The Hong Kong Polytechnic University
Centre for Gerontological Nursing

NEWSLETTER

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DIRECTOR'S MESSAGE

Frailty is prevalent among older people in Western Pacific Region, particularly those in lower-income countries in Southeast Asia and East Asia. Frailty is associated with higher disability, institutionalisation and mortality risk. This research evidence, given by Dr Stefanos Tyrovolas, months earlier in a webinar (Click here to learn more), has served as a stark reminder that targeted interventions to prevent or reverse frailty or slow its progress are indeed of urgent need in our region.

In this issue, we are going to review CGN's efforts in managing frailty. Dr Daphne Cheung and Dr Lily Ho's studies identified the factors associated with frailty transition, which have laid the groundwork for other members to review the effectiveness of existing interventions or develop new interventions to fit the needs of local older people.

Our proposed wearable activity tracker based exercise intervention attempted to encourage frail older adults to adopt a more physically active lifestyle. The massive open online course on frailty, launched in 2020, has informed local and global learners of the health outcomes of frailty and supporting them to manage frailty of themselves and others. Recently, our investigation on ageing of local centenarians provided the public's tips on ageing well.

We have worked extremely well throughout the year. At the end of the year, I am pleased to see our young member awarded Distinguished Educator in Gerontological Nursing at the international level and our experienced member ranked top pain management expert in Asia and Mainland China. During this festive season, I would like to take this opportunity to wish you and all CGN members a Merry Christmas and a Happy New Year!

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RESEARCH and EDUCATIONAL ACTIVITIES

Identify factors associated with frailty transition

Frailty is a dynamic and transitional process[1]. Identifying the factors associated with frailty transition (robust, pre-frail and frail), means providing evidence-based information for colleagues and healthcare professionals to develop target interventions for reversing or delaying the transition to frailty.

Dr Daphne Cheung (Principle Investigator & Assistant Professor) and the CGN members carried out a secondary data analysis of a CGN 5-year longitudinal study to explore the factors associated with frailty transition. The parent study adopted continuous sampling to track the change of health status of older adults aged 60 or above. 306 participants, recruited from the local community and residential care settings, who had undergone at least two assessments within the 5-year period were selected for analysis. The research team compared the baseline characteristics of participants at the frail, pre-frail, and robust states (categorised using the Fried Frailty Index) and used a generalised estimating equation to identify factors associated with frailty transition. The probability of transitions between frailty states was also calculated.

The results showed that the three main factors contributing to a decline in frailty states were: worse cognitive status, more dependent in activities of daily living (ADL), and slower mobility in the timed up-and-go (TUG) test. Sleep difficulties, poor nutritional status, hearing impairment, poor quality of life also led to a transition to a more frail state. Participants with higher physical activity, no hearing impairment, and faster mobility in TUG showed improvements in frailty state.

Access to the article: 10.1111/jnu.12588

In the scoping review aiming at identifying factors associated with frailty transition in short-term, intermediate-term, and long-term in community-dwelling older people aged 60 or above, **Dr Lily Ho** (Leading Author & Clinical Associate) and her team identified 21 observational studies (two from Hong Kong) with sample sizes that varied from 237 to 4518 and follow-up periods that ranged from 2 to 17 years.

The results showed that life course characteristics, diseases, and psychological factors were related to frailty transitions at all follow-up intervals. Protective life course characteristics included being female, consuming more fruits and vegetables, greater wealth or socioeconomic status, a higher level of education, and a healthy lifestyle. Psychological factors included cognitive function and humour. Better cognitive function was a protective factor. Chronic disease caused a loss of physiological reserve in multiple body systems, such as musculoskeletal and cardiovascular, therefore was a risk factor for frailty transition.

Access to the article: 10.1016/j.gerinurse.2020.10.005

[1]Hoogendijk EO, Afilalo J, Ensrud KE, Kowal P, Onder G, Fried LP. Frailty: Implications for clinical practice and public health. Lancet. 2019; 394:1365–1375.

CGN's interventions for frailty

Nutritional intervention

Ms Joanna Yin (PhD student), **Dr Justina Liu** (Associate Professor) and the research team conducted a systematic review to examine the effectiveness of nutritional advise compared with usual care, or exercise alone or combined with nutritional advice as a means of improving the body weight, body composition, physical function, and psychosocial well-being of frail older people with obesity.

The team identified eight articles from two studies with a total of 137 participants and performed a meta-analysis with respect to body weight and fat mass. The results showed that nutritional advice was more effective than exercise in reducing body weight and fat mass. The nutritional advice was also beneficial in enhancing physical function and psychosocial well-being. However, it was less effective than exercise or combined interventions in increasing muscle strength and preventing lean mass loss. The limited number of studies included in this review suggests a need for more well-designed interventional studies to confirm these findings.

Access to the article: https://doi.org/10.3389/fnut.2021.619903

Activity tracker-based exercise

Dr Justina Liu, **Dr Rick Kwan** (Assistant Professor), **Ms Joanna Yin** and the research team carried out a pilot study to examine the feasibility, and preliminary effects of a wearable activity tracker (WAT) based exercise intervention in increasing physical activity levels in frail older adults.

The study involved 40 community-dwelling frail older adults. The experimental group received a 14-week WAT-based group exercise intervention, which consisted of centre-based physical training, behavioural change techniques (BCTs) delivered by the activity trackers, and a 3-month follow-up. The control group that had not been given the activity trackers received similar physical training but learnt the BCTs through human contact.

The average attendance rate was 85.2% and 82.2% in the WAT and control groups, respectively. Adherence to wearing the activity trackers was 94.2% and 92% during the intervention and follow-up periods. This finding suggests that wearable activity trackers are welcome by the participants.

A significant interaction effect between time and group was found in all of the physical assessments, including the TUG test, the 30-s Chair Stand Test and the Two-Minute Walk Test, in baseline (T0) and one week (T1) and 3 month (T2) post intervention. Significantly better performances in these physical assessments and the amotivation domain of Chinese Behavioural Regulation in Exercise Questionnaire-2 (C-BREQ-2) were found between T0 and T1in the intervention group, but not in the control group.

RESEARCH and EDUCATIONAL ACTIVITIES

No significant difference between the groups was observed in any daily activity level by the ActiGraph measurement (in T0 and T1). However, a significant decrease in time spent in moderate to vigorous physical activity (MVPA) and peak cadence per week between T0 and T1 was identified only in the control group. Moreover, the majority of the WAT group's ActiGraph measurements reverted to baseline levels at the 1-month follow-up, meaning that sustaining the effects after the intervention remains a major challenge.

Access to the article: https://doi.org/10.3390/ijerph181910344

MOOC course on frailty

To enhance understanding of local and global audiences on frailty and promote frailty management, CGN members including **Dr Justina Liu**, **Dr Rick Kwan**, **Dr Daphne Cheung** and **Dr Patrick Kor** (Assistant Professor) delivered a massive open online course (MOOC) "Frailty in Daily Living" from January 2020 to January 2021.

The course enrolled over 1000 learners, received very positive comments and won the Faculty Award in Teaching (2019/20) from PolyU's Faculty of Health and Social Sciences.

The four-week course was offered by the HKPolyUx* and delivered via the edX* platform. CGN members were instructors to introduce the theories, risk and protective factors, assessment methods, and interventions of frailty, as well as association between frailty, cognitive functions and nutrition to audiences.

*HKPolyUx is an online platform established to facilitate online learning. PolyU is an institutional partner of the edX Consortium, an e-educational platform founded by Massachusetts Institute of Technology and Harvard University.

Frailty in Daily Living-the first MOOC course led by CGN members.

Demonstrative videos were produced for the MOOC course to enhance learners understanding of frailty.

Members received HMRF support to conduct research on COVID-19 and dyadic pain

Prof. Angela Leung (Professor)**, Dr Stefanos Tyrovolas** (Research Assistant Professor), **Dr Justina Liu** and **Dr Mimi Tse** (Associate Professor), received a total of over 18 million grants from the Health and Medical Research Fund (HMRF) of the Food and Health Bureau, Hong Kong Government. The COVID-19 related projects are commissioned research studies that aim to enhance COVID-19 related health literacy, deliver personalised treatment, and reduce physiological and psychosocial distress for Hong Kong citizens during the pandemic. Dr Mimi Tse's research study explores the effectiveness of a Dyadic Pain Management Programme for community-dwelling older adults with chronic pain and their informal caregivers.

Chief Investigator	Project Title	Funding amount HK$
Prof. Angela Leung	Digital health literacy on COVID-19 for All: Co-creation and evaluation of interventions for ethnic minorities and Chinese people with chronic illnesses in Hong Kong	5.5mil
-Dr Stefanos Tyrovolas (Co-chief Investigator) **-Dr Lin Yang (Lead Investigator & Associate Professor)**	Development of precision prognosis and diagnostic biomarkers for the personalised treatment and monitoring of COVID-19 patients	4.14mil
Dr Justina Liu	A smart health 3P (Prevention, Protection, Progression) platform for people with physiological and psychosocial distress under the influence of COVID-19	6.9mil
Dr Mimi Tse	Effectiveness of a dyadic pain management programme for community-dwelling older adults with chronic pain: a cluster randomised controlled trial	1.5mil

Grant received for study improving caregivers' wellbeing

Dr Shan-shan Wang, Postdoctoral Fellow, received the Nethersole Institute of Continuing Holistic Health Education (NICHE) Research Grant of a sum of HK$120,000 for supporting her project titled 'Effects of Electronic Bibliotherapy on Improving the Well-Being of Informal Caregivers of People with Dementia: A Pilot Randomised Controlled Trial'.

FEATURES

How well centenarians are ageing in Hong Kong?

Hong Kong has the highest life expectancy in the world but we know very little about how well local near-centenarians and centenarians are ageing. Funded by Sik Sik Yuen (SSY), a religious charitable organisation providing medical, education and elderly services in Hong Kong, Dr Justina Liu's team (Principle Investigator)** collected quantitative and qualitative data from the research participants aged 85 or above, recruited from ten community centres for older people run by SSY.

To generate a full picture of how well the oldest-old are ageing in Hong Kong, the research team had to understand how they were living physically, psychological, socially, and spiritually. 151 participants completed a cross-sectional self-reported health survey and series of health assessments. In addition, their Life Space Mobility was assessed by Global Positioning System (GPS) via a smartphone and their Moderate to Vigorous intensity Physical Activity (MVPA) was measured by a wrist-worn ActiGraph GT3X+ accelerometer. Twenty-two participants identified of achieving healthy ageing were interviewed to find out the factors leading to their ageing well.

In general, all participants were in good health although most of them have at least one chronic disease. They could live independently in the community despite their high age. In average, they spent about 38 minutes of moderate to vigorous physical activity per day (World Health Organization recommends about 30 minutes of physical activity on five days a week). Their daily average step count was about 9600 per day. These figures are better than some of the younger adults with a sedentary lifestyle.

Three themes contributing to ageing well were identified from the 22 interviewees: (i) maintaining functional capacity, (ii) staying positive, (iii) satisfying with the support received. Barriers to living a happy oldest life were also identified, which include: deteriorating physical health, financial insecurity, feeling like a burden to others, living with Covid-19 and social distancing, and aches all over the body that affect the quality of life.

A press conference was held by SSY on 5 November. **Dr Justina Liu, Dr Rick Kwan and Dr Patrick Kor** were invited to attend the event and announce their research findings. The research team expressed that the experience shared by the local near-centenarians and centenarians helps increase the public's awareness of healthy ageing and improve elderly care service, as well as provide valuable tips for people to age well. The findings can also be used for developing strategic plans to address the challenges of ageing population in Hong Kong.

Furthermore, the research showed that during the COVID-19 pandemic, more than 80% of the interviewees spent their time in their apartments and the nearby areas to prevent being infected. The reduction in outdoor activity caught the attention of the team. The research team is identifying how the community-dwelling oldest-old perceived well-being during the COVID-19 pandemic and exploring sarcopenia and its association with life-space mobility and moderate-to-vigorous physical activity in the oldest-old when a physical distancing policy is in force.

Centenarians shared their secrets of living well at the press conference. [In the photo, second row, from left]: Dr Patrick Kor, Dr Rick Kwan, Dr Justina Liu and Ms Jay Wong (Research Associate) reported the research findings.



Measuring of the participants' physical activities. [Left photo]: Wrist-worn ActiGraph GT3X+ accelerometer to measure moderate to vigorous intensity physical activity. [Mid & right photos]: Life space mobility was assessed by Global Positioning System via a smartphone.

The press conference attracted more media attention. Dr Justina Liu (1st from left) on air talking about the research findings for a RTHK radio programme on health issues.

** Dr Patrick Kor, Dr Rick Kwan, and Ms Jay Wong.

OUR PEOPLE


Dr Patrick Kor was awarded the National Hartford Center of Gerontological Nursing Excellence (NHCGNE) Recognition Programme for Distinguished Educator in Gerontological Nursing. Following Prof. Angela Leung and Dr Daphne Cheung, he is the third CGN member receiving this honour.

Prof. Angela Leung's project 'Changing the Way We Prevent Diabetes: The Use of Mobile Application (project no. 29150794; funded by the Health and Medical Research Fund) was awarded the Excellent Health Promotion Project Award by the Food and Health Bureau (FHB), HK Government. The award was presented to Prof. Leung and her research team at the Health Research Symposium 2021, organised by the FHB on 23 November.

Under Secretary for Food and Health, Dr Tak-yi Chui, JP, presented the award to Prof. Angela Leung's team.

Dr Mimi Tse is ranked sixth in Asia and FIRST in Mainland China among the Pain Management Experts recognised by Expertscape, a PubMed-based algorithms that ranks persons and institutions according to their demonstrated expertise in specific medical diseases, conditions, and treatments. Expertise is calculated from publications in the scientific literature. Click here to see Dr Tse's rankings.

OUR PEOPLE

Prof. Angela Leung was an invited Guest Editor for the special issue 'New Advances in Dementia Care' of the *International Journal of Environmental Research and Public Health* (Impact factor 3.390). On 4 October, She was invited to deliver a plenary address under the theme 'Health Literacy and Digital Health' at the Global Health Literacy Summit.

Ms Angel Tang, Clinical Instructor, completed the Doctor of Philosophy (supervised by Dr Mimi Tse, Dr Sau-fong Leung, and Dr Theofanis Fotis [University of Brighton, UK]) offered by the School. Her PhD degree was conferred at the PolyU 27th Congregation in November. Congratulations!

After years of leading the CGN, Prof. Angela Leung has passed the torch on to **Dr Justina Liu**, who has taken up the role as Director of the Centre. We thank Prof. Leung for her leadership and great contribution to the Centre. Prof. Leung is going to take up the post of Associate Head of the School, steering research development.

CURRENT ISSUES

(3-6 Nov)

Dr Rick Kwan, Dr Justina Liu, and Dr Daphne Cheung (5th to 7th from left in the photo) showcased their latest work: the Virtual Reality (VR) Motor-Cognitive Game-based Training System, the VR games for healthcare students to experience cognitive disorders in older adults, and the Music-with-Movement Programme, at the Gerontech and Innovation Expo cum Summit, the largest gerontechnology public education event in Hong Kong.