. The mean age of participants at baseline was 72.4 years (SD = 7.0) and 26 (56.5%) were females; 37 (80.4%) of the participants were Chinese. They received 2.1 years of education (SD = 2.7). Twenty-six (57%) of the initial 46 participants completed both baseline and follow-up assessments. There were no significant differences in baseline characteristics of those who completed follow-up and those who did not. Among the 26 participants who had successfully completed follow-up, 6 (23%) participants had converted from MCI to dementia and 20 (77%) had remained stable at MCI. None of the subjects had reverted to normal cognition. The mean annual conversion rate to dementia was 7%. Comparison of the baseline demographics, psychometric measures, serum biomarkers and genotype between converters and non-converters did not reveal any significant differences. Converters were older and level of education was comparable. There was an absence of depressive symptoms in both groups. Higher folate and B12 levels were observed in converters. There was an absence of ApoE4 genotype in the converters, suggesting that genotyping for the ApoE4 allele may be of limited value for predicting dementia in Chinese populations.

Conclusion

Our results are consistent with previous research conducted in Asian populations such as China and Japan. However, certain noteworthy deviations from current knowledge highlight a need for more epidemiological and longitudinal studies to identify predictors that are specific and relevant to Asian populations.

Omega-3 Polyunsaturated Fatty Acids (PUFA) Supplements Use and Cognition: Singapore Longitudinal Ageing Studies

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Introduction
Omega-3 polyunsaturated fatty acids (PUFA) have been shown to confer neuroprotection and associated with reduced risks of dementia. No naturalistic studies have yet documented an association of regular use of Omega3- PUFA supplements with cognitive decline and function among older persons.

Methods
Prospective follow-up study of cognitive decline in the Singapore Longitudinal Ageing Study-1 (SLAS-1) among 1475 Chinese participants and cross-sectional study of neurocognitive domain performance associated with Omega-3 PUFA supplement use among 710 Chinese participants was conducted.

Results
Daily n-3 PUFA supplements intake was significantly associated with lower risk of cognitive decline (adjusted OR = 0.23, 95% CI, 0.07 to 0.75, $P = 0.015$). Daily intake of n-3 PUFA supplements was independently associated with better cognitive performance on memory ($\beta = 0.098$, SE = 0.31, $P = 0.006$), executive function ($\beta = 0.071$, SE = 0.43, $P = 0.046$) and information processing speed ($\beta = 0.074$, SE = 0.24, $P = 0.036$).

Conclusion
These studies indicated that multiple risk and protective factors related to lipid metabolism are involved in cognitive decline and dementia. The complex relationships between lipid-related factors, cognitive decline and dementia should be recognised and investigated systematically in future research.

Intranasal Oxytocin for Autism Spectrum Disorder —A Narrative Review

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Introduction
There is growing evidence that the neuropeptide oxytocin plays a role in facilitating prosocial behaviours in healthy humans. Because social deficits are one of the core dimensions of autism spectrum disorder (ASD), it is thought that intranasal oxytocin could have therapeutic effects for patients with ASD. However, to date, there have been no systematic reviews that focus on examining the efficacy and safety of intranasal oxytocin in treating ASD. The aim of this review is to provide a narrative assessment of existing research data on the efficacy and safety of intranasal oxytocin in treating ASD.

Methods
Literature searches were conducted on 15 electronic databases and trial registers (e.g. Cochrane Central Register of Controlled Trials, Ovid MEDLINE, Embase, PsycINFO, et al) for all journal articles and abstracts published before 8 August 2013 (date of electronic searches). We also manually sourced for studies that were cited in reference sections of relevant papers. To be considered for this review, studies had to be randomised and blinded controlled trials (RCTs) comparing intranasal oxytocin with placebo among a sample of individuals clinically diagnosed with ASD based on diagnostic criteria in the Diagnostic and Statistical Manual of Mental Disorders (DSM system, version 5.0, version IV, or version III) or the International Statistical Classification of Diseases and Related Health Problems (ICD system, version 10 or version 9).

Results
Six studies involving 158 subjects were identified from the search results of 734 titles and abstracts. All studies used a small sample (median = 22). Two of the 6 were conference abstracts without published full text; hence their main results were not available for review. Two published studies examined the effects of intranasal oxytocin on social behaviour using short-duration trials but only 1 had evidence that oxytocin enhanced visual scanning of faces and gaze to the eye region on a face perception task, and promoted positive interactions and feelings of trust toward the most cooperative player in the cyberball game.Three of the 4 published studies investigated on emotion recognition. Of these, 2 reported that the short-term use of intranasal oxytocin was associated with improvements on the Reading the Mind in the Eyes Test-Revised (RMET),while 1study had non-significant results (measured by the UNSW Facial Emotion task). In addition, 5 of the 6 studies evaluated the safety of intranasal oxytocin and showed no significant safety concerns. In particular, intranasal oxytocin appeared safe in patients of a long-duration trial (up to 4 months). All the 6 studies were conducted on Caucasian patient population; there is no published data on the efficacy and safety of intranasal oxytocin in treating Asian ASD patients.

Conclusion

There is insufficient data to support the notion that intranasal oxytocin could be an effective treatment for social deficits observed in ASD. Intranasal oxytocin appears to be a well tolerated intervention. More RCTs should be conducted in the future, especially on Asian patient population.

What Roles do Mindfulness Play in the Relationship between Rumination and Help-seeking Intentions for Emotional Distress?

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Introduction

Individuals who need help are very often the ones who believe that seeking, much less accepting, help is an admission of failure. Such delays in help-seeking for emotional distress often result in dire, and sometimes even fatal, consequences. Studies have highlighted that those prone to rumination—the tendency to respond to distress by repetitively focussing on the depressive symptoms, meanings, and consequences—often report low help-seeking intentions and behaviours. Mindfulness—attentive and non-judgemental metacognitive monitoring of moment-by-moment experiences without fixation on thoughts about the past—however, is often touted as key to combating ruminative tendencies. In the present study, we therefore sought to examine these relationships in college-going students, who may be more susceptible to the consequences of delays in help-seeking for emotional distress. Because the literature is virtually non-existent, we hypothesised that mindfulness would both mediate (strengthen) and moderate (alter) the rumination-help-seeking relationship.

Methods

A total of 179 ethnically Chinese undergraduate students (45% women; Mage = 21.8 years, age range = 19 to 25 years; 88% Chinese; 71% affiliated with a religion) from the National University of Singapore participated in this ethics-approved study. Participants completed a basic sociodemographic questionnaire and measures of rumination (Rumination Responses Scale; RRS; Nolen-Hoeksema et al, 1991), mindfulness (Five Facet Mindfulness Questionnaire Short Form; FFMQ-SF; Baer et al, 2006), and help-seeking intentions (General Help-Seeking Questionnaire Vignette Version; GHSQ-V; Wilson et al, 2005). We tabulated mean intention scores from 4 vignettes of the GHSQ-V that described emotionally distressed (stressed, anxious, depressed, and suicidal) individuals across 10 avenues of help-seeking ($\alpha = 0.90$).

Results

Preliminary analyses revealed significant gender differences across help-seeking scores, with men less likely to seek help than women ($P < 0.001$); no other case-mix differences were found significant. Bivariate correlations separated by gender revealed that there was no significant relationship between mindfulness and help-seeking scores for men; as such, the subsequent analyses were conducted only for the subsample of Chinese women (n = 100). Mindfulness, specifically non-reactivity (FFMQ-SF subscale), significantly fully negatively mediated the rumination-help-seeking relationship for women ($F([2,97] = 6.26$, $P < 0.01$; Sobel's $z = -2.45$, $P < 0.01$). Non-reactivity was also found to be a significant moderator of the rumination-help-seeking link for women ($F[3,96] = 6.25$, $P < 0.05$). No other facets of mindfulness were found to be significant mediators or moderators.

Conclusion

These results reveal that, for ethnically Chinese college-going women, at least, intentions to seek help for emotional distress (e.g. acute or chronic stressors, symptoms of generalised anxiety and major depressive disorders, and suicidal ideation) were influenced by trait ruminative tendencies, which acted primarily through their reacting to their ruminative thoughts. This seemed exacerbated in individuals who were high trait-ruminators; their emotional reactivity to their distress further reduced help-seeking intentions. This is worrying, given that these individuals may in fact be those truly in need of assistance and support. These findings provide preliminary data supporting the usefulness of mindfulness-based interventions in improving help-seeking intentions for emotional distress, particularly amongst high trait-ruminators, and that these may benefit women more than they may benefit men because of universal societal expectations of gender roles.

Mindful Awareness Practice for the Prevention of Dementia: A Randomised Controlled Trial

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Introduction

Dementia has a growing global health, social and economic impact. While there is ongoing research on pharmacotherapy, non-pharmacological interventions are cost-effective, associated with fewer side effects, adaptable at an earlier age and more likely to prove acceptable to the elderly in helping counteract cognitive decline. Mindfulness programmes have gained increasing recognition in improving physical health, psychological and emotional well-being (Mcbee, 2008). These are thought to be mediated via neural plasticity mechanisms, enhanced immune response and changes in gene expression and activity (Creswell, 2014). Mindfulness involves mental training in focusing on the "present moment, non-judgmentally" (Kabat-Zinn, 1994 and Bishop et al, 2004). This study investigates the efficacy of Mindful Awareness Practice or MAP (Wee, Doshi & Chow, 2014) in improving cognitive function in the elderly.

Methods

In a randomised controlled trial, 55 elderly individuals (aged 60 to 85 years) assessed with mild cognitive impairment have been entered in 2 study arms, the active Mindfulness Awareness Practice and the control arm, a Health Education Programme. NUS IRB (Ref Code B-14-110) gave ethics approval. The study is in 2 phases, a weekly 3-month phase and then a monthly 6-month phase. Assessments are done at baseline, 3-months and at 9-months. They include: (i) Structural MRI at baseline and 3 months; (ii) Assessment for anxiety and depression using the Geriatric Depression Scale and the Geriatric Anxiety Inventory; (iii) Neuropsychological tests for cognitive functioning, the Mini Mental State Examination, Clinical Dementia Rating, Rey Auditory Verbal Learning Test, Digit Span Test, Color Trails Test, Block Design, Semantic Verbal Fluency; (iv) Biological samples of blood for cytokine, chromosomal studies and terminal telomere restriction fragment length analysis, urine for oxidative biomarkers, saliva for cortisol and cytokine analysis and faeces for bacterial analysis. Basic health screening and demographic data are also collected. The MAP intervention is delivered by a trained practitioner and consists of 40-minute sessions weekly for 3 months and tracked self-practice at home, in-between these sessions. The planned sessions introduce the elderly to mindfulness practice in a graduated manner. The extension of sessions for 6 months is to determine sustainability and longer-term changes. The MAP is designed to foster awareness of internal states and promote positive mental and physical health through mindful awareness in daily activities. The control arm participates in similar 40-minute sessions but will receive a Health Education Programme with a focus on information on hypertension, diabetes, dementia, depression, medications, exercise, diet, sleep, home safety, falls and social support.

Conclusion

This RCT is the first study to investigate systematically the efficacy of a psychosocial and non-invasive intervention, Mindful Awareness Practice, and the multiple pathways through which this intervention could potentially counteract mental deterioration and enhance mental resilience. The study has tremendous potential for supporting cognitive training programmes and applicability to larger populations of the elderly.

Eliminating Inappropriate Anticholinergic Medication Use

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Introduction

Current guidelines do not recommend prophylactic use of anticholinergics for patients on long-term antipsychotic medication. Anticholinergics (e.g. benzhexol) are used to overcome antipsychotic-induced extrapyramidal side effects (EPSE) such as dystonia and parkinsonian symptoms. However, its use is associated with autonomic side effects (e.g. urinary retention, paralytic ileus) and psychiatric effects that can range from mild impairment of recent memory to acute confusional states.

The risk of side effects increases with age, dose and presence of pre-existing mental impairment. Long-term use may predispose patients to tardive dyskinesia or exacerbate tardive dyskinesia syndrome in affected patients. Benzhexol (triexyphenidyl) may be abused as a euphoriant. Long-term administration is unnecessary for the majority of patients. Most patients do not experience recurrence of EPSE when anticholinergic drug therapy is discontinued after 3 months of administration. Klett et al (1972), McClelland et al (1974) and Pullen et al (1984) have concluded that anticholinergic drugs could be withdrawn after 3 months as drug-induced parkinsonism tends to improve over this time despite continued antipsychotic medications. The WHO (1990) guidelines recommend the continuation of anticholinergic drugs for approximately 3 months, after

which a slow reduction in doses of anticholinergic drugs should be tried, and they should be withdrawn if it is at all possible. If EPS recurs, the anticholinergic drug may need to be reinstituted. However, an attempt to reduce and discontinue the anticholinergic drug should be made again after another 3 to 4 months.

In clinical practice, patients are often started on anticholinergics together with antipsychotics and the use is subsequently not reviewed. A clinical practice improvement project (2006 to 2007) was undertaken to determine the extent of anticholinergic use in a tertiary psychiatric hospital and to determine if inappropriate use could be successfully reduced.

Methods

Data from pharmacy records were checked for the number of outpatients and the doses of benzhexol prescribed in a 2-month period in 2005. For inpatients, a manual check of inpatient medication records was undertaken in 2006. The clinical practice improvement project was undertaken in 8 wards and amongst outpatients in the outpatient clinics of the tertiary psychiatric hospital to reduce inappropriate anticholinergic medication use.

Results

The average number of outpatients prescribed anticholinergics (2-month period) was 4920 and this fell to 4507 after 16 months. There was a 34.1% decrease in the use of 8 mg doses, a 20.5% decrease in 10 mg doses and a 9.8% decrease in 12 mg doses used. A total of 643 out of 1096 (59%) long-stay ward inpatients were on maintenance anticholinergic (trihexyphenidyl) treatment; 156 patients (14%) were on doses of 6 mg per day and above. A reduction of 56.8% of anticholinergic use was achieved. Fifteen percent were successfully discontinued from anticholinergics without experiencing any extrapyramidal side effects.

Conclusion

Inappropriate anticholinergic use can be eliminated with increased awareness and proper guidelines to support clinical practice. The methods used in the project included preparation of learning cards, use of treatment algorithms to guide clinical practice, developing an e-learning programme and feedback on improvements and close tracking of anticholinergic use.

Cognitive Impairment Associated with Anticholinergic Adverse Effects of Common Drug Use among Older Adults: Singapore Longitudinal Ageing Studies

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Introduction

Numerous drugs with known anticholinergic effects are used in the elderly. This study examined the contribution of the use of such drugs to the presence of cognitive impairment in older adults in a population-based study.

Methods

Cross-sectional data from the Singapore Longitudinal Ageing studies (SLAS-1) of 2795 older adults aged 55 and above. The use of drugs with anticholinergic effects was determined from self-report and physical inspection of labels. Cognition impairment was assessed by Mini Mental State Examination (MMSE) score ≤23.

Results

The use of drugs with anticholinergic effects was significantly associated with cognitive impairment (OR = 2.66; 95% CI, 1.06 to 6.68, $P = 0.038$), independent of other significant risk factors including gender, age, ethnicity, education, depression, cardio metabolic factors and stroke. As the prevalence of anticholinergic drugs use was only 1.3% in this population, the PAR was less than 1%, compared to other modifiable risk factors like stroke (3.9% prevalence, PAR 2.7%), and depression (13.1% prevalence, PAR 6.6%). In populations with reported prevalence between 13.5% and 23%, the estimated PAR is between 8.0% and 14.3%.

Conclusion

The use of drugs with anticholinergic effects made a measurable contribution as a modifiable risk factor for cognitive impairment in older persons.

Effects of Nutritional, Physical, Cognitive Interventions on Cognitive Outcomes in the Singapore Frailty Intervention Trial (S-FIT)

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Introduction

Growing evidence suggests that lifestyle and behaviour modifications in at-risk populations of older adults are an important strategy in the primary prevention of dementia. Frail older persons represent a large population at risk of developing dementia. The Singapore Frailty Intervention Trial (S-FIT) is the first multidomain randomised control trial evaluating the effects of physical, cognitive, nutritional and combination versus control interventions in slowing cognitive decline among frail older persons in the community.

Methods

Pre-frail and frail older persons identified by the Cardiovascular Health Study (CHS) criteria (unintentional shrinking, slowness, weakness, exhaustion and low activity) were randomly allocated to 1 of 5 interventions of 24 weeks duration each: nutritional supplementation (n=47), cognitive training (n = 50), physical training (n = 48), combination intervention (n = 49), and control (standard care, n = 49). (Clinical Trial Registration: NCT00973258). Cognitive functioning was assessed at baseline and 12-month follow-up using composite cognitive performance scores derived from the mean of 5 domain z-scores: (i) verbal learning and memory (RAVLT immediate and delayed recall z-scores); (ii) visuospatial learning and memory (BVMT-R immediate and delayed recall z-scores); (iii) executive functioning (BD and VF z-scores); (iv) working memory (DS forward and backward z-scores); and (v) processing speed (SDT z-scores).

Results

The mean age of the participants was 70.0 years and mean years of education was 5.4 years. At baseline, intervention groups were similar in levels of cognitive performance. Cognitive training compared to control was associated with significantly more favourable change in working memory from baseline: control, mean change = –0.206 and cognitive training, mean change = 0.133, P = 0.011. Significant differences in cognitive change from baseline favouring combination intervention over control were observed at 12-month: control, mean change = –0.075 and combination, mean change = 0.063, P = 0.042. Nutritional and physical interventions were not observed to be associated with more favourable cognitive changes over control interventions.

Conclusion

Cognitive interventions significantly improved attention and working memory performance, and combined cognitive, physical and nutritional intervention resulted in a significant improvement in global cognitive performance among frail older persons.

Antidepressant Prescription Patterns in Singapore

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Introduction

Antidepressants are prescribed for a variety of psychiatric conditions. Prescribing habits vary amongst clinicians in different countries. The Research on East Asian Psychotropic Prescription-Antidepressants 2013 (REAP-AD 2013) study evaluated the patterns of antidepressant use in 10 East Asian countries and territories—China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan and Thailand.

The objectives of REAP-AD 2013 were to: (i) Describe the prescription habits and patterns of antidepressant use in East Asia; and (ii) Compare the differences in types, doses and indications for antidepressant prescriptions amongst various centres. The findings of the cross-sectional survey in Singapore are presented here.

Methods

A unified research protocol and standardised data collection form were used. Patients who were prescribed antidepressant medications on a selected day between 1 March 2013 and 31 May 2013 were recruited from both inpatient and outpatient psychiatric units. The information collected included demographic data, targeted depressive symptoms, names and doses of prescribed psychotropic medication. The International Classification of Diseases 10th revision (ICD-10) psychiatric and medical diagnoses were also recorded. The team from Singapore recruited participants from 2 centres—National University Hospital (NUH) and Institute of Mental Health (IMH). Data was collected retrospectively from existing medical records.

Results

The medical records of 135 participants were examined. Mean age of the participants was 43.4 years (SD 16.5).

Fifty-seven percent of participants were female, and 63.0% were outpatients. There were a total of 144 antidepressant prescriptions for this population. Most of the antidepressant prescriptions for children and adolescents, and adults below 65 years were for SSRIs (80.0% and 73.6% respectively). Half of the antidepressant prescriptions for elderly participants in the study were for mirtazapine, a dual action antidepressant. Majority of individuals were prescribed with 1 antidepressant medication (93.3%), and the remaining 6.7% were given 2 or more antidepressants. Antidepressants were most often prescribed to treat mood disorders (39.4%) and neurotic, stress-related and somatoform disorders (31.0%). SSRIs were the most commonly prescribed antidepressants in our study sample. The first REAP-AD study conducted in 2004 also found that the majority of antidepressant prescriptions in Singapore, Korea, China and Taiwan were for SSRIs. In a study of antidepressant prescriptions patterns in Europe, SSRIs were likewise most often prescribed, compared to antidepressants from other classes. In our study population, mirtazapine was prescribed for a significant proportion of elderly individuals aged 65 years and above. Mirtazapine is a weak inhibitor of cytochrome P450 (CYP) isoenzymes CYP1A2, CYP2D6 and CYP3A4. It thus has a very low potential for pharmacokinetic interactions with other drugs compared to SSRIs such as fluoxetine and fluvoxamine.

Conclusion

We found that SSRIs were frequently prescribed for our sample of psychiatric patients in Singapore. Comparison of prescribing patterns amongst different centres in the international REAP-AD 2013 study will yield interesting findings.

NUH Psychology Team Psychotherapy Feedback Survey (March to April 2013)

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Introduction

Despite its proven effectiveness, psychotherapy utilisation by patients could be impacted by various factors (APA, 2012; Brown University, 2013). This psychotherapy feedback survey was conducted with the purpose to objectively study patients' experiences of our psychotherapy services, and understand the effectiveness/ineffectiveness factors involved, so as to subsequently work towards an improved treatment paradigm specific to our NUH Psychology team.

Methods

Participants who responded included 61 adult and adolescent patients (male = 29; female = 32; mean age = 30.4), and 11 child patients (male = 6; female = 5; mean age = 11.4) who attended psychotherapy with our team of 7 psychologists, at the NUH Neuroscience Clinic, from 25 March to 19 April 2013 (a period of 4 weeks). In terms of psychiatric diagnoses, majority were diagnosed with anxiety disorders, followed by bipolar, and comorbidity of anxiety with bipolar disorder. The other patients were diagnosed with personality disorders, anxiety with depression, adjustment disorder, autism spectrum disorder, depression, or had no specified diagnoses. Among the 11 child participants, 4 were diagnosed with anxiety disorder, 3 with bipolar disorder, and others with adjustment disorders, emotional disturbance, or anger management problems. Patients were informed by their respective psychologists at the end of their psychotherapy session on that survey day to rate the service received from their respective psychologists thus far. They were also informed that information collected would be anonymous, confidential, and for the purpose of psychotherapy service improvement. Participants would submit the completed survey into a survey box placed at the neuroscience clinic's payment counter, without going through their respective psychologists. Question items were finalised upon reference to the following established ratings scales on psychotherapy feedback: Working Alliance Inventory (Tracey & Kokotowitc, 1989), Outcome Rating Scale (Miller & Duncan, 2000), Questionnaire of Personal Changes (Krampen, 2010), and Psychologist Patient Satisfaction Survey (2012). The modified adult questionnaire consisted 10-item ratings, and 2 open-ended questions: "Examples of areas that I have improved because of psychotherapy" and "Other comments", allowing patients to feely express their service experience. Patients rated each item e.g. "I feel supported by my psychologist", "I find strategies taught in the sessions are helpful" on a 5-point Likert scale 1 (strong disagree) to 5 (strongly agree). The modified child questionnaire consisted 9 question items, with 2 similar open-ended questions. Item contents were similar to the adult version but simplified in wording. Patients rated each item eg. "I can trust my psychologist", "I can apply the skills at home and in school" on a 3-point Likert scale.

Results

Statistic tabulations were computed using Microsoft Excel. Results were presented in terms of graded mean averages for each question item. Upon mean average ranking, item contents with closest ratings were reviewed together as a group, on face value, and categorised wherever meaningfully possible.

Conclusion

Two important factors to psychotherapy effectiveness were highlighted in this survey: (i) Therapeutic alliance; and (ii) Application by patients outside of sessions or in naturalistic settings. Points for improvements for future sessions were noted: (Application) Helping patients to apply what was taught in therapy to their naturalistic settings; and (Communication) Enabling child patients to express themselves through other means (e.g. drawing, play therapy), apart from verbal expression.

Do the Attitudes toward Psychiatry of Medical Students in Singapore Differ from those Worldwide? An Eleven-city Comparison

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Introduction

Medical students' attitudes toward psychiatry are often a result of the sociocultural environment, and unless these future physicians eventually chose to specialise in psychiatry, the knowledge, interests, and attitudes formed at the end of their psychiatry rotation (often between 4 and 6 weeks) likely last through their medical careers. These negative attitudes are somewhat worrying as they could potentially affect both the personal and professional behaviours of future clinicians. This is perhaps even of greater concern in Singapore, an Asian society with an already high prevalence of stigma toward mental illnesses.

This study therefore sought to compare the levels of Singapore medical students' attitudes toward psychiatry globally with those of other cities, following a psychiatry rotation. It was hypothesised that there would be differences in the attitudes toward psychiatry between the undergraduate and graduate medical school students, and that, because of the stigma, Singapore medical school students would have less favourable attitudes toward psychiatry than their overseas counterparts would.

Methods

A total of 148 students from an undergraduate and graduate medical school in Singapore (51% male; 85% Chinese; 81% between 21 and 25 years) were compared to their counterparts in 5 cities in the United States (Albany, Albuquerque, Boston, Detroit, and Pittsburgh; n = 158), 3 cities in India (Nagpur, Mumbai, Amritsar; n = 231), 1 city in Ghana (Kumasi; n = 94), and another in Spain (Barcelona; n = 150). Participants completed the modified Attitudes to Psychiatry Scale (mAPS; Shankar et al, 2011), a 16-item measure ascertaining students' attitudes toward psychiatry on 4-point Likert-type scale, with higher scores reflecting more positive attitudes. The items on the mAPS are clustered around 4 themes: (i) Merits of psychiatry as scientific medicine; (ii) Effectiveness of treatment; (iii) Stigma of psychiatry; and (iv) Inspiration from medical school.

Results

There were no significant gender differences in attitudes. Contrary to the predicted hypotheses, analyses revealed no significant differences in attitudes toward psychiatry between the undergraduate and graduate medical school students. Further, cross-city comparisons revealed that medical school students in Singapore had significantly more positive attitudes than their counterparts in all the other cities except for those in the United States ($F[6,780] = 86.51$, $P < 0.001$). Subscale analyses revealed a similar pattern, with Singapore having significantly more positive attitude on mAPS I–III than India and Ghana, with similar levels to the United States and Spain ($Fs[6,780] = 20.74$ to 204.51, $Ps < 0.001$). Students in Singapore, however, seemed to have more positive attitudes toward psychiatry on the mAPS IV than all other cities ($F[6,780] = 46.30$, $P < 0.001$).

Conclusion

Psychiatry training programmes in Singapore have managed to effectively improve students' attitudes toward the field following a rotation, and that these attitudes are comparable to those in other developed Western countries and more positive than those in developing countries. Despite these positive findings, and in tandem with a global drive to improve mental health literacy, more still can be done in Singapore to alleviate the stigma and negative attitudes faced by patients with mental illnesses and halt the perpetuation of such damaging stereotypes even amongst healthcare professionals.

Medical Students' Perceptions of the Learning Environment during a Psychiatry Rotation

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Introduction

The educational environment forms an important component of the medical students' learning experience during a clinical rotation. However measuring the environment is complex as it encompasses not only the curriculum, clinical settings and learning opportunities but also relationships with teachers and peers, interprofessional experiences and socialisation. Understanding this learning environment is important as it provides greater understanding of students' needs and provides the opportunity to shape the environment to benefit clinical and professional development. The present study sought to determine students' perceptions of the learning environment at the end of their clinical rotation in psychological medicine.

Methods

This study was part of a larger self-report cross-sectional observational study determining undergraduate medical students' perceptions of their learning environment at the National University Hospital in AY2013 to 2014 (total n = 402); of the 108 Phase IV medical students that responded (response rate: 72%), 55 had completed the psychiatry rotation. The study had NUS Institutional Review Board ethics approval. Participants (87.3% Chinese; 54.5% male) completed the Dundee Ready Education Environment Measure (DREEM; Roff et al, 1997) and a modified version of the Johns Hopkins University School of Medicine Medical School Events Questionnaire (JHUSOM-MSEQ; Shochet et al, 2013) at the end of their clinical posting. The DREEM has been widely used to determine undergraduate medical environments in medical schools; it consists of 50 statements on a 5-point Likert-type scale ranging from "strongly disagree" to "strongly agree". Higher scores indicate satisfaction with the environment. The JHUSOM-MSEQ has 55 items listing events experienced by medical students on a 4-point Likert-type scale ranging from "not experienced" to "experienced—high impact". The modified version of the JHUSOM-MSEQ used excluded events not specific to the clinical posting.

Results

The total DREEM score was 141±19.5, indicating it was perceived as "more positive than negative" by 64.5% of the students. In the subscales, the scores were as follows: Perception of Learning, 33.9±5.6 ("more positive perception") by 74.5%; Perception of Teachers, 33.3±4.3 ("moving in the right direction by 50.9% with "model teachers" a close second with 47.3%); Academic Self-perception, 21.2 ±4.2 ("feeling more on the positive side" by 72.7%); Perceptions of the Atmosphere, 35.1 ± 4.6, ("a more positive atmosphere" by 72.7%); Social Self-perceptions 17.6 ± 3.6 ("not too bad" by 69.1%). On the JHUSOM-MSEQ, the top 3 experiences students scored as "high impact" (in decreasing order) were: Working with enthusiastic and motivating teachers; encountering inspiring role models; and having opportunities to participate in innovative curricula.

Conclusion

The findings validate that the many innovative practices and clinical teacher support and competencies have been recognised and acknowledged by the students themselves for their learning needs and experiences in the psychiatry rotation which for some may be the only learning opportunity in psychiatry for the rest of their careers. It provides an opportunity for the psychological medicine department to identify further areas that require attention and change.

What are Undergraduate Medical Students' Perceptions of their Learning Environment?

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Introduction

Medical students' learning environment (LE) has been recognised as vital for a high quality education and crucial for their professional and clinical development. The LE consists of more than the physical environment: it also encompasses the emotional and intellectual climate. Evaluating the LE provides not only an understanding of students' needs, but also a basis for change management and the opportunity to shape the environment to enhance professional formation and development. Medical students at NUS undergo different clinical rotations in Phase III and Phase IV of their undergraduate years. Phase V, the final year, is the Student Internship Programme: students repeat the important Phase III rotations and play a larger role within the clinical teams in preparation for independent functioning upon graduation. This study investigated medical students' perceptions of the learning environment in the National University Hospital (NUH) at the end of their clinical rotation in the different departments, hypothesising that students would perceive the environment as conducive, but that there would be differences amongst the different phases of their clinical education.

Methods

A total of 402 medical students in each of the Phases III to V who rotated through various clinical postings in NUH in AY2013 to 2014 completed the Dundee Ready Education Environment Measure (DREEM) and a modified version of the Johns Hopkins University School of Medicine Medical School Events Questionnaire (JHUSOM-MSEQ) at the end of each clinical posting. The DREEM has been widely used to determine undergraduate medical environments in medical schools and consists of 50 statements on a 5-point Likert-type scale ranging from "strongly disagree" to "strongly agree"; higher scores indicate satisfaction with the environment. The JHUSOM-MSEQ is a 55-item measure listing events experienced by medical school students on a 4-point Likert-type scale ranging from "not experienced" to "experienced—high impact". This modified version of the JHUSOM-MSEQ administered excluded events non-specific to the NUH clinical postings. This study was approved by the NUS Institutional Review Board.

Results

Analyses revealed significant differences in the DREEM scores between Phases III (145.9 ± 15.9) and V (138.4 ± 15.9) of the medical undergraduate programme ($t[292] = 4.23$, $P < 0.001$) and the DREEM Subscale scores (Ps < 0.001), with students in Phase V (final year of their education) scoring the lowest amongst the 3 phases. Analyses of responses on the JHUSOM-MSE indicated that students across Phases III to V rated similar experiences as having impacted their clinical environment in the rotation. The 3 most important highly impactful events experienced by students were related to teachers, specifically, "encountering inspiring role models", "working with enthusiastic and motivating teachers", and "participating in small-group teaching sessions".

Conclusion

Medical students face a range of challenges as they rotate through different clinical postings. Recognising and identifying these challenges require greater attention, even as there is pressure to ensure that as much knowledge is imparted and clinical skills are acquired. Clearly, for medical students, their clinical teachers provide the positive learning experience; it is thus of paramount importance to support and develop these capabilities in our mentors or role models.

The Experience with Standardised Patients (ESP) Scale: Development and Preliminary Validation

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Introduction

While there is a burgeoning use of standardised patients (SPs) in psychiatric education today to facilitate student learning in conducting mental state examinations (MSEs), no previous work has attempted to investigate and quantify students' experiences with the SPs during the MSEs. This study sought to develop and evaluate the psychometric properties of a self-report questionnaire, the Experience with SPs (ESP) scale, to determine these experiences in a psychiatry rotation.

Methods

The first phase involved in-depth face-to-face semi-structured qualitative interviews, led by the PI, with medical students (n = 10) who had completed their psychiatry rotation. The interview guide was prepared by 3 experts with numerous years of experience in teaching psychiatry, and covered students' learning experience, their ability to relate and empathise, skills acquisition and attitudes. The qualitative phase provided insight leading to the development of a large item pool around 3 main themes that emerged from qualitative analyses: (i) Students' experience of learning psychopathology and MSEs with SPs; (ii) Selection and training of SPs used in psychiatry teaching; and (iii) How students' clinical competencies and skills in MSEs could be improved. These items underwent content and substantive validation through a consensus from the same 2 experts and 2 medical students, and was piloted with 40 medical students for further feedback via the Delphi method. The final version of the ESP scale comprised 20 items on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree).

Results

The ESP scale was then validated with 160 medical students. Principal component analyses revealed a 5-factor structure (based upon eigenvalues >1); however, as 2 of these factors only had 1 item each, factor analyses were carried out using an orthogonal Promax rotation with a 3-factor model. This presented a 3-factor structure that supported the qualitative analyses: (i) Challenges in Learning MSE Using SPs (3 items; 9.67±2.45); (ii) Beneficial Effects of Learning with SPs (11 items 22.58±3.41); and (iii) Learning Experience (6 items; 14.02±2.87). The total and subscales had good internal consistency (αs = 0.72 to 0.86), and the average total score was 55.07 out of a possible 100, with higher scores reflecting a positive experience. To determine predictive validity, total scores were correlated with end-of-posting OSCE score (available for 106 medical students). There was no significant correlation ($P = 0.31$) on all items except for one, "SPs were useful in enabling me to learn communication skills", which was correlated with the OSCE final score ($r[106] = 0.30$, $P = .0002$); this was expected, given that there presently exists no concurrent measure upon which to validate the ESP scale. Combining pilot and validation data revealed that there was a significantly better learning experience for mood disorders than both neurosis ($t[199] = 5.10$, $P < 0.001$) and psychosis ($t[199] = 7.48$, $P < 0.001$).

Conclusion

This 20-item self-report scale is the first to assess medical students' experiences with SP in psychiatric education. The ESP is brief and not burdensome, and has established content, substantive, and some predictive validity. Further studies should determine discriminant validity, test-retest reliability, and the stability of the factor structure in other cross-cultural contexts.

Does Curriculum Change Improve Stigma toward Psychiatry Amongst Medical Students?

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Introduction

Physicians' attitudes toward psychiatry, often formed during brief rotations in medical school, may last throughout their medical careers. These quickly-formed attitudes, unfortunately, have far reaching implications that affect personal and professional behaviours, even amongst those involved in mental healthcare. Various opinion leaders in the field have recommended that underlying false beliefs be actively targeted for remediation in the medical school curriculum. In 2008, a study conducted with 146 undergraduate medical students at National University of Singapore (NUS) found that students' attitudes toward psychiatry, specifically in their appreciation of psychiatric treatment and the application of these skills to other disciplines, improved after a psychiatry rotation; however, these students' perceptions of psychiatrists and of psychiatry making little use of medical training, raised concerns about collegiality and professional conduct in

care delivery. Five years on, the psychiatry curriculum at NUS has undergone significant revisions: the psychiatry rotation is now a complete 6-week programme in Year 4, with opportunities for electives for clinical and research work. The present study is a follow-up of the earlier work.

Methods

Fourth year medical students (n = 100; age range: 21 to 25 years; 49% females; 87% ethnically Chinese) participated in this study during their psychiatry rotation in AY2013-2014 (response rate 76.9%). The NUS Institutional Review Board provided ethics approval. Participants completed the modified Attitudes to Psychiatry Scale (mAPS) at the start and end of their 6-week rotation.

Results

Analyses revealed significant attitudinal improvements with the rotation ($t[99] = -2.89$, $P = 0.006$), specifically in the following 2 domains: recognising the merits of psychiatry as scientific medicine ($Z = -3.09$, $P = 0.022$) and the effectiveness of psychiatric treatment ($Z = -4.74$, $P < 0.001$). There were, however, no improvements in the stigma of psychiatry ($Z = -0.52$, $P = 0.60$).

Conclusion

Despite changes to the curriculum, both samples of medical students in 2008 and 2013 were found to have non-significant improvements in their stigma of psychiatry following a psychiatry rotation. One possibility is that the curriculum revision addressed only attitudes, one component of the tripartite model of stigma (the others being knowledge and behaviours). Stigma is perhaps more deeply rooted and related to societal, cultural, and religious beliefs; it is thus more pervasive, associated with discrimination, and is an obstacle to treatment and recovery, with far reaching negative consequences and quality of life impairments for patients, especially those with medical and psychiatric comorbidities. It appears that conventional psychiatric education alone will not reduce stigmatising attitudes; knowledge to correct misinformation needs to actively focus attention on shaping medical students' perspectives of mental illnesses and addressing stereotypes. Students should have the opportunity to interact with and hear patients' stories about their mental illness experience with the opportunity to discuss these experiences with tutors. As NUS develops community health programmes for medical students, interactions with the mentally ill could be included for greater opportunities to understand mental illnesses, for the necessary steps to address the gaps in misinformation, and hopefully erode discrimination and stigma.

Validity and Reliability of the AD8 in Primary Healthcare Settings

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Introduction
The AD8 is a valid and reliable informant-based cognitive screening tool that has been primarily used in tertiary memory clinics. However, the validity and reliability of the informant AD8 in primary healthcare has not been established. Therefore, the present study examined the concurrent and construct validity, as well as the reliability of the informant AD8 at polyclinics.

Methods
Eligible patients (≥60 years old) attending 2 polyclinics, the government subsidised primary healthcare setting of Singapore in Choa Chu Kang and Clementi, were recruited from November 2013 to August 2014. The study was conducted in 2 phases. In phase 1, informants of patients' were screened using the AD8 in the waiting areas of the polyclinic. Patient-informant dyads then returned to the Memory Aging and Cognition Centre (MACC) for phase 2 within 2 weeks of their screening date. Performance based screening tools such as the Mini-Mental State Examination (MMSE) and Montreal Cognitive Assessment (MoCA); the Clinical Dementia Rating (CDR); and a comprehensive neuropsychological battery were administered during phase 2. The CDR was used for staging risk of dementia into following categories: low risk (CDR = 0), moderate risk (CDR = 0.5) and high risk (CDR ≥1).

Results
A total of 309 patients completed both phases. Of these, 237 (76.7%) had low risk; 31(10%) had moderate risk; and 41 (13.3%) had high risk of dementia. Compared to patients in the low risk group, patients with increased risk of dementia were found to be older; with lesser years of education; have higher AD8 scores; and worse performance on the MMSE and MoCA (P <0.001). Concurrent validity was measured by examining the correlation of AD8 with global CDR scores (R = 0.70, P <0.001), CDR sum scores (R = 0.60, P <0.001), MMSE (R = –0.39, P <0.001) and MoCA (R = –0.40, P <0.001). Strong correlations between AD8 items, CDR domains and performance on the neuropsychological battery (R ≥0.4) indicated good construct validity. The AD8 demonstrated exceptional internal consistency (Cronbach alpha = 0.85); strong inter-rater reliability (intraclass correlation coefficient t = 0.84, 95% CI, 0.76 to 0.89) and good test-retest reliability (weighted kappa = 0.80, 95% CI, 0.74 to 0.85).

Conclusion
The informant AD8 can accurately distinguish increasing levels of dementia risk. It also demonstrates good concurrent and construct validity, as well as excellent reliability in primary healthcare settings.

The Discriminant Validity of The Informant AD8 at Primary Healthcare Settings

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Introduction
The informant AD8 is equivalent to performance-based instruments such as the Mini-Mental State Examination (MMSE) and the Montreal Cognitive Assessment (MoCA) in detecting cognitive impairment in memory clinic patients. However, its utility for case finding in primary healthcare settings is unknown. Therefore, we compared the discriminant validity of the informant AD8 to the MMSE and MoCA for case finding in primary healthcare settings.

Methods
Participants were recruited from 2 primary healthcare clinics in Singapore. They were administered the informant AD8, MMSE, MoCA and the Clinical Dementia Rating (CDR). Area under the receiver operating characteristics curve (ROC) analyses were conducted to compare the discriminatory ability of the AD8, MMSE and MoCA.

Results
Among the 309 participants recruited, they were Chinese (73.1%), females (54.0%) with a mean age and education of 71.7 ± 8.2 years and 8.0 ± 4.9 years, respectively. Of these, 236 (76.4%) had CDR = 0, 32 (10.3%) had CDR = 0.5 and 41 (13.3%) had CDR ≥1. The informant AD8 has excellent discriminant validity in detecting CDR = 0.5 {AUC [95% confidence interval (CI)]: 0.82 (0.75 to 0.90), cut-off 1/2, Sensitivity: 0.81, Specificity: 0.75, Positive Predictive Value (PPV): 0.31, Negative Predictive Value (NPV): 0.97, Positive Likelihood Ratio (PLR): 3.25, Negative Likelihood Ratio (NLR): 0.25}; CDR ≥0.5 {AUC (95% CI): 0.91 (0.87 to 0.95), cut-off 1/2, Sensitivity: 0.92, Specificity: 0.75, PPV: 0.53, NPV: 0.97, PLR: 3.67, NLR: 0.11} and CDR≥1 {AUC (95% CI): 0.97 (0.95 to 0.99), cut-off 3/4, Sensitivity: 0.93, Specificity: 0.90, PPV: 0.59, NPV: 0.99, PLR: 9.56, NLR: 0.08}. It is also equivalent to the MMSE and MoCA in detecting CDR = 0 {AUC [95% CI]: MMSE [0.82 (0.75 to 0.89), P = 0.94], MoCA [0.83 (0.75 to 0.90),

$P = 0.97]$}, CDR ≥0.5 {AUC [95% CI]: MMSE [0.89 (0.85 to 0.93), $P = 0.50$], MoCA [0.90 (0.86 to 0.94), $P = 0.76$]} and CDR ≥1 {AUC [95% CI]: MMSE [0.94 (0.89 to 0.98), $P = 0.14$], MoCA [0.95 (0.92 to 0.98), $P = 0.21$]}.

Conclusion

The informant AD8 is equivalent to the MMSE and MoCA, and is sensitive for case finding in primary healthcare settings.

Percentile Curves Charts as Smooth Functions of Age for the Modified Mini-Mental State Examination to Assess Cognitive Function in Singapore

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Introduction

The assessment and monitoring of cognitive status over time in older adults is conventionally done using normative values of Mini-Mental State Examination (MMSE) based on age bands. This is imprecise, and population-based normative data on change in MMSE score over time are scarce and crude, as they do not include age and education specific norms.

Objective

This study aimed to develop unconditional standards for assessing current cognitive status and conditional standards that take prior MMSE score into account for assessing longitudinal change, using percentile curves as smooth functions of age.

Methods

Cross-sectional (n = 1995) and longitudinal data (n = 1507) of a modified version of MMSE for older Chinese adults in Singapore were used to estimate quantile regression coefficients and create unconditional standards and conditional standards.

Results

We presented MMSE percentile curves as smooth functions of age in education strata, for unconditional and conditional standards, based on quantile regression coefficient estimates. We found that the 5th and 10th percentiles were more strongly associated with age and education than the higher percentiles were. Model diagnostics demonstrated the accuracy of the standards. The unconditional standard classified 4.9% (95% CI, 4.0% to 5.9%) of the baseline MMSE scores below the 5th percentile and 9.8% (95% CI, 8.6% to 11.2%) below the 10th percentile. This agreed with the nominal levels. The probabilities of classification below these percentiles were not associated with the covariates, age, gender, education (Wald test, df = 1, each P >0.10). Similar model diagnostic results support the accuracy of the conditional standards.

Conclusion

The development and use of unconditional and conditional standards should facilitate cognitive assessment in clinical practice and merit further studies.

Repeatable Battery for the Assessment of Neuropsychological Status (RBANS): Normative Data in Elderly Chinese

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Introduction

The Repeatable Battery for the Assessment of Neuropsychological Status (RBANS) was developed for the specific purpose of identifying and characterising abnormal cognitive decline in the elderly. Asia will experience a surge in dementia prevalence within the next 20 to 40 years, but there is a dearth of well-normed neuropsychological tests to assist with dementia diagnosis. In Asia, the prevalence of illiteracy is high and educational systems differ markedly. Advanced age and lower education levels significantly influence neuropsychological tests scores. This study extended a previously published normative dataset in a larger sample of 1165 elderly Chinese participants and further investigated the effects of age, education, language and gender on the performance of the RBANS.

Methods

A total of 1165 male and female community-dwelling, cognitively normal elderly Chinese persons in the Singapore Longitudinal Ageing Studies (SLAS), with varying levels of education and range of languages, were tested with the RBANS Form A. A 3-way MANOVA was conducted

to investigate the effects of age, education and language on RBANS performance. Univariate ANOVAS for each RBANS subtest and index were conducted as follow-up analyses. Norms were established using descriptive analyses, yielding group means and standard deviations that were stratified by age and education.

Results

MANOVA analyses revealed significant main effects of age and education for the combined RBANS subtests and indices (all P <0.001). Follow-up univariate ANOVAs showed significant main effect of age for all RBANS indices (P <0.01) except the Visuospatial/ Constructional and Language Indices. The main effect of education was also found to be significant for all indices (P <0.01) except the Language index.

Conclusion

Unique cultural and educational profile of elderly Chinese should be considered when applying the RBANS. Normative data for neurocognitive assessment using the RBANS are now available for the first time in Singapore.

Cognitive Frailty: Construct and Predictive Validity in the Singapore Longitudinal Ageing Studies

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Introduction

Data supporting a causal association of physical frailty and cognitive impairment and the predictive validity of the cognitive frailty subtype are still lacking. We aimed (i) to evaluate the association of physical frailty with cognitive impairment or neurocognitive disorder (NCD), and (ii) to investigate whether co-occurrence of physical frailty and cognitive impairment, compared with physical frailty alone increased estimates of the risk of hospitalisation, functional disability, impaired quality of life, and mortality.

Methods

A total of 1575 (response rate 78%) community-living old Chinese adults from Singapore Longitudinal Ageing Study I (SLASI) were followed up for about 2 years. They were aged 55 and above, had no dementia, stroke and other neurodegenerative disorders at baseline. Frailty phenotype was defined using Cardiovascular Health Study (CHS) criteria, cognitive impairment was evaluated by Mini-Mental State Examination (MMSE), and NCD was measured by Clinical Dementia scale. Adverse health outcomes analysed included functional disability, hospitalisation, lower quality of life and mortality.

Results

Data of cross-sectional analysis showed that both frail and pre-frail status were associated with higher risk of cognitive impairment than robust (OR = 1.79, 95% CI, 1.19 to 2.71 for pre-frail; OR = 7.33, 95 % CI, 3.00 to 17.90 for frail) after controlling for confounding variables. Further longitudinal analysis demonstrated significant relationship between baseline pre-frailty and incident cognitive impairment OR =2.80, 95% CI, 1.35 to 5.79 for pre-frail), and marginal association between frailty and incident cognitive impairment. (OR = 4.41, 95% CI, 0.80 to 24.35 for frail). However, both frail and pre-frail statuses were not associated with the development of NCD. When cognitive impairment was incorporated into CHS frailty definition, frailty was significantly associated with ADL-IADL disability, lower PCS score and mortality. The risks for these 3 outcomes were remarkably increased in cognitively impaired frail participants than in the frail regardless of cognitive function. (OR 20.7 vs. 8.39 for ADL-IADL disability; OR 16.23 vs. 1.99 for PCS score, OR 5.12 vs. 1.49 for mortality).

Conclusion

In conclusion, physical frailty is a significant predictor of future cognitive impairment in the cohort of old Chinese adults after a 2-year follow-up. Addition of cognitive impairment to physical frailty improves the predictive validity of frailty.

Montreal Cognitive Assessment (MoCA): Evaluation for Screening Mild Cognitive Impairment in Singapore

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Introduction

The Montreal Cognitive Assessment (MoCA) was developed as a screening instrument for mild cognitive impairment (MCI), but its scoring and test characteristics in diverse groups is not well established. We evaluated MoCA test performance by educational groups among Singaporean Chinese older adults, and the relative contributions

of education vis-a-vis MCI diagnosis on MoCA score variations.

Methods

The study subjects included independent clinic-based samples of MCI cases (from National Neuroscience Institute and Khoo Teck Puat Hospital) and community-based sample of normal cognition (NC) controls from Singapore Longitudinal Ageing Study (SLAS). The MoCA and MMSE were evaluated using receiver operating curves analyses: area under curve (AUC), sensitivity (Sn) and specificity (Sp).

Results

The clinic-based sample was younger and better educated with higher overall mean MoCA and MMSE scores. The MoCA modestly discriminated MCI from NC in both study samples (AUC = 0.63 and 0.65): Sn = 0.64, Sp = 0.36 at cut-off of 28/29 in the clinic-based sample, and Sn = 0.65, Sp = 0.55 at cut-off of 22/23 in the community-based sample. MoCA test performance was least satisfactory in the highest (>6 years) education group: AUC = 0.50 (P = 0.98), Sn = 0.54 and Sp = 0.51 at cut-off 27/28. Overall, MoCA test performance was not better than the MMSE. In multivariate analyses controlling for age and gender, MCI diagnosis was associated with <1 point decrement in MoCA score ($\eta^2 = 0.010$), but lower (1 to 6 years) and no education was associated with 3 to 5 points decrement ($\eta^2 = 0.115$ and $\eta^2 = 0.162$) respectively.

Conclusion

The MoCA's ability to discriminate MCI from NC was modest in this Chinese population, because it was far more sensitive to the effect of education than MCI diagnosis.

The Singapore Youth Resilience Scale: Development and Validation

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Introduction

Resilience is multi-faceted and measurement scales should comprehensively capture the broad spectrum of known underlying dimensions of resilience. Patterns of resilience are also context-dependent, but there are no resilience scales that are suitable for use in adolescent population.

Objective

We developed and validated a resilience scale that encompassed the broad spectrum of known underlying resilience dimensions, and was culturally relevant and suitable for use among youths in Singapore.

Methods

The initial item pool was drawn from existing established resilience scales and original items proposed by the research team comprising paediatric psychiatrists, child psychologists and researchers. A series of focus group discussions, expert panel reviews and pilot testing resulted in the prototype Singapore Youth Resilience Scale (SYRESS). The factor structure of the prototype SYRESS was examined with an Exploratory Factor Analysis using principal components analysis. The Connor-Davidson Resilience Scale (CD-RISC), World Health Organisation Quality of Life (WHOQOL-BREF) and the General Health Questionnaire (GHQ-28) were used to evaluate the scale's convergent and predictive validity.

Results

Factor analyses revealed a 10-factor structure (total variance 63.4%) for the SYRESS The final 50-item SYPRESS showed good internal consistency (Cronbach's alpha = 0.95, P <0.01), test-retest reliability (r = 0.82, P <0.01) and convergent validity with the CD-RISC (r = 0.88, P <0.01), and predictive validity with WHOQOL-BREF (r = 0.55, P <0.01), and (GHQ-28) (r = –0.33, P <0.01). Hierarchical analyses showed that SYRESS significantly contributed additional variance to the prediction of the WHOQOL-BREF and GHQ-28 scores over that contributed by CD-RISC alone.

Conclusion

We recommend the use of the SYRESS among youths in Singapore.

The Academic Competitiveness Scale (ACS): Development and Preliminary Validation

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Introduction

Academic competitiveness amongst students is ubiquitous especially in Asian countries; however, there is an astonishing dearth of research on its measurement and relationships with performance and psychological sequelae

such as depression, anxiety, and even suicidal ideation. Meta-analytic reviews in relation to motivation have shown that competitiveness is primarily motivated either by hyper-competitiveness, a strong desire to win, often at the expense of others, or by competitiveness for personal development and improvement. Hyper-competitiveness has been associated with social comparison and evaluation apprehension, which may lead to larger magnitudes of perceived failures; this desire to outperform others, we feel, most clearly defines academic competitiveness in an Asian education context, even up to the undergraduate level. Because this is a relatively new area of research, in the present study, we sought to develop and preliminary validate a measure of academic competitiveness (the Academic Competitiveness Scale (ACS)) that may eventually prove useful in investigating its effects on academic performance and psychological outcomes.

Methods

In Phase 1, we generated an initial pool of items that we sent to judges for evaluation. After refinement, these items, together with items on social desirability (SD) were included in a questionnaire electronically administered to a sample of 223 undergraduates (64% female; 94% Chinese; 21.4±1.9 years) at the National University of Singapore, the responses of which were used for Phase 2. In Phase 2, we carried out an exploratory factor analysis allowing for the selection of items with high loadings onto latent factors. These we put through further item analyses before coming up with the final scale of items.

Results

In total, 81 items generated in Phase 1 and centred around 2 themes (the desire to win and the determination to win) were evaluated independently by 3 subject matter experts who had an acceptable inter-rater reliability coefficient (0.62 to 0.65). A total of 13 items with a low content validity ratio were removed, and another 10 were reworded for clarity. The 68 items and the SD M-C1 (Strahan & Gerbasi, 1972) were administered to Phase 1 participants on a 5-point Likert-type scale, with higher scores reflecting greater competitiveness. Phase 2 data was suitable for item analyses; however, 5 items had high correlations with M-C1 and were removed. Established strict triad criteria (Kaiser 1960; Cattell, 1966; Horn, 1965) suggested retaining 4 factors (53% of solution variance), extracted through a Promax rotation (Thompson, 2004). Three iterations suggested the removal of 38 items based on established criteria (Stevens, 1996; Worthington & Whittaker, 2006). Three items with inter-item correlations exceeding recommended values (Clark & Watson, 1995) were removed, resulting in a 22-item ACS ($\alpha = 0.89$) with 3 factors: importance of academic competition; determination to win; and selfishness (αs = 0.78 to 0.88; rs = 0.44 to 0.56).

Conclusion

To the best of our knowledge, the ACS is the first measure of academic competitiveness, and therefore, one of the first few steps in systematically investigating the widespread psychological sequelae arising from negative experiences or failures in academically (hyper-) competitive individuals or situations. Future work should target establishing test-retest reliability as well as divergent validity in other representative samples.

Validating the Meaning-Making Model in Asia

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Introduction

The act of making meaning facilitates individuals' coping with, and adaptation to, stressful and traumatic situations; however, little is known about the methods through which meaning-making conveys these benefits. Extending Janoff-Bulman's (1992) Theory of Shattered Assumptions to everyday stressors, Park's (2010) Meaning-Making Model (MMM) postulates that when individuals perceive major discrepancies between how the world truly is and how they think it should be (belief violations (BV)) or want it to be (goal violations (GV)), they experience higher levels of distress. Therefore, reconciling these violations through meaning-making would result in meaning-made, and, therefore, higher levels of well-being. This model, however, has only been validated cross-sectionally in a predominantly religious sample of undergraduate students in the US. The present study, therefore, seeks to cross-culturally validate the MMM longitudinally in a sample of Asian undergraduate students. It was hypothesised that situational meaning-making (SM) would mediate the relationships between violations and meaning-made.

Methods

In total, 280 undergraduate students from National University of Singapore participated in this ethics-approved study at baseline, but only 128 (60% female; 88% ethnically Chinese; Mage = 20.8 ± 1.6 years, range: 18 to 24 years) completed the 1-month follow-up assessment (46% follow-up rate). At baseline, participants completed a self-report, specific to their most stressful experience in the past 6 months, assessing the degree to which this resulted in

violations (i.e. BV and GV; Park, 2008). At follow-up, participants completed a related self-report assessing them on the amount of meaning-making they engaged in as a result of the aforementioned stressor (i.e. SM; Core Beliefs Inventory; Cann et al, 2010) and the amount the stressful event altered their life philosophy or self concept (i.e. meaning-made; LP or SC, respectively; Lim et al, 2013).

Results

Mediation analyses revealed that SM fully positively mediated the relationships between BV and both LP (R^2 = 0.22; F[2,127] = 18.7, P <0.001; Sobel's z = 3.4, P <0.001) and SC (R^2 = 0.32; F[2,127] = 28.8, P <0.001; Sobel's z = 3.8, P <0.001), as well as GV and both LP (R^2 = 0.23; F[2,127] = 18.7, P <0.001; Sobel's z = 3.5, P <0.001) and SC (R^2 = 0.32; F[2,127] = 28.7, P <0.001; Sobel's z = 4.0, P <0.001). Meaning-making therefore seems to positively and fully mediate the relationships between violations and meaning-made.

Conclusion

Findings from this study provide the first longitudinal and cross-cultural validity for the MMM in a relatively non-religious Asian undergraduate population. These results also suggest that facilitating meaning-making, and perhaps even a tendency to make meaning, from everyday stressors may assist individuals in coping with and adapting to unexpected situations that violate either their beliefs or goals. Elements of meaning-making-based interventions (MMBIs) can therefore possibly be used in everyday counselling for non-traumatic stressors and may potentially assist in the management of chronic stressors. Future studies, however, are still needed to ascertain the impact of meaning-making and meaning-made on psychological and psychiatric sequelae, and explore if improving trait, and not just situational, meaning-making would facilitate this relationship.

Using the Strengths and Difficulties Questionnaire as a Screening Tool for Psychopathology in a Sample of Singaporean Children

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Introduction

Screening tools such as the Strengths and Difficulties Questionnaire (SDQ) help to assess psychopathology in children and adolescents, where satisfactory psychometric properties have been obtained in European populations (Goodman, 1997). However, the use of the SDQ in countries outside of Europe is increasing but its cross-cultural validity as a screening tool is limited (Rotheberger & Woerner, 2004).

Objective

This study examines the clinical utility and predictive values of the SDQ in a sample of Singaporean students by looking at the sensitivity and specificity of the SDQ.

Methods

Participants consisted of a total of 103 students ranging from 6 to 18 years old who were referred to the REACH (Response, Early intervention and Assessment in Community mental Health) programme at the National University Hospital, Singapore. These students were diagnosed with either an anxiety disorder, mood disorder or disruptive disorder by a clinical interview which served as the criterion measure. The Total Difficulties Score of the SDQ from the parents and teachers were used as the variable.

Results

The sensitivity of the teacher-rated SDQ was found to be 68%, and the sensitivity of the parent-rated SDQ was 50%. These values were higher than the results reported by the study by Goodman et al (1997), which found the sensitivity of the teacher-rated SDQ to be 29.8%, and the parent-rated SDQ to be 34.5%.

Conclusion

Despite having a sensitivity level below the recommended value for an effective screening tool, the SDQ shows higher clinical utility when reported by teachers, compared to parents' report in Singapore.

Modified Clinical Dementia Rating Scale without an Informant: A Validation Study

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Introduction

An informant's report is essential for the Clinical Dementia Rating Scale (CDR) to assess the cognitive function of older persons with and without dementia. However, an informant's report is often lacking or difficult to obtain for various reasons such as for older persons living alone in the community. We modified the CDR assessment protocol to include in-situ observations of the subject and evaluate the reliability and validity of the CDR assessment with no informant (CDR-NI).

Methods

The Mini Mental State Examination (MMSE) and Montreal Cognitive Assessment (MOCA) were used to select cognitively impaired (MMSE or MOCA <26) elderly from the Singapore Longitudinal Ageing Study Wave II. Among them, consenting participants who could communicate without an informant were interviewed using the modified CDR-NI Scale and were independently assessed by a clinical assessment panel using Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-SCID IV (DSM IV) criteria for dementia. Cronbach α, Pearson correlation, Kappa and ANOVA were analysed for internal consistency, inter-rater and test-retest reliability and agreement of the CDR-NI.

Results

Out of 90 eligible participants, 36 (41%) were clinically diagnosed with mild cognitive impairment (MCI) and 4 (4.4%) with mild dementia.

The internal consistency (Crohnbach α) for each rating was 0.83 to 0.84. The Kappa statistics (P <0.001) of inter-rater agreement ranged from 0.77 to 1.00 for 6 domains, and 0.95 for global score. Test-retest reliability ranged from 0.75 to 1.00 for 6 domains and 0.80 for global score. Kappa for agreement between Global CDR score and clinical assessment by DSM IV was 0.79. CDR-NI severity grades were significantly related to MMSE, MOCA, IADL and BADL measures of cognitive and functional impairment.

Conclusion

The CDR-NI showed good reliability and validity in assessing dementia without an informant report.

Validation and Reliability of the Geriatric Depression Scale (15-items) among Older Singaporeans

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Introduction

This study aimed to evaluate the criterion validity and reliability of the Geriatric Depression Scale (15-items) (GDS-15) and its equivalence across different gender, age groups, ethnicity and different comorbidities in community-living elderly and nursing homes residents.

Methods

English, Chinese, Malay versions of GDS-15 were administered face-to-face by trained research nurses for 4253 non-demented older persons (age ≥60 years), who regularly used community-based care corner, senior activity centre, day care centre, sheltered homes and nursing homes, and repeated at 2 weeks on a subsample of the participants. DSM IV (Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition-SCID IV) diagnosis of major depressive disorder (MDD) was made independently by a medically qualified researcher with psychiatric training with structured clinical interviews within 2 weeks after GDS screening.

Results

A total of 338 (7.8%) were depressive symptoms positive and 147 (3.5%) were clinically diagnosed as depression. GDS has sensitivity of 0.96 and specificity of 0.95 at cut-off of 4/5. GDS scores were stable for 2 weeks (ICC test-retest reliability 0.83, and reliable among independent raters (ICC interrater reliability 0.94. Cronbach's alpha was 0.80. There were no clinically significant differences in test performance among different age, gender, ethnicity and comorbidities at cut-off of 4/5.

Conclusion

The GDS-15 is a reliable and valid screening instrument for major depression across different age, gender, ethnicity and chronic illness status in the community and social service setting.

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