The Hong Kong Polytechnic University
Centre for Gerontological Nursing

NEWSLETTER

JAN – MAR 2022
Issue 1

DIRECTOR'S MESSAGE

Caring for persons with cognitive impairment and their caregivers is one of the key research areas of the CGN. For the past decade, our members have made extraordinary efforts in developing innovative interventions for improving the health and quality of life of persons with dementia and their caregivers. These innovations included Cognitive Stimulating Play Intervention for dementia, using smartphone to measure gait and life-space in older people with mild cognitive impairment to assess their physical and cognitive functioning, and using music to de-escalate agitation of persons with dementia.

Among those, Dr Daphne Cheung (Assistant Professor, Deputy Director of CGN) and her team's exploration of Music-with-Movement (MwM) intervention is one of the most remarkable research achievements. As early as 2008, the team invented the MwM intervention. After a series of test with positive results and effectiveness proven, the MwM intervention have been implemented in the community. To ensure the sustainability of the intervention, informal caregivers and staff of the nursing homes were trained to deliver the MwM intervention.

Daphne's work is an exemplary of dedication changing existing practice and creating impacts to the society. In this issue of the newsletter, we will overview the latest development of the MwM intervention and see how two young CGN members have been inspired to use technology to develop new interventions for supporting the wellness of persons with dementia and their informal caregivers.

Finally, in March, amid the soaring number of Covid-19 outbreaks at residential care homes, the CGN swiftly coordinated and organised our members to help the distribution of donated medical supplies to staff and residents of the care homes. Some of our members have been devoting themselves in assisting in conducting Covid-19 RT-PCR test or supporting the Telehealth service at a public hospital. I would like to take this opportunity to commend all CGN members for your commitment to protecting the health of Hong Kong people against the Omicron variant of COVID-19.

Enjoy reading!

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Director, CGN

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RESEARCH and EDUCATIONAL ACTIVITIES

A Stand-alone Therapeutic Music-with-Movement Programme for Elderly with Cognitive Impairment

Older adults with dementia experience anxiety, depression, or other behavioral and psychological symptoms. To reduce these symptoms, as well as help caregivers manage stress of caregiving, **Dr Daphne Cheung (**Principal Investigator; Assistant Professor**) and her team*** developed the first-of-its-kind interactive Music-with-Movement (MwM) System that integrates modern technology. The system will be implemented in about 50 institutes (including community service centers and residential care homes) and 1,000 older adults with dementia will participate in this new innovative MwM System. It is expected that the results will show positive health outcomes in multiple areas, such as cognition, mood, and agitation.

The MwM system was created with the support of HK$ 4.75 million from the Innovation and Technology Commission (the Innovation and Technology Fund for Better Living) and HK $500,000 from the Ho Cheung Shuk Yuen Charitable Foundation.

In addition to the application of augmented reality (AR) technology, the system uses 70 sets of tablets to facilitate the interventions and provide interactive experiences for users. It provides four musical games and the music (mainly pop songs from 1940s to 1980s) were specially selected by registered music therapists to recall participants' memory. User's health conditions and engagement level are tracked by an intelligent cloud-based management platform through the motion sensors embedded in the specifically designed musical instruments.

This project adopts a train-the-trainer approach. Staff at the participating elderly care institutes will be recruited to complete eight sessions of training to take up the role as a facilitator to deliver the MwM activities up to 12 weeks.

Well-being of the participants will be monitored at baseline, post-intervention, and 3-month follow-up. Facilitators' knowledge and attitudes on dementia will also be assessed prior training and post-intervention. The research team is recruiting nursing students to help assess the engagement of older adults during the interventions and the fidelity of facilitators in delivering the interventions.

The School's MwM intervention was developed in 2008. It is Hong Kong's FIRST Music-with-Movement intervention that actively engages people with dementia in activity (not simply receptively listening to music) to improve their wellness. Followed by a series of test with positive results and effectiveness proven, the intervention was implemented in the community in 2018-2019. The new MwM system is a step forward taken by the CGN team to make use of modern technology to enhance participants' engagement in the Music-with-Movement intervention for achieving psychological well-being of people with dementia and their family caregivers.

*Team members: Dr Lily Ho [Deputy Coordinator; Clinical Associate], Dr Claudia Lai [Honorary Professor], Dr Harry Qin [Associate Professor]. External members: Ir Dr Alan Lam, Chairman of the Board of Logistics and Supply Chain MultiTech R&D Centre, the Board of Hong Kong Academy of Gifted Education, and Chairman of Sengital Group; Prof. Ken Ho, Assistant Professor, The Nethersole School of Nursing, CUHK.

RESEARCH and EDUCATIONAL ACTIVITIES

With the support of AR technology, participants' engagement using the musical instruments were shown on the plasma display panel.

Left photo: The system provides four musical games. Right photo: Specifically designed musical instruments with sensors to track the engagement level and health conditions of the participants.

In addition to Dr Daphne Cheung's more than ten years of effort in developing MwM intervention for relieving stress of caregivers and improving the wellness of people with dementia, two younger CGN members, Dr Patrick Kor and Dr Shanshan Wang, are investigating the effects of biofeedback plus mindfulness, as well as electronic bibliotherapy in supporting caregivers' physical and mental health.

Biofeedback and mindfulness training to reduce stress for family caregivers of people with dementia

Mindfulness-based intervention has shown promising results on stress reduction. However, caregivers of people with dementia (PwD) usually are heavily engaged in caring tasks, which results in giving up a regular mindfulness practice. **Dr Patrick Kor** (Principal Investigator; Assistant Professor) and his team** makes use of consumer-grade wearable devices to provide biofeedback experience to help caregivers maintain their mindfulness practice.

The device involves wearing a sensor on the waist that monitors breathing patterns, heart rate, electrodermal activity, and sleep quality of users. Information about the body and mind, which may not be noticed by stressful caregivers, such as tensed muscles, increased heart rate is shown in the device to alert caregivers of their physical and psychological condition. This visualised experience, together with the brief mindfulness training offered by the research team, is expected to help caregivers adhere to mindfulness practice, and lead to reduction in stress, depression, anxiety, and better control of health.

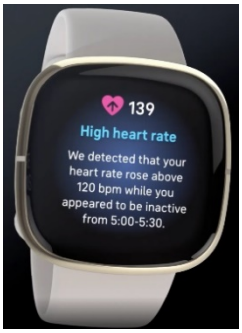
This research project+ adopts a prospective, parallel group, randomised controlled trial. Thirty-six community-dwelling family caregivers of PwD will be recruited. The primary outcome (stress) and secondary outcomes (depression, anxiety, and the behavioural and psychological symptoms of the care recipients) will be measured at mid-point of the intervention, immediately post-intervention, and comparisons will be made with the baseline data. Focus group interviews will be conducted to understand the strengths and limitations of different therapeutic components and identify participants' difficulties in using the devices and receiving the mindfulness training.

RESEARCH and EDUCATIONAL ACTIVITIES

Recently, Dr Kor received the funding with an amount of HK$ 845,120 from the Early Career Scheme of the Research Grants Council, to support his new project on investigating the effects of a hybrid face-to-face and online mode of delivering a mindfulness-based dementia caregiving programme for family caregivers of persons with dementia.

**Team members: Dr Justina Liu, Associate Professor; Prof. Angela Leung, Professor, Dr Daphne Cheung, Assistant Professor; External members: Dr Yuen-tung Lam, Research Assistant Professor, CUHK; and Dr Gary Cheung, Senior Lecturer, University of Auckland.

+Project title: Effects of using a consumer-grade wearable device with biofeedback and brief mindfulness training for stress reduction in family caregivers of people with dementia: a pilot randomized controlled trials. This project is supported by a grant of HK$ 400,000 from PolyU's Start-up Fund for New Recruits.



The research team expects that this wearable biofeedback device, together with brief mindfulness training, help family caregivers of people with dementia to reduce stress and achieve wellness.

Electronic bibliotherapy on improving well-being of informal caregivers of PwD

Funded by a sum of HK$ 120,000 from the Nethersole Institute of Continuing Holistic Health Education (NICHE) Research Grant, **Dr Shanshan Wang** (Principal Investigator; Postdoctoral Fellow) is conducting Hong Kong's FIRST study to investigate the effectiveness of electronic bibliotherapy in improving well-being of informal caregivers of people with dementia (PwD).

Informal caregivers of PwD are usually fully occupied with their caregiving tasks and are unwilling to seek help due to their limited amount of time. The proposed e-bibliotherapy protocol includes eight weekly sessions. In each session, the participating caregivers will read and learn skills via the social media platforms for improving their well-being. The skills include those that support caregivers to cope with daily caregiving challenges and strategies to deal with caregiving stress and depression. The feasibility and preliminary efficacy of the e-bibliotherapy on caregivers' psychological well-being and health-related quality of life will be examined. If proven effective, this cost-effective and self-help e-bibliotherapy intervention will be a convenient strategy for dementia caregivers to improve their wellbeing. The researcher believes that with the guidance of a e-bibliotherapy coaching manual, trained staff in community centres can deliver the interventions, and hopes that in a long run, e-bibliotherapy can be incorporated into routine service in community centres.

FEATURES

Research effort in supporting the community to fight against COVID-19

Following the announcement (last CGN newsletter: issue 4/2021) of our three projects awarding a total of over HK$ 16.5 million grants from the Health and Medical Research Fund (HMRF) of the Food and Health Bureau, Hong Kong Government, in this issue, let's explore how our research teams make use of modern technology to develop innovative strategies to engage vulnerable groups or the whole community in strengthening protection against the novel coronavirus.

A Smart Health 3P (Prevention, Protection, Progression) platform for people with physiological and psychosocial distress under the influence of COVID-19

Chief Investigator: Dr Justina Liu, Associate Professor

To support people with physiological and psychosocial distress and help them alleviate stress and improve coping skills during the COVID-19 pandemic period, **Dr Justina Liu** and her team^ is using the **HK$ 6.9 million** HMRF grant to develop the Smart Health 3P (Prevention, Protection, Progression) online platform and a test of its effectiveness will be performed.

Grounded on the Transactional Model of Stress and Coping, the first level of the Smart Health 3P platform aims to ***enhance self-awareness*** of users by providing information to support their continuous cognitively appraise of their situations under the pandemic. The ***interventions*** *(i.e., the second level)* will include suggestion of different coping and self-management strategies (such as mindfulness-based coping, energy conservation techniques, breathing exercise, and physical training, etc.) and encouragement for improving self-efficacy and positive appraisals. The third level of the platform aims to ***reinforce*** the cognitive and behavioural changes of the users and the self-management techniques learnt to achieve emotional wellbeing and sustain positive health outcomes in the short-and long-term.

^Team members: Prof. David Man, DoMHRC & Professor, Department of Rehabilitation Sciences; Prof. David Shum, Dean, Faculty of Health and Social Sciences. School of Nursing: Prof. Thomas Choi, Professor; Dr Daphne Cheung & Dr Teris Cheung, Assistant Professors; Dr Gabriel Fong, Scientific Officer, Department of Rehabilitation Sciences.
External members: Prof. Simon Lam, Associate Dean (Research) and Professor; Prof. Rick Kwan, Professor, School of Nursing Tung Wah College; Dr Frank Ho-Yin Lai, Senior Lecturer, The Northumbria University Newcastle.

FEATURES

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

Chief Investigator: Prof. Angela Leung, Professor & Associate Head (Research)

To increase COVID-19-related health literacy and vaccine literacy among minority ethnic groups, chronically ill populations and caregivers, and ultimately engage everyone in the community to fight against the COVID-19, **Prof. Angela Leung** and her team^^ is using the **HK$ 5.5 million** HMRF grants to create culturally appropriate and specific online educational materials (including video clips and games, etc.) that will be disseminated via Facebook or other online platforms.

The uniqueness of this project lies on its Community-Based Participatory Approach. The planning and development of health educational programmes is usually professionally oriented with limited inputs from recipients. The research team, however, attempts to break away from the traditional top-down approach and will adopt a community-based participatory bottom-up approach to engage the health education recipients in idea exchange, discussions, and co-creation of the educational materials. This ensures that the content fits the needs of the health recipients.

The research team and the participants will evaluate the effectiveness of the digital educational materials and it is expected that the project will help enhance the community capacity to respond to health challenges brought by COVID-19.

+Ethnic minorities refer to Filipinos, Indonesians, Indians, Nepalese and Pakistanis living in Hong Kong.

^^Team member

Co-Investigator (Co-I): Prof. Bernadette Maria Watson, Interim Head & Professor, Department of English and Communication; Co-I from the School of Nursing: Prof. Alex Molasiotis, Head; Dr Justina Liu & Dr Doris YP Leung, Associate Professors; Dr Patrick Kor, Assistant Professor, Dr Jingjing Su, Postdoctoral Fellow. External members: Co-I: Dr Windy Chan, Caritas Institute of Higher Education; Dr Karrie Chan, HK Christian Service.

Development of precision prognosis and diagnostic biomarkers for the personalised treatment and monitoring of COVID-19 patients

Co-chief Investigator: Dr Stefanos Tyrovolas, Research Assistant Professor

Building on the researchers' previous experience of estimating the COVID-19 spread through real-time population mobility patterns in over 200 low-and middle- income countries/territories, this **HK$ 4.41 million** worth project aims to develop an online risk calculator, based on the local demographics, population lifestyle, chronic health conditions and living places. The public will be able to use their mobile App (or via a webpage) to estimate individual risk for severe outcomes of COVID-19 and real-time infection risk.

The research team

PolyU members: Principal Investigator: Dr Yang Lin, Associate Professor;

Co-Investigators: Dr Grace Xie, Assistant Professor; Prof. Man Sing Wong, Associate Dean, Faculty of Construction and Environment, and Professor, Department of Land Surveying and Geo-Informatics; Dr Kit-hang Siu, Associate Professor, Department of Health Technology and Informatics; Dr Justina Liu, Associate Professor; Dr Yan Li, Research Assistant Professor; Dr Man-hin Lam, Assistant Professor, Department of Rehabilitation Sciences; Dr Daihai He, Associate Professor, Department of Applied Mathematics; and

External member: Dr Chloe Chan, Medical Director, Rambo Medical Center, Honorary Clinical Assistant Professor of HKU & Honorary Clinical Tutor, Jockey Club School of Public Health and Primary Care, CUHK.

OUR PEOPLE

Amid the Omicron outbreak, the School of Nursing teamed up with the CGN to distribute donated medical supplies to over 200 local nursing homes in support of senior or frail residents to fight against COVID-19. In March, over 40,000 rapid antigen test kits and 200,000 sets personal protective equipment reached the hands of staff and residents of the nursing homes.

Left photo: (From left) CGN members, Dr Ivy Zhao (Postdoctoral Fellow), Dr Polly Ma (Postdoctoral Fellow), Mr Alan Tam (PhD candidate), and Dr Shanshan Wang (Postdoctoral Fellow) helped deliver the medical supplies to the nursing homes. Right photo: Prof. Angela Leung (Professor), Dr Lin Yang (Associate Professor) and Prof. Alex Molasiotis, Head of the School of Nursing, handed boxes of rapid antigen test kits to the staff representatives of the nursing home.

Mr Laurence Parial, our postgraduate research student (PgR) member, together with another PgR student, Mr Wilson Kwok, volunteered to work in the COVID lab of the PolyU Department of Applied Biology and Chemical Technology and support the University Covid-19 RT-PCR test. CGN members dedicated themselves in capacity building for fighting against the Omicron outbreak when local infections soared skyrocketing.

Mr Laurence Parial (right) and Mr Wilson Kwok (left) assisted in conducting Covid-19 RT-PCR test at a temporary site on the campus.

Dr Shanshan Wang and Dr Polly Ma (Postdoctoral Fellows) supported the initiative of the Schools of Nursing at PolyU and Tung Wah College to voluntarily perform N95 respirator fit tests for over 200 nursing staff and students from Hong Kong Baptist University's School of Continuing Education, who will be working at the Kai Tai Holding Centre. The centre accommodates frail senior COVID-19 patients for isolation and temporary care.

1st row: Dr Shanshan Wang (3rd from left 3) and Dr Polly Ma (4th from left) at the fit test lab.

Dr Phyllis Pang has joined the Telehealth service at Kowloon Hospital since March to help give advice and answer telephone inquiries related to the pandemic. Earlier, *Ms Pang* (Supervisors: Dr Daphne Cheung [Assistant Professor] and Dr Vico Chiang [left the School]) has completed the Doctor of Health Science (Nursing) offered by PolyU's Faculty of Health and Social Sciences. The title of her dissertation is "A Visual Art Intervention MOLACE for Enhancing the Holistic Well-Being of Older People with Stroke in Residential Care Homes: A Feasibility Study". Congratulations!