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Mobile health applications (app) have shown to be beneficial for chronic disease management. However, few studies assessed older adults' engagement in tracking self-management activities with app functions and effectiveness on improving their diabetes outcomes. This study investigated tracking patterns of each app function (blood sugar, blood pressure, diet, exercise, medication adherence etc.) in a graphic-based aging-friendly diabetes self-management app (IMTOP app) and associated the patterns with changes in HbA1c, self-care behavior, diabetes empowerment, and health promotion. The sample included 334 community-dwelling older adults with type 2 diabetes in Taiwan (mean age 64.57 ± 6.64 years) participated in the IMTOP training course that designed to motivate and train older adults with diabetes to use mobile tablets and apps. We performed trajectory analyses using SAS TRAJ procedure to identify distinct classes of individuals following similar longitudinal patterns on absence or presence of weekly app use for each individual app function. The relationships between the app engagement class memberships and 4- and 8-month diabetes health outcomes were assessed using an econometric regression analysis approach. The results showed the degree of app engagement on any single function was significantly and positively correlated with diabetes self-care scale scores (all p < .05). Only the engagement on the blood sugar function had statistically significant association with HbA1c improvements (p < .05). The app use was not associated with diabetes empowerment or health promotion. The study findings suggest any app function engagement significantly improved older adults' overall self-management but blood sugar tracking is critical to improve HbA1c.

INCREASED PHYSIOLOGICAL VARIABILITY PREDICTS DECLINING HEALTH AND CRITICAL TRANSITIONS IN HEMODIALYSIS PATIENTS

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Increased variability in levels of several individual biomarkers has been shown to predict adverse outcomes, particularly in hemodialysis patients, for whom time series data is often available. Here, we evaluate the feasibility of using multivariate approaches to quantify global physiological variability as a potential predictor of adverse outcomes. We used data on 588 deaths and 1196 hospitalisations across ~38,000 visits of 591 hemodialysis patients at a Quebec hospital, as well as data on frailty and mortality in 580 patients assessed 20+ times within a one-year period at a hospital in Saitama, Japan. We use two approaches: principal components analysis (PCA) of the coefficients of variation (CVs) of the individual biomarkers over the previous year, and Mahalanobis distance (MD) of the biomarker profile relative to the same profile at the previous time point. We show that both methods provide substantial prediction of both impending mortality and impending hospitalisation, with hazard ratios across the 95% quantile range of the indices varying between 1.5 and 3.5 (p<0.0001). Each unit change on the first PCA axis (PC1) increased frailty odds by 2.34 (95% CI: 1.21-4.52). PCA performed substantially better than MD. CVs of various biomarkers were consistently positively correlated, and PC1 was a good predictor of frailty, mortality, and hospitalisation. Overall, these results confirm that complex physiological integration can break down, resulting in loss of homeostatic control and increasing variability, as predicted by complex systems theory. The resulting indices provide a predictive signal of impending critical health transitions, with both theoretical and clinical implications.

MULTIMORBIDITY PATTERNS ARE DIFFERENTLY ASSOCIATED WITH DEPRESSION IN MIDDLE-AGED AND OLDER CHINESE

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The associations of multiple physical conditions with depression are still unclear. This study examined the relationship between physical multimorbidity patterns and depression among middle-aged and older Chinese. Patterns of physical multimorbidity were identified using Exploratory Factor Analysis (EFA) among 21,933 participants ≥ 45 years from 2011 to 2015. Multiple logistic regressions were performed to assess the associations between multimorbidity, multimorbidity patterns (factor scores) and depression for each age group (45-60 years vs. ≥60 years). The overall prevalence of multimorbidity was 40% and it was higher among participants with depression (54%) than those without depression (33%). Middle-aged (OR: 1.45; 95%CI 1.16–1.80) and older (OR: 1.85; 95%CI 1.62–2.11) adults with multimorbidity were more likely to have depression compared with those without multimorbidity. Five multimorbidity patterns were identified: cardio-metabolic, respiratory, splanchnic, cardio-cerebrovascular, and tumor-and-degenerative. Middle-aged participants with higher respiratory pattern score had a higher odds to have depression (OR: 1.59; 95%CI 1.15–2.21). Among older adults, higher cardio-metabolic pattern score was significantly associated with lower odds of depression (OR: 0.78; 95% CI 0.63–0.97), while higher respiratory (OR: 1.32; 95%CI 1.04–1.68), splanchnic (OR: 1.22; 95%CI 1.01–1.47) and tumor-and-degenerative pattern scores (OR: 1.86; 95%CI 1.42–2.43) were all found to be significantly associated with higher risk of depression. The associations between physical multimorbidity patterns and depression differ by age. Future studies are needed to investigate the temporal nature of how physical multimorbidity patterns may induce depression and the underlying mechanisms.

TRANSLATING RESEARCH TO PRACTICE: USING CHANGE MODEL TO IMPROVE SUSTAINABILITY OF HEALTH ALERTS FOR CHRONIC ILLNESS

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Chronic illness is the primary reason for hospitalization and rehospitalization in the US today. Nearly 1/3 of older

adults have 3 or more chronic illnesses. Chronic illnesses require significant self-management or management by nursing staff. This paper highlights the use of a change model to assist in sustaining nursing interventions in assisted living environments. We utilized embedded sensors measuring heart rate, respiratory rate, time in bed, restlessness in bed, and gait parameters to manage chronic illness. The embedded sensors use an algorithm to signify when a measure has changed for a resident, based on the past 2 weeks of data. Early health messages are emailed or texted to nursing staff. Nursing staff can use these messages as tools to further assess the resident's condition. It was important to revisit the education, hold the staff accountable, phone in suggestions/reinforcement of what the alerts meant, and provide positive messages. This interdisciplinary study has been deployed in 6 assisted living settings (n=386) (facility-wide) in the midwest. We used a wait-list control group (n=482) of facilities awaiting sensor installation. Outcome variables included length of stay, hospitalizations, falls, and medication changes. Results included a decrease in all outcome variables length of stay 1.98 years longer (F=3.67; p=0.003); hospitalizations (F=2.15; p=0.048); falls (F=1.899; p=0.012); and medication changes (F=3.9; p=0.0008) when compared to the control group. We feel these results may benefit other clinicians in the future when implementing new protocols and practices.

USING CHRONIC DISEASE SELF-MANAGEMENT TO ENHANCE PATIENT-PROVIDER PARTNERSHIPS

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The Partners in Aging Strategies and Training (PAST) project employed a bilateral approach to educate both healthcare professionals and consumers. Our theory is that improved health outcomes are attained by teaching healthcare providers and consumers how to engage better with each other, especially when consumers use the skills learned in community-based programs, such as self-management and healthy lifestyle choices. PAST activities provided an integrated educational program for healthcare providers and older adult patients, their families and caregivers to learn skills that enhance their ability to form productive patient-provider partnerships. We used three types of training: 1) multi-disciplinary health professions and primary care provider continuing-education face-to-face workshops and webinars; 2) older adult patient and caregiver workshops, resource materials; and 3) reverse marketing comprised of sending information to physicians whose patients attended a workshop that included the topics covered in the workshops and the patients' three- to six-month action goals. We found that physicians who attended the grand rounds presentations were very receptive to the 'nuts and bolts' approach to things like doing a quick mobility assessment, effectively communicating with patients, health literacy, and referring patients to community-based non-medical services and supports. We conducted seven types of evidence-based workshops. Over 90% of participants gave permission to send a letter to their physician to tell them they attended the workshop. We used pre-post confidence scales based on each workshop's learning objectives to measure changes in workshop participants' self-management confidence. There was positive change in confidence for all seven workshops.

SESSION 4010 (SYMPOSIUM)

DIVERSITY IN HOSPICE AND END-OF-LIFE EXPERIENCES: THE INFLUENCE OF CHRONIC DISEASE AND SOCIOCULTURAL FACTORS

Chair: David Russell, *Visiting Nurse Service of New York, New York, New York, United States*
Co-Chair: Elizabeth A. Luth, *Weill Cornell Medicine, New York, New York, United States*
Discussant: Ruth Masterson Creber, *Weill Cornell Medical College, New York, New York, United States*

Hospice provides supportive and palliative services to persons nearing the end-of-life. Use of the Medicare hospice benefit has grown to cover nearly half of all Medicare decedents. Even more notably, hospice agencies now serve patients with a diverse range of terminal conditions, including those not traditionally served by hospices, such as dementia and heart failure. In addition to expanded use of hospice care by patients with multiple types of chronic disease, demographic transitions in the United States over the last several decades have also led to increased use of hospice services among patients with diverse socio-cultural and linguistic backgrounds. Limited research has identified the unique experiences of patients enrolled in hospice who have diagnoses of dementia and heart failure, or explored how socio-cultural factors act to influence the course and outcomes of hospice care. This symposium features interdisciplinary collaborations between academic researchers and clinical practitioners at a large non-profit hospice agency in a multicultural urban environment. These collaborations, which draw on multiple theoretical perspectives and research methodologies, shed new light on patient experiences in hospice and identify opportunities for improving care and comfort at end-of-life. Presentations will include an exploration of the unique symptoms and experiences of hospice patients with heart failure, an evaluation of a clinical program for heart failure hospice patients, an exploration of collaborative goal setting between patients-providers, and an examination of cultural health capital as it relates to race/ethnic and socioeconomic disparities in hospitalization among hospice patients, and factors for disenrollment among hospice patients with dementia.

SOCIAL AND CULTURAL FACTORS FOR HOSPICE CARE OUTCOMES: PERSPECTIVES OF PATIENTS, CAREGIVERS, AND PROVIDERS

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Use of hospice services in the U.S. has grown to cover an expanding number of patients with varying conditions and demographic characteristics. Notably, hospice agencies increasingly serve patients with diverse socio-cultural and linguistic backgrounds. Limited research has explored