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2022 6th International Conference of
Public Health and Medical Sciences

2022 6th International Conference of
Psychology and Behavioural Sciences

May 27, 2022

Virtual Conference

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Introduction

2022 6th International Conference on Public Health and Medical Sciences (ICPHMS2022) and 2022 6th International Conference on Psychology and Behavioural Sciences (ICPBS2022) are organized by Shanghai Laixi Conference Services Co., Ltd. According to the similarity among the topics of ICPHMS2022 and ICPBS2022, ICPHMS2022 is held in conjunction with ICPBS2022 virtually on May 27, 2022.

ICPHMS2022 and ICPBS2022 serve as an optimal platform for specialists, scholars and researchers in the field related to Public Health and Medical Sciences, Psychology and Behavioural Sciences to facilitate academic communications and exchange ideas. The conferences offer an academic space known for its interdisciplinary approach as well as a space for academics and practitioners.

Major themes of the Conferences included:

Public Health: Infectious Diseases Control, Public Health Practice and Impact, Applied Epidemiology, Health Service Effectiveness, Health Protection, Control of Communicable Diseases, Health Promotion and Disease Prevention, Hygiene, Epidemiology, Health Education, etc.

Medical Sciences: Anatomy, Medical Ethics, Biology and Genetics, Microbiology, Biophisics and Physics, Neurology, Dentistry, Oncology, Dermatovenerology, Ophthalmology, etc.

Psychology: Behavioral Psychology, Social Psychology, Personality, Community Psychology, Sports Psychology, School Psychology, Abnormal Psychology, Forensic Psychology, Clinical Psychology, Cognitive Psychology, etc

Behavioural Sciences: Experimental and Clinical Neurosciences, Behavior Genetics, Neurocognitive Sciences, Sociology and Social Networks, Applied Anthropology, Operations Research, Organizational Behavior, Social and Cultural Anthropology, Psychology, Behavioral Aspects of Biology, etc.

The abstracts that were selected had a complete peer review process. Selected papers are also published at the cooperating journals of each conference. They show the richness in interdisciplinary approaches, theories, models and applied research presented in the conference.

We would like to thank you for your scientific contribution to ICPHMS2022 and ICPBS2022 and look forward to having the opportunity to showcase and disseminate your research.

Special thanks also to the organizing committee, and all the people that worked hard, to bring in light this considerable event.

Sincerely,

ICPHMS2022 and ICPBS2022 Organizing Committees

CONTENTS

Effects of Metformin on COVID-19 Patients with Type 2 Diabetes: A Retrospective Study

Zi-Yu Guo[1, †], Chao Wu[2, †], Mei-Hui Wu[3, †], Ze-Ping Liang[3], Dong-Po Jiang[3], Yan-Xiang Gao[4], Qing Li[1], Yao Wu[5], Ya-Xin Wu[1], Yi-Min Tu[6], Yun-Fu Zhang[7], Hai-Yan He[3], Ya-Ling Wang[3, *], Jin-Gang Zheng[1, *], Xia Xu[3, *]

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† Zi-Yu Guo, Chao Wu and Mei-Hui Wu are co-first authors.

Abstract: Aims: Data about the metformin for reducing in-hosptial mortality in patients with COVID-19 were still controversy. More information about the clinical impact of metformin will be of great significance and direct impact. Methods: This was a retrospective study of patients with COVID-19 and T2D in Wuhan, from February 4th to April 11th, 2020. Patients were divided into two groups according to metformin exposure. Cox regression was used to estimate the hazard ratio (HR) of COVID-19-related mortality and invasive mechanical ventilation. Propensity score matching (PSM) was used to adjust for confounders in the baseline characteristics of the groups. Results: Of 571 patients with COVID-19 and T2D, 241 patients were treated with metformin. The in-hospital mortality and invasive mechanical ventilation of metformin group was lower than non-metformin group. However, in the multivariate model, metformin use was not associated with hospital mortality risk when compared with that of the control group (aHR: 1.93 [95% CI 0.74-5.02]; P = 0.180). Conclusion: Our study indicated that metformin therapy may not offer benefits in COVID-19 patients with T2D. However, considering the second outcomes, further studies or systematic study can be conducted to verify the safety and effects of metformin.

Keywords: COVID-19, Diabetes Mellitus, Metformin, Mortality

A Critical COVID-19 Patient Managed with Timely Evaluation, Early Prone Positioning Ventilation, and a Multi-pronged Pharmacotherapy

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Abstract: There is not yet a standard drug regimen for the treatment of coronavirus disease 2019 (COVID-19) patients. Here, we summarize our experience and successful treatment plan with a critical COVID-19 patient who required mechanical ventilation (MV). A 56-year-old man presented with a fever, cough, and dyspnea. He had not been to a medium/high risk epidemic area in the past year and had no family history of a disease cluster. COVID-19 was suspected based on clinical symptoms and radiologically detected ground-glass lung changes in the context of a normal white blood cell count (WBCC) and lymphocyte fraction (L%). A diagnosis of COVID-19 was confirmed by nucleic acid testing. Initially, he was started on noninvasive ventilation (NIV). Because his respiratory distress worsened over the following 2 h, he was transitioned to mechanical ventilation (MV), placed in prone positioning 12 h/day, and given a multi-pronged pharmacotherapy regimen that included an antiviral cocktail (lopinavir/ritonavir plus α-interferon), an immunity enhancer (thymosin α1), an anti-coagulant to prevent thrombosis (heparin). He was given an antibiotic to treat an opportunistic nosocomial infection. The patient has recovered well. The regimen applied in this case of timely evaluation, early prone positioning with MV, and a multi-pronged pharmacotherapy may be an effective strategy for patients with critical COVID-19, particularly with respect to preventing life-threatening worsening of the illness.

Keywords: Critical, COVID-19, Timely Evaluation, Early Prone Positioning Ventilation, A Multi-pronged Pharmacotherapy

Clinical Study of Bio-Oss Powder and Bio-Oss Collagen Site Preservation

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Abstract: Objective: To investigate the effect of Bio-oss bone powder combined with Heal-All Oral repair membrane and Bio-oss collagen on site preservation of teeth. Methods: A total of 26 cases were randomly divided into 2 groups. Bio-oss bone powder group (13 cases): The sockets were filled with Bio-oss bone, covering with Heal-All Oral repair membrane on the surface; Bio-oss collagen Group (13 cases): The sockets were filled with Bio-oss collagen only. The results of patients in these two groups were observed. The changes in alveolar bone density, height, width and new bone contour were observed by CBCT scanning in patients of these 2 groups after 3 months. Results In comparison with these two groups, the difference of new bone contour was no significant ($P > 0.05$). The changes in height, width and grey level of alveolar bone between these two groups were no significantly different after follow up for 3 months ($P > 0.05$). Conclusion: There was no significant difference in the efficacy of site preservation between the two materials, but the site preservation technique using collagen was simple, less invasive and less costly.

Keywords: Alveolar Bone, Site Preservation, CBCT

Research on the Mechanism of Qishen Granule on Improving Chronic Heart Failure Combined with Skeletal Muscle Atrophy

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Abstract: Objective The purpose of the experiment was to clarify the mechanism of Qishen granule on improving chronic heart failure combined with skeletal muscle atrophy in rats. Methods A rat model of heart failure was established by ligation of anterior descending branch of left coronary artery, and rats were randomly divided into Sham operation group, Model group and Qishen granule group. After 12 weeks of administration, cardiac ejection fraction, grip strength of rats, concentration of NT-pro BNP and gastrocnemius muscle weight were detected. HE staining was used to observe the morphology of heart and gastrocnemius muscle. Western blot was used to detect the expressions of PI3K, Akt, Atrogin-1, MuRF-1 and FOXO1 in gastrocnemius muscle. Results Compared with Sham operation group, the cardiac ejection fraction of model group was significantly decreased, with the concentration of NT-pro BNP increased. HE staining showed that arrangement of cardiac tissue was irregular. The grip strength of rats, gastrocnemius weight and muscle fiber cross-sectional area were decreased. The expressions of PI3K and Akt were reduced, while the expressions of Atrogin-1, MuRF-1 and FOXO1 were significantly increased. Compared with Model group, Qishen granules could improve the cardiac ejection fraction of rats, reduce the concentration of NT-pro BNP, make the myocardial tissue arrangement relatively regular, and increase the grip strength of rats, gastrocnemius weight and muscle fiber cross-sectional area. Qishen granules could also regulate atrophy related proteins, by elevating the expression of PI3K and Akt, and decreasing the expressions of Atrogin-1, MuRF-1 and FOXO1. Conclusions Qishen granule could improve chronic heart failure complicated with skeletal muscle atrophy, and its mechanism may be related to promoting PI3K/Akt signaling pathway activation and inhibiting atrophy related proteins.

Keywords: Chronic Heart Failure, Skeletal Muscle Atrophy, Qishen Granule

Significance of circRNAs as Circulating Biomarkers in Early Diagnosis and Prognosis Evaluation of Acute Myocardial Infarction

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Abstract: [Background] The current popularity of percutaneous coronary intervention (PCI) has significantly reduced the mortality of patients with acute myocardial infarction, but has not fundamentally prevented the occurrence and development of coronary heart disease. It is believed that Circular RNAs (CircRNAs) play a major biological role in regulating the expression of miRNA as endogenous competition in the spongy body of miRNA, and thus participate in regulating cell proliferation, differentiation and apoptosis. CircRNA itself is rich in peripheral blood and other body fluids, has a long half-life and strong tissue specificity, which has great potential to be used as a new biomarker in the early diagnosis, treatment and prognosis evaluation of diseases. [Research Purpose] To explore the role of circRNA in the early diagnosis of acute myocardial infarction; To evaluate the effect of circRNA on short-term prognosis of patients with myocardial infarction; Traditional risk factors and circRNA expression levels were comprehensively considered through proportional risk model; To establish a new risk prediction model for myocardial infarction. [Methods] Patients with acute myocardial infarction (AMI) who meet the criteria were enrolled. CircRNA content determination: screening meaningful circRNA; Statistical analysis (SPSS 20.0 statistical software package was used for data analysis, $P<0.05$ was considered statistically significant). [Conclusion] Compared with the control group, multiple circRNAs expressions were successfully detected in the acute myocardial infarction group, with statistical differences (cZNF292, cSRSF4), and in the early diagnosis of acute myocardial infarction, compared with traditional markers such as troponin, it is highly correlated, even better than troponin, which is conducive to early accurate diagnosis. According to the risk model evaluation established by follow-up, multiple circRNAs are highly correlated with the prognosis of AMI, which has become a new risk stratification factor to predict the occurrence and prognosis of AMI.

Keywords: Acute Myocardial Infarction, CircularRNA, Diagnosis, Prognostic Evaluation

Shift Work Is Associated with an Increased Risk of Type 2 Diabetes and Elevated RBP4: A Cross - Sectional Analyses

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Abstract: Objectives: Shift work is becoming increasingly common worldwide. Shift work disrupts the body's normal circadian rhythm, which could lead to an increased risk of many chronic diseases through the dysregulation of normal physiological, behavioral, and psychosocial pathways. This study aimed to evaluate the effect of shift work on type 2 diabetes (T2DM) and Retinol binding protein 4 (RBP4) level, an adipokine associated with insulin resistance (IR). Methods: This study adopted the method of multi-stage stratified cluster sampling. 1499 oilfield workers who participated in the occupational health examination in Karamay Central Hospital of Xinjiang from March 2017 to June 2018 were selected as the research objects. We evaluated their shift work, sleep quality, T2DM status and plasma RBP4 levels with blood samples and questionnaires. Chi-square tests, t-tests, and multivariate logistic regression analyses were performed. Result The prevalence rate of T2DM in shift workers (6.56%) was significantly higher than that in day workers (4.21%) (OR=1.599, 95%CI: 1.010-2.533), and there was no significant difference in family history of diabetes, hypertension and other chronic heart diseases (P =0.378). The total score of the PSQI was distinctly higher in shift workers (6.89 ± 3.35) than that in day workers (5.99 ± 2.87) (P < 0.001). Adjusting for age, gender, BMI, family income, tobacco smoking, alcohol drinking and PSQI, shift work remained to be a risk factor for T2DM (OR=1.913, 95%CI: 1.167-3.135). The results of pairwise comparison showed that the levels of RBP4 were statistical difference in shift and non-shift without T2DM and shift and non-shift with T2DM group (P < 0.001). The RBP4 level of the shift group without T2DM was higher than the non-shift group without T2DM (P < 0.05). The levels of RBP4 in shift and non-shift group with T2DM were higher than shift and non-shift group without T2DM (P < 0.05). Conclusion: Shift work is associated with an increased risk of T2DM and high levels of RBP4. Follow-up of RBP4 may help early detection of T2DM in shift workers.

Keywords: Shift Work, Type 2 Diabetes, Retinol Binding Protein 4, Sleep Quality, Oil Workers

A Novel AR Variant in Enzalutamide Resistant Prostate Cancer

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Abstract: Prostate cancer (PCa) is the second leading cause of cancer-related death among men in western countries. Therefore, dissection of the underlying mechanisms and developing novel drugs to fight against PCa has important implications. It is widely accepted that androgen receptor (AR) signaling plays a crucial role in the initiation and progression of PCa. As a nuclear receptor, AR recognizes its responsive DNA element (5'-GGA/TACANNNTGTTCT-3',) and transcriptionally regulates the expression of a broad range of genes including PSA, FKBP5 and TMPRSS2 upon androgen stimulation, providing survival signals to PCa cells. Since AR activity mainly requires ligand binding, androgen deprivation therapy (ADT) has become the popular treatment for PCa, which effectively cures PCa patients for 2-3 years before the development of castration resistant prostate cancer (CRPC). A more powerful anti-androgen enzalutamide (Enz, also called MDV3100) was recently approved to treat castration-resistant prostate cancer (CRPC) that can extend PCa patients survival by 4.8 months. Nevertheless, Enz resistance caused by multiple mechanisms limits its further application. Here, we uncovered a new AR variant (named as AR-v33 due to its duplicated exon 3) dramatically induced in Enz-resistant PCa cells based on divergent PCR analysis. Sequence analysis using two-round PCR revealed that this AR variant had intact AR's exons but with additional exon 3. Importantly, ARv33 protein can be detected by the established antibody. Human clinical sample survey revealed that ARv33 was expressed in the later PCa stage. Our data also demonstrated that the induction of this new AR-v33 variant was not due to genomic alteration, and probably, it may be generated from a trans-splicing event of pre-AR transcript. Mechanism dissection revealed that Enz/AR could function *via* transcriptional regulating the lncRNA-LINC00312 to promote splicing of the pre-AR transcript to induce the ARv33, which might then alter the B4GALT1 expression to increase the Enz resistance. Results from preclinical studies revealed that ARv33 could complex with ARv7 to increase the Enz resistance *in vitro* and targeting ARv33 with ARv33-siRNAs suppressed the EnzR tumor growth in an *in vivo* xenograft mice model. Together, these results conclude that this ARv33 may play key roles to alter the Enz resistance and targeting this ARv33 may provide us a new and better therapy to further suppress the CRPC that already developed the Enz resistance.

Keywords: PCa, ARv33, Enzalutamide Resistance

Association of Surface Acting and Emotional Exhaustion with Turnover Intention Among Family Doctors in Rural Areas of China: Moderated Mediating Effect of Team Identification

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Abstract: Background: Family doctors, as health gatekeepers, provide preventive care and basic medical services to residents. In rural areas of China, where residents are far from the quality medical resources in cities, family physicians have become a key player in health monitoring and precision treatment. However, studies have shown that there is a high turnover of family doctors in rural China, which has shaken the vital cornerstone of primary health care. Whereas many studies have examined the reasons for family physicians' turnover intentions in terms of physical and mental labor, few studies have explored the negative effects of family doctors' emotional labor. Drawing on resource conservation theory and organizational support theory, this study discussed the effect of surface acting on turnover intentions, emphasizing the mediating role of emotional exhaustion and the moderated mediating role of team identification. Methods: 973 valid data were obtained from an anonymous self-administered questionnaire in a baseline primary health survey conducted in December 2021 for a baseline primary health survey in Shandong Province. The process macro in SPSS was performed to analyze mediating and moderated mediating effects of surface acting, emotional exhaustion, team identification, and turnover intention, where Model 4 and Model 7 were used respectively. Results: Surface acting had a direct positive effect on turnover intention (β= 0.479, 95%CI: [0.418, 0.541]). Emotional exhaustion partially mediated the effect of surface acting on turnover intention (indirect effect: 0.219, 95%CI: [0.180, 0.261]). Team identification moderated the effect of surface acting on emotional exhaustion (β= 0.098, 95%CI: [0.026, 0.170]), and moderated the indirect effect of surface acting on turnover intention via emotional exhaustion (index of moderated mediation: 0.040, 95%CI: [0.009, 0.073]). Conclusions: Policymakers can reduce the loss of family physicians by discouraging surface acting, such as targeted emotional labor interventions, emotional management training. In addition, increasing family doctors' team identity is used to reduce emotional exhaustion and further control turnover.

Keywords: Family Doctors, Surface Acting, Emotional Exhaustion, Team Identification, Turnover Intention

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The E3 Ligase NEDD4 Is a Potential Target in IGF Signal Pathway-driven Gastric Cancer

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Abstract: Heterogeneity has always been a challenge in targeted therapy of gastric cancer (GC). IGF1/IGF1R pathway is found to highly activate in the mesenchymal phenotype (MP) subtype GC that exhibits poor survival and chemotherapy resistance, indicating IGF1/IGF1R pathway may be a promising therapeutic target for GC. However, clinical trials on IGF1R-targeted agents in cancer have yielded disappointing results, calling for alternative or combined strategy to address the susceptibility and drug resistance of IGF1 signaling targeted therapy. Here, we investigated the therapeutic benefit of targeting NEDD4 in GC with high activation of IGF1 signaling. We found that IGF1/IGF1R is highly activated in part of GC cell lines and GC tissues, which is significantly correlated with the prognosis of GC patients. Using a Dox-induced NEDD4 gene silence system, we found that knockdown of NEDD4 inhibits the IGF1/IRS1/AKT signaling and proliferation of IGF1R-dependent GC cells both in vitro and in vivo. However, knockdown of NEDD4 has no effect on the phosphorylation level of AKT and proliferation of IGF1R-independent GC cells. Moreover, rescue experiment showed that a PTEN-IRS1 axis is required for NEDD4-mediated regulation of AKT activation. Taken together, we demonstrated that NEDD4 promotes proliferation of GC cells with high activation of IGF1 signaling in a PTEN-dependent manner, suggesting the distinctive clinical significance of NEDD4-targeted strategy in GC treatment for both IGF1 signaling inhibition and PTEN reactivation.

Keywords: Gastric Cancer, E3 Ligase, NEDD4, PTEN, IGF1 Signaling

The Establishment and Validation of Automatic Monitoring Module for Drug-Induced Arrhythmia Based on Hospital Information System Data

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Abstract: Background: Drug-induced arrhythmias are rare but potentially life-threatening. This study aims to reduce the harm of drug-induced arrhythmias to patients through the use of Adverse Drug Event Active Surveillance and Assessment System - Ⅱ (ADE-ASAS-Ⅱ) that we developed for post marketing surveillance. Objective: To establish a drug-induced arrhythmias module in ADE-ASAS-Ⅱ and explore the relationship between drugs and arrhythmias in the real world data. Methods: We established the keywords which were identified and extracted by text categorization technology. The alert rule setting of the module was optimized through continually testing. We expanded the sample size of monitored inpatients and analyzed the gender, age and related drugs of positive patients to validate the module. Results: Finally, 28 keywords are identified for drug-induced arrhythmias module. In the optimal alert rule setting of the module, the positive predictive value (PPV) and recall rate (R) were 10.82% and 99.18%, respectively. The module was used to monitor 33007 patients, of which 622 positive patients with the incidence rate of 1.88% and a PPV of 7.88%. Among them, 50.32% were over 65 years old. 64 categories of 133 drugs were involved, and the top 3 drugs were quinolones antibacterials, calcium channel blockers and antifungal drugs. Extrasystoles, tachycardia and electrocardiogram QT prolonged were the most important types of drug-induced arrhythmias. Conclusion: In this study, the automatic monitoring module of drug-induced arrhythmia can efficiently, accurately and quickly obtain target cases in a large sample of drug users in the real world. Monitoring results show that the incidence of drug-induced arrhythmia was common in hospitalized patients. The age distribution, drug category and type classification of related patients is basically consistent with relevant research results.

Keywords: Drug-induced Arrhythmias, Automatic Monitoring, Text Categorization Technology, Adverse Drug Reactions, Real World Research

Translation of the Skidmore Anxiety Stigma Scale and Its Reliability and Validity

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Abstract: Objective: To translate The Skidmore Anxiety Stigma Scale (SASS) and test its reliability and validity. Methods: The scale was translated with Brislin's classic model for translation, and the Delphi method was used for cultural adjustment. A total of 405 participants with self -reported anxiety were randomly recruited from the Health Management Center of Affiliated Hospital of Nantong University to conduct a questionnaire survey. SPSS 26.0 and AMOS 26.0 were used for statistical analysis of the data to test the reliability and validity of the translated scale. Results: There were 7 items in the Chinese version of SASS. The content validity index (S-CVI) was 0.902, and the content validity index of each item (I-CVI) 0.833~1.000. Two common factors were extracted by exploratory factor analysis, and the cumulative variance contribution rate was 54.754%. The criterion validity showed that the scores of The Chinese Version of Skidmore Anxiety stigma Scale were moderately correlated with the scores of the Perceived Devaluation-Discrimination Scale and the Attitudes Towards Seeking Professional Psychological Help, with the correlation coefficients of 0.425 and -0.460 respectively. The Cronbach α coefficient of the scale was 0.719 and the retest reliability 0.855. Confirmatory factor analysis shows that the model fitted well. Conclusion: The Chinese version of Skidmore Anxiety Stigma Scale has good reliability and validity, and it can be used as an investigation tool to evaluate the stigma of patients with anxiety in China.

Keywords: Anxiety, Stigma, Translation, Reliability, Validity

Analysis of 12 Novel GWAS-linked Loci in Chinese Han Population with Parkinson's Disease

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Abstract: Parkinson's disease (PD) is the second most common neurodegenerative disorder next to Alzheimer's disease, with a prevalence of 1.7% in the Chinese Han population aged ≥ 65 years. Mounting evidence has revealed that genetic factors may provide significant clues to causes of PD. A recent large-scale European-originated genome-wide association study identified 38 novel independent risk signals in 37 loci for PD. However, whether these new loci are associated with PD in Asian populations remains elusive. The present study aimed to explore the relationship between the 12 novel risk loci with large absolute values and PD in Chinese Han population. We performed a case-control study including 527 PD patients and 435 healthy controls. In allele model, it was found that rs10748818/*GBF1* was associated with PD (p = 0.035, odd ratio [OR] 1.221, 95% confidence interval [CI] 1.014-1.472). After further age-stratified analysis, rs11950533/*C5orf24* and rs76949143/*GS1-124K5 ·11* were shown related to early-onset PD (p = 0.034) and late-onset PD (p = 0.042) in genotype model, respectively. Intriguingly, GBF1 is involved in regulating the recruitment of proteins to membranes and has been reported to play an essential role in the regulation of the spatial organization and function of mitochondria in a microtubule-dependent manner, which is strongly linked with PD pathogenesis. GS1-124K5 ·11 is recruited to damaged mitochondria via ubiquitin binding downstream of PD-related pathogenic gene *Parkin* in mammalian cultured cells and promotes autophagy of damaged mitochondria. C5orf24 was reported to be upregulated in patients with mental disorders, such as posttraumatic stress disorder. No significant statistical difference was found in the remaining 9 loci (rs34025766/*LCORL*, rs55961674/*KPNA1*, rs61169879/*BRIP1*, rs666463/*DNAH17*, rs75859381/*RPS12*, rs76116224/*KCNS3*, rs77351827/*CRLS1*, rs7938782/*RNF141*, rs850738/*FAM171A2*) in Chinese Han population. In conclusion, our study revealed that the novel variants of rs10748818/*GBF1*, rs11950533/*C5orf24*, and rs76949143/*GS1-124K5 ·11* were associated with PD in Chinese Han population, which represented a substantial step forward and served as a foundational resource for the community to pursue the next phase of PD research on pathogenic mechanisms.

Keywords: Parkinson's Disease, Single Nucleotide Polymorphisms, Chinese Han Population

Protective Effect of *Gastrodia elata* Bl.-*Acorus tatarinowii* Decoction on Hippocampal Neural Cell Apoptosis in Lithium-pilocarpine Induced Seizures in Mice

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Abstract: *Objective* To explore the protective effect of *Gastrodia elata* Bl.-*Acorus tatarinowii* (GEAT) decoction on hippocampal neuron injury in lithium-pilocarpine (Li-Pilo) induced seizures in mice. *Methods* The successful models were randomly divided into control group, model group and GEAT group. Hippocampal neural cell apoptosis were detected by TUNEL staining. The activities of superoxide dismutase (SOD), glutathione peroxidase (GPX), nitric oxide (NO), and inflammatory mediators like tumor necrosis factor-α (TNF-α) and interleukin-1β (IL-1β) content in hippocampus of mice were determined. *Results* The data showed that administered GEAT decoction (100 mg/kg) through gastric garage for 7 days ameliorated seizures severity, inhibit the release of inflammatory mediators TNF-α, and IL-1β, and improved the SOD and GPX activity. Besides, GEAT decoction inhibit the production or release of NO in hippocampus of mice. TUNEL apoptotic dyeing results showed that the number of TUNEL positive cells was significantly lower than that in the model group, indicating that GEAT decoction can prevent the apoptosis of hippocampal neurons in Li-Pilo induced mice. *Conclusion* GEAT decoction plays an important role in protecting hippocampal neurons injury of status epileptics mice induced by Li-Pilo, which may be related to the inhibition of oxidative stress and inflammation.

Keywords: *Gastrodia elata*, *Acorus tatarinowii*, Neuroprotection, Seizures

Clustering Research on Question Text of Online Medical Community Based on Multi-feature Fusion

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Abstract: Introduction: The development of medical community has produced a large number of medical question-and-answer data, which contains a large amount of medical knowledge. The accumulation of massive medical data is also called a major obstacle to obtain information. Aiming at the problems of high-dimensional sparseness and lack of contextual semanticst in medical questional text, this paper proposes a text representation method that integrates word embedding and topic model in order to improve the effect of medical question text clustering, so as to obtain information quickly and accurately. Methods: Taking the online medical question-and-answer community as the data source, the word embedding generated by fastText was weighted by TF-IDF value, and then fused with LDA's document-topic distribution features to construct the fused other features of medical question texts. The question texts was clustered based on K-means++ algorithm, and compared with the experimental results of single feature clustering and LDA topic model, and the clustering is evaluated according to the clustering accuracy (ACC) and normalized mutual information (NMI). Results: the clustering model based on feature fusion had the best performance compared with other methods, and its clustering accuracy and normalized mutual information was 0.577 and 0.429, compared with LDA, LDA_K-means++ and TF-IDF_K-Means++ models, it respectively improved by 20.1%, 16.2%, 10.3% and 3.3% in the NMI, and respectively improved 19.4%, 9.1%, 4.4% and 1.7% in the ACC, it was higher than other relevant baseline models. Conclusions: Experiments show that feature fusion can describe the semantic information of the question text more comprehensively and accurately, and can characterize the medical question text more effectively.

Keywords: LDA topic Model, fastText Model, Feature Fusion, Clustering, Medical Questional Text

Research on the Similarity Calculation of Question Sentences Combined with Classification Features in Question Answering System

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Abstract: [Background] Rheumatoid arthritis is a kind of chronic disease that can cause the destruction of cartilage and bone in the joints, if which not is treated in time, deformity of joints can occur and the patient's quality of life can be seriously affected eventually. Because the pain caused by the disease is severe, patients' demand for basic disease information will become more comprehensive and urgent, such as medication, symptoms, home care, and treatment. When users are inquiring about knowledge in a certain field using the Internet, the FAQ (frequently Answering Questions)-based intelligent question answering system can provide the most concise and accurate answers that have been manually made. However, there are few specific question answering systems for chronic diseases such as rheumatoid arthritis and related technology for question answering system construction is not mature enough at present. [Method] Our research embedded the classification information of the question into the sentence vector based on the BERT (Bidirectional Encoder Representations from Transformers) pre-training model. We first calculated similarity using Edit Distance to recall the candidate set of similar questions, then, took advantage of the BERT pre-training model to map the sentence information to the corresponding embedding representation, finally, each dimensional feature of the sentence was obtained by sentence vector passing through the Multi-Head Attention layer and the Fully Connected Feed Forward layer. The features stitched and fused were used for semantic similarity calculation. [Results] Our improved model achieves Precision@1 of 0.551, Precision@3 of 0.767 and Precision@5 of 0.813 on 176 testing question sentences. In the analysis of the actual application effect of the model, we found that our model has a good performance in understanding the actual intention of users, which considers the semantic relevance of question sentences, with 0.098 improvements on MRR. [Conclusions] Our deep learning model that takes into account the background and classifications of questions combined the efficiency of deep learning technology and the comprehensibility of semantics, so that making the returned answer as close as possible to the users' query needs and improving the efficiency of the question answering system.

Keywords: Intelligent Question Answering System, Semantic Text Similarity Calculation, Rheumatoid Arthritis

Construction of Nomogram Prediction Model of Chronic Pain after Total Knee Arthroplasty

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Abstract: Objective To analyze the risk factors of chronic pain (CPSP) after total knee arthroplasty (TKA), and construct a nomogram prediction model to predict the occurrence of chronic pain 6 months after TKA. Methods Using the pain coping style questionnaire, Psychological Resilience Scale and hospital anxiety and depression scale, 210 patients who underwent total knee arthroplasty in our hospital from August to December 2019 were followed up on the day before operation and 6 months after operation. 185 patients who were effectively investigated were divided into pain group (n=52) and non-pain group (n=133), and various indexes were compared. The independent risk factors of chronic pain 6 months after operation were explored by univariate analysis and multivariate logistic regression analysis. The risk prediction model and nomogram were established. The prediction effect of the model was verified by bootstrap ping method. Results Multivariate logistic regression analysis showed that coping style, HSS and resilience in June were the protective factors of chronic pain 6 months after total knee arthroplasty. According to the above results, the consistency index of the nomogram model is 0.626, the sensitivity is 76.9%, the specificity is 85.7%, and the yoden index is 0.626. Conclusion: The nomogram prediction model constructed in this study has good accuracy and discrimination, and can effectively predict the occurrence of chronic pain 6 months after total knee arthroplasty.

Keywords: Total Knee Arthroplasty, 6 Months After Operation, Chronic Pain, Nomograph, Risk Prediction Model

Health-related Quality of Life and Associated Factors in Elderly Individuals with Dyslipidemia in Northern China

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Abstract: Purpose To investigate the status of HRQOL and its associated factors among elderly individuals with dyslipidemia in Northern China. Methods We performed a cross-sectional study in 457 elderly individuals with dyslipidemia, and applied a stratified random sampling method to recruit participants. EuroQol five-dimensional questionnaire (EQ-5D) was used to assess the HRQOL of the participants. Sociodemographic, anthropometric, lifestyle and health variables were collected using a structured and standardized questionnaire. Multiple linear regression analyses were used to investigate factors associated with EQ-5D-5L and EQ-VAS scores. Results The mean age of the 457 participating elderly individuals was 68.04 ±5.98 years (range: 60-90 years). The median score of EQ-5D-5L and EQ-VAS was 0.942 and 80, ranging from −0.251 to 1.000 and 8 to 100, respectively. Regression analysis showed that illiteracy, < 5 hours of sleep per day, and chronic disease core knowledge score < 8 had significant correlations with the lower EQ-5D-5L index values ($P < 0.05$). Hypertension, diabetes mellitus (DM), ≥ 6 hours of average daily sedentary time, < 5 hours of sleep per day, and chronic disease core knowledge score < 8 ($P < 0.05$) had significant associations with the lower EQ-VAS scores. Conclusions These findings provide a clinical basis to guide the improvement of HRQOL in elderly individuals with dyslipidemia through focusing on illiterate elderly individuals, ensuring 5-7 hours of quality sleep daily, enhancing chronic disease core knowledge, and preventing hypertension and DM.

Keywords: Health-related Quality of Life, EQ-5D, Dyslipidemia, Cross-sectional Study

Study on Vaccination of Children with Special Health Status

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Abstract: Objective: To analyze the vaccination situation of children with special health status (CSHS), and to enhance the confidence of medical staff in community health service centers in vaccination of CSHS. Methods: The datas of 297 CSHS, who attended the Vaccination Clinic for Special Needs in Guangzhou Women's and children's Medical Center of Guangdong Province from February to May 2021, were collected. Vaccination evaluation recommendations and adverse reactions of CSHS were retrospectively analyzed. Results: Nervous system diseases and cardiovascular diseases were the main reasons, accounting for 45.5% and 28.6% respectively. It has been evaluated 83.5% CSHS can be vaccinated or supplemented in accordance with the national immunization procedures, 12.5% CSHS can be partially vaccinated. 96.0% CSHS have been vaccinated, and 0.7% CSHS have adverse reactions after vaccination, all of which are general reactions without abnormal reactions. Conclusion: The incidence of adverse reactions in CSHS after vaccination is low, and the safety is high. Enhancing the confidence of medical staff in community health service centers in vaccinating such children can improve the coverage of such children’s vaccines.

Keywords: Children with Special Health Status, Vaccines, Vaccination, Community Health Service Center

Association of ABCG2 Gene rs72554040 Polymorphism with Hyperuricemia in Xinjiang Uyghur Population

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Abstract: Objectives: This study aimed to investigate the relationship between ATP-binding cassette sub-family G member 2 (ABCG2) gene polymorphism rs72554040 and hyperuricemia, and risk factors for hyperuricemia in Uygur people from Xinjiang, China. Methods: A case-control study was conducted. According to the inclusion and exclusion criteria, 998 cases with hyperuricemia and 978 control without hyperuricemia were selected from Xinjiang Uygur population. Genotyping of the ABCG2 gene rs72554040 was performed using the Sequenom Mass ARRAY system. The differences in general clinical information, genotype and allele distribution frequency between the two groups were compared. Logistic regression was used to analyze the relationship between different genetic patterns and hyperuricemia and the risk factors for hyperuricemia. Result: The distribution of GA, AA, GG genotypes and A, G allele frequency at rs72554040 of ABCG2 gene was statistically significant between the hyperuricemia group and the control group ($P< 0.05$). Compared to the A allele, those carrying the G allele had an increased risk of hyperuricemia (*OR*=1.193, *95% CI:* 1.025-1.390, $P<0.05$). In the dominant model of ABCG2 rs72554040, the risk of developing hyperuricemia with GG genotype is 1.277 times higher than those with GA+AA genotype (*OR* =1.277, *95% CI:* 1.064-1.532, $P< 0.05$). Conclusion: The ABCG2 rs72554040 gene polymorphism is associated with hyperuricemia in Xinjiang Uyghurs, and the G allele of rs72554040 may be a risk factor for hyperuricemia in this population.

Keywords: Hyperuricemia, ABCG2 Gene, Gene Polymorphismgh

The Establishment of the Ai Analysis for the Pathological Tissue Identifications Obtained Via the Cryotome

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Abstract: The biopsy samples obtained from the patients are immediately performed by the cryotome, by which the results are applied for the detection of the resection scope in surgery. But the frozen tissue is not processed by the dehydration protocol, which gives rise to the de novo deformation of the tissue morphology and non-homogeneous stained clot. The integrity of the pathological diagnosis is further complemented by a separate paraffin section replication. The period of the latter rolls to more than three days for having the accurate result. This long cycle does not substantially parallel with the healthcare expansions. In our research, we aim to develop the "key-to-quick" protocol and manipulations to obtain the pathological results within 2 hours; it is as accurate as the paraffin section yields. Meanwhile we characterize the pathological tissue identifications by the mechanism and recognition of the AI based algorithm. This aims to establish the data system to map the district of the normal and pathological tissue constructions. Our goal is standing for the improvement of the medical care asset, the fundamentals of the technical transformations will support either the objectivity or quality for the patients when approach to the medics.

Keywords: Biopsy, Tissue Identifications, Medical Care, Pathological Sections

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Prevalence of Physical Multimorbidity and Trends of Health Care Utilization in China from 2011 to 2015: A Longitudinal Population-Based Study

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Abstract: Objective: To analyzes the prevalence of multimorbidity (excluding mental illnesses) and the trend of medical resource usage among the elderly in China. Methods: We utilized the Cochran-Armitage trend test to analyze the overall multimorbidity trend, and further explored trends in subgroups of age, gender, and economic regions. Finally, we fitted quasi-Poisson regression models and linear regression models to analyze trends in the number of visits in 30 days, total medical expenses in 30 days, out-of-pocket expenses in 30 days, the number of hospitalization in 1 year, total medical expenses in 1 year, out-of-pocket expenses in 1 year, and length of stay, respectively. Results: The number of patients with multimorbidity in 2011, 2013, and 2015 were 6,588, 6,646, and 7,441, respectively, and the prevalence rates were 37.4%, 36.0%, and 35.5%, respectively. The prevalence among 45-54 years old patients showed a downward trend ($P < 0.05$), the prevalence among 55-64 years old patients remained stable, and the prevalence among 65-74 years old patients showed an upward trend ($P < 0.05$). Additionally, the prevalence among males and females both showed a downward trend ($P < 0.05$). Changes in the number of visits in 30 days, the number of hospitalization in a previous year, the average length of stay in a previous year. The number of visits in 30 days showed an upward trend ($P < 0.05$), and the number of hospitalization in a previous year showed a downward trend ($P < 0.05$). The average length of stay in a previous year remained stable, and the rate of hospitalization showed an increasing trend ($P < 0.05$). Total medical expenses in 30 days, out-of-pocket expenses in 30 days, total medical expenses in 1 year, and out-of-pocket expenses in 1 year all showed an increasing trend ($P < 0.05$), and the growth rates were 2665.9%, 2471.8%, 43.5%, and 40.2%, respectively. Conclusions: From 2011 to 2015, the overall prevalence of multimorbidity in China showed a downward trend, indicating China's remarkable achievements in the management of chronic diseases. Age is a key factor affecting the prevalence. The older the age, the higher the prevalence of multimorbidity, especially in those aged 65 and over. As the aging of population seems to be an irreversible trend, multimorbidity in the elderly will continue to be the focus of management in the medical industry for the foreseeable future. The overall usage of hospitalization resources has increased, which may influence the further development of the disease. All expenses are increasing, and the rate of increase of outpatient expenses is much greater than that of hospitalization expenses.

Keywords: Trends, Health Care Utilization, Physical Multimorbidity

Research Progress of Blood Biomarkers Related to Fatigue After Stroke

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Abstract: Background: Post-stroke fatigue is one of the most common complications in stroke survivors. There is still a lack of Hematology that can early identify and respond to the severity of PSF. This paper will summarize the related hematological indexes of PSF from the perspectives of neurotransmitter, immune inflammation and metabolism. Materials and methods: Refer to relevant literature reports at home and abroad, review, summarize and summarize the indicators with the potential to predict PFS. Result: (1) The concentration of 5HT in female patients with PSF is lower than that in men. The decrease of monoamine oxidase activity in the promoter region of 5HT related gene is a predictor of PSF in female patients, especially in the 3 months before stroke. (2) Serum IL-1 in the early stage of immune inflammation β. The level of hs CRP is positively correlated with the degree of fatigue at 6 months after stroke. ESR, PLR, MLR and NLR were used as predictors. (3) Platelet oxygen consumption rate there is a two-way relationship between platelet oxygen consumption rate and PSF. When FAS<25, platelet oxygen consumption rate is negatively correlated with fatigue degree, and when FAS>25, it is positively correlated with fatigue degree. (4) Serum uric acid≥366μmo /L during stroke is an independent risk factor for fatigue one year after stroke. (5) Serum TSH levels are negatively associated with the risk of acute PSF, and the risk of PSF is higher at low TSH levels 6 months after the first stroke. (6) Norepinephrine and serotonin norepinephrine and serotonin levels are negatively correlated with the incidence of post-stroke fatigue. Frontal lobe related neural pathway abnormalities may reduce the levels of neurotransmitters such as serotonin and norepinephrine, leading to post-stroke fatigue. (7) The level of serum cystatin Cys-C is positively correlated with PFS. The specificity of Cys-C > 0.75mg/l was 93.7%, Cys-C increased by 1 mg /dl (0.1mg /L), and the risk of PSF increased by 2.55 times. Conclusion: 5-HT and serum IL-1 are summarized β, Hs-CRP and other markers can predict PFS, but in view of the limited research data on PSF, it is still necessary to increase the sample size and conduct in-depth research in the future.

Keywords: Fatigue After Stroke, Biomarker, Stroke

Fusobacterium nucleatum Infection Correlates with Microsatellite Instability and MLH1 Downregulation in Colorectal Cancer

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Abstract: Several studies suggest a link between *Fusobacterium nucleatum* (*F. nucleatum*) infection in the gut and microsatellite instability (MSI), which is one of the major carcinogenetic pathways of colorectal cancer (CRC). In addition, it has been well established that deficiency in mismatch repair (MMR) proteins is responsible for MSI. Thus, we speculated that *F. nucleatum* might also have a relationship with MMR protein expression. To elucidate this question, we first explored the abundance of *F. nucleatum* in samples of CRC patients who underwent surgery or colonoscopy. The association between *F. nucleatum* status and clinicopathological and molecular features in CRCs through quantitative real-time PCR was evaluated in 567 CRC cases. Enrichment for *F. nucleatum* DNA in the tumor tissue was observed in young patient cohort, patients with higher pT stage, higher pN stage and advanced clinical stages. In addition, multivariable ordinal logistic regression analysis showed that overabundance of *F. nucleatum* was positively correlated with MSI-positive status and the loss of expression of MMR protein MLH1, but not MSH2, MSH6 or PMS2. To examine whether *F. nucleatum* directly regulated components of the MMR machinery, we infected colorectal cancer cells Colo205, SW480, DLD1 and CT26 with *F. nucleatum* at different multiplicity of infection (MOI). Western blotting was used to detect the expression level of MLH1. It turned out that MLH1 were downregulated at different degrees in all of the four cell lines. To further confirm the conclusion, we conducted *in vivo* experiment with nude mice, and MLH1 level of subcutaneous tumor tissue administrated with *F. nucleatum* was also lower than that of control groups. Mechanism investigation suggested that lanthionine, a constituted component of the cell wall of *F. nucleatum* might be the extracellular signal that initiated MLH1 downregulation. This study first provided experimental evidence for the role of *F. nucleatum* in MLH1 expression, suggesting a new potential mechanism for deficient MMR (dMMR) besides epigenetic inactivation of MLH1.

Keywords: Microsatellite Instability, MLH1, Colorectal Cancer, *Fusobacterium nucleatum*, Lanthionine

Active Substance and Mechanism of Ganfule (GFL) Treating Primary Carcinoma of the Liver Based on Network Pharmacology

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Abstract: (Objective) To study the effects of GFL on inhibiting the proliferation, invasion abilities and related protein expression of human hepatoma carcinoma HepG-2 cells, then to further verify the screening results of network pharmacology. (Methods) The effects of GFL influencing on the expression of hepatoma carcinoma targets were evaluated by a network mode of medicine-ingredient-target-pathway-disease", and the most active anti-hepatoma low molecular weight compounds and the critical signal transduction pathways were determined by network pharmacology strategy. The proliferation rate was detected by CCK-8 methods. The migration and invasion ability were measured by Transwell assay. The PIK3CA and CASP8 proteins expression levels were examined by western-blot assay. (Results) 69 ingredients including quercetin, beta-sitosterol, vanillin, artemisin C, eugenone, and so on were main potential active low molecular weight compounds inhibiting tumor cell. Yinchen, Chaihu, Dangshen, Huangqi, Chenxiang, Baizhu and Dahuang were key nodes in network. CAPS8, PIK3CA targets were closely related with PI3K - Akt/mTOR/JAkt - STAT/Wnt signaling pathways. GFL (5 μl/mL, 10 μl/mL) inhibited the proliferation, migration and invasion ability of human hepatoma carcinoma HepG-2 cells in time-dose-dependent manner ($P < 0.05$) after 48h. GFL had the ability of down-regulating the express of CASP8 and PIK3CA. (Conclusion) Ganfule indirect regulate PI3K-Akt/JAkt-STAT signaling pathway with inducing the expression of PIK3CA and CASP8, which restrain proliferation, migration and invasion abilities of human hepatoma carcinoma HepG-2 cells. The mechanism of GFL anti-hepatocellular carcinoma maybe associated with indirect regulation of PI3K-Akt/JAkt-STAT signaling pathway through inducing the expression of PIK3CA and CASP8, along with inhibitory of proliferation, migration and invasion abilities of human hepatoma carcinoma HepG-2 cells in a time-dose dependent manner, with view to affecting the normal morphology and physiological activity of HepG-2 cells.

Keywords: Ganfule, Network Pharmacology, Hepatoma Targets, Proliferation, Migration, Invasion

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Antilipemic Effect of Gafule on Nonalcoholic Fatty Liver Disease Model Rats

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Abstract: (Objective) To observe the lipid-lowering effect of Ganfule on alcoholic fatty liver disease model rats. (Methods) 60 adult healthy male SD rats were selected and randomly divided into sham operation group, model group, positive control group (0.42 mg/mL Simvastatin) and Ganfule capsule group (60 mg/mL). Non-alcoholic fatty liver disease rat models were established in the other three groups. After successful modeling, the rats in each group were given corresponding drugs by gavage respectively, and the sham-operated group and the model group were given the same amount of normal saline. The body weight of the rats in each group was observed. The levels of serum biochemical indexes such as TC, TG, ALT, AST and LDL-C/HDL-C in liver tissue of rats in each group were detected by automatic biochemical analyzer. HE staining and Oil Red O staining method were used to detect the pathological changes of the liver tissue of the rats in each group. The contents of inflammatory factors IL1A and IL4 in the liver tissue of rats in each group were detected by ELISA method. Western blotting was used to detect the protein expressions of PPAR-α, PPAR-δ, IL1A and IL4 in the liver tissues of rats in each group. (Results) Compared with the sham-operated group, the body weight of the other three groups increased significantly (P <0.01); the sham-operated group had intact liver tissue structure and cell function; the model group had severely damaged liver tissue structure and obvious swelling of liver cells, the infiltration of inflammatory cells was obvious, and the vacuolated lipid droplets were increased; the pathological changes of the rats in the Simvastatin group and the Ganfule capsule group were alleviated, and the lipid droplets were significantly reduced. Compared with the sham-operated group, the contents of TC, TG, ALT, AST and LDL-C in the other three groups were significantly increased (P <0.01), and the content of HDL-C was decreased (P <0.05); Compared with the model group, the contents of TC, TG, ALT, AST and LDC-C in the Simvastatin group and the Ganfule capsule group were significantly decreased (P <0.01), and the content of HDL-C was increased (P <0.05). Compared with the sham-operated group, the protein expressions of PPAR-α and PPAR-δ in the other three groups were significantly down-regulated (P <0.01), while the protein expressions of IL1A and IL4 were significantly up-regulated (P <0.01); Compared with the model group, theexpressions of protein PPAR-α and PPAR-δ in the Simvastatin group and the Ganfule capsule group were significantly up-regulated (P <0.01), while the protein expressions of IL1A and IL4 were down-regulated (P <0.05); Compared with the Simvastatin group, the expressions of protein PPAR-α and PPAR-δ in the Ganfule capsule group were down-regulated (P <0.05), while the expressions of protein IL1A and IL4 were up-regulated (P <0.05). (Conclusion) Ganfule Capsule may improve the lipid deposition and serum biochemical indexes of liver cells of non-alcoholic fatty liver rats through the functions of invigorating the spleen and regulating qi, promoting blood circulation and removing blood stasis, as well as regulating the express levels of protein PPAR-α, PPAR-δ, IL1A and IL4.

Keywords: Ganfule, Nonalcoholic Fatty Liver Disease, High-fat Model Rats, Antilipemic Effect

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Hypomethylation of Plasma Cell-Free DNA Has a High Diagnostic Value for Endometrial Polyps

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Abstract: Objectives: Endometrial polyp (EP) is a common gynecological condition, which results from local hyperproliferation of the endometrium, containing glands and stroma. DNA methylation is an important epigenetic marker that affects the expression of genes related to cell proliferation. cfDNA, as a type of non-invasive biomarker, carries tissue-specific epigenetic informations, suitable for screening proliferative diseases. However, no specific link between cfDNA methylation and EP has been demonstrated. We hypothesized that cfDNA methylation level is associated with the etiology of EP. Methods: This study included 45 EP cases and 55 female controls continuously enrolled at Shenzhen Baoan Women's and Children's Hospital of Jinan University between July and December 2019. The EP patients were diagnosed by hysteroscopy, ultrasonic imaging, and pathological examinations; while the controls exclude those with EP, endometriosis, endometrial cancer, gynecologic endocrine system disorders. Differentially methylated genes (DMGs) were analyzed in first recruited 10 cases and 11 controls using targeted capture methylation sequencing targeting 24,473 CpG sites consistently showed aberrant methylation in proliferative diseases according to The Cancer Genome Atlas. Then 21 candidate DMGs were validated in total population by multiplex amplicon methylation sequencing in total population. We further conducted the GO and KEGG enrichment analyses of the validated DMCs, and performed the PPI analysis between these altering genes. We divided total population into a Training set (70% of samples) to construct a prediction model for EP using LASSO-Logistic regression, and a Test set (30% of samples) to evaluate the diagnostic efficiency using ROC. Results: Total 19 hypomethylated genes were found and validated in this study, including *PRKCA*, *COL4A2*, *IGF1R*, *CTBP1*, *TCF7L1*, *E2F3*, *CACNA2D4*, *KCNJ12*, *TPO*, *UGT1A8/10*, *CABP5*, *CST9*, *ITGA2*, *DLGAP2*, *ESPNP*, *NBPF25P*, *RASA3*, *ZIM2*, *PXDN*, *HDAC4*, and *VAV2*. These genes are enriched in IGF1R pathway, relative to 4 GO process, 4 KEGG pathways, and a 10-protein interaction network. In the training set, we constructed a prediction model with a 90.3% sensitivity and an 87.2% specificity (AUC=0.961), including 7 markers (*IGF1R*, *CTBP1*, *TCF7L1*, *E2F3*, *CACNA2D4*, *KCNJ12*, and *TPO*). This model showed a 92.9% sensitivity and an 87.5% specificity (AUC=0.955) in the test set. Conclusion: We found that hypomethylation of cfDNA was associated with EP risk, and a set of 7 markers of DMGs had a high diagnostic value for EP. Larger studied in different ethnic population are warranted.

Keywords: cfDNA, Endometrial Polyps, Methylation, Prediction Model, Diagnostic Efficiency

Association Between Insulin Resistance and Abnormal Menstrual Cycle in Patients with Polycystic Ovary Syndrome

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Abstract: Polycystic ovary syndrome (PCOS) is a common reproductive endocrine disorder with a 5.5-16.0% prevalence. It characterized by menstrual cycle disorders and insulin resistance, and can lead to a variety of health problems, such as cardiovascular disease, diabetes, hypertension, and infertility. Insulin resistance is thought as a pivotal etiology of PCOS and related comorbidities. However, the link of insulin resistance and abnormal menstrual cycle in PCOS is largely uncertain. In this study, we want to clarify the association of insulin resistance and amenorrhea in PCOS patients. This study included 140 incident PCOS patients of reproductive age at Shenzhen Baoan Women's and Children's Hospital from 2020 to 2021. The insulin resistance index (HOMA-IR) was compared among the patients with normal menstruation, oligomenorrhea, and amenorrhea, using ANOVA analysis. And further stratification analyses were performed on confounding factors of amenorrhea, such as age, parity, gravidity and circulating levels of hormones. We found that compared to the patients with normal menstruation, those with oligomenorrhea had a higher HOMA-IR index (2.02 [95%CI: 1.61-2.44] vs. 1.610 [95%CI: 1.37-1.85], $P<0.01$), and those with amenorrhea had a further increased HOMA-IR index (2.35, 95%CI: 1.96-2.75, $P<0.01$). There was a dose-response relationship between the increased HOMA-IR index and the level of menstrual cycle disorders (P for trend = 0.003, Figure 1). Further stratification analyses showed that this dose-response relationship was more evident in the patients who was older than 25 years ($F=6.833$, P for trend = 0.012), had no pregnancy history ($F=16.907$, P for trend <0.001), no parity history ($F=15.355$, P for trend<0.001), had a lower circulating progestogen level (≤0.9 ng/ml, $F=15.670$, P for trend<0.001), and higher levels of testosterone (>0.43 ng/ml, $F=15.670$, P for trend<0.001), anti-Müllerian hormone (>7.69 ng/ml, $F=29.465$, P for trend<0.001), and inhibin B (>74.0 pg/ml, $F=21.035$, P for trend<0.001). In conclusion, our study has established an association between insulin resistance and abnormal menstrual cycle in PCOS patients, which can be affected by older age and aberrant hormone levels. Our results might be helpful for further prevention and treatment of amenorrhea in PCOS.

Keywords: Polycystic Ovary Syndrome, Insulin Resistance, Amenorrhea, Risk Factors

Association Between *LIN28B* Polymorphisms and Postoperative Recurrence of Uterine Fibroid

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Abstract: It is known that *LIN28B* gene is highly expressed in a variety of tumors, which promotes the proliferation of tumor cells and leads to recurrence. After myomectomy, the residual uterine fibroid cells proliferate, which can lead to postoperative recurrence. Therefore, we speculate that *LIN28B* polymorphisms are associated with recurrence of uterine fibroid after myomectomy. From February 2014 to May 2020, 396 female patients who were treated with myomectomy entered the study cohort, and then were followed up to May 2021. We genotyped two common polymorphisms in *LIN28B* gene (rs314280 A > G and rs369065 C > T) and analyzed the association between these genotypes and the risk of recurrence after myomectomy in multiple Cox regression model. In this study, 24.0% of patients (95/396) had a postoperative recurrence of uterine fibroid. We found an increased recurrence risk of with rs314280 AA genotype (adjusting hazard ratio [HR] = 2.404, 95% confidence interval [CI] = 1.274 – 4.535, *P*=0.007), compared to GG genotype. Similarly, rs369065 CC genotype also showed an increased risk of recurrence (adjusting HR = 2.259, 95% CI = 1.195-4.270, *P*=0.012), compared to TT genotype. We further combined the genotypes of the two SNPs according to the number of risk genotypes, defining the rs314280 AA genotype and rs369065 CC genotype as risk genotypes. Compared to the carriers with zero risk genotypes, carriers with two risk genotypes had a higher risk of recurrence (adjusted HR = 2.130, 95% CI = 1.153-3.935, *P*=0.016) and a shorter recurrence time (94 days vs 160 days, Figure 1). Further stratification analysis showed that the increased risk of two risk genotypes was more significant in patients who were younger than 38 years (adjusted HR = 1.982, 95%CI = 1.011 – 3.887, *P*=0.046), had a reproductive history (adjusted HR = 2.271, 95%CI = 1.200 – 4.300, *P*=0.012), had intramural myoma (adjusted HR = 2.025, 95%CI = 1.078 – 3.807, *P*=0.028), had a single myoma (adjusted HR = 2.759, 95%CI = 1.411 – 5.395, *P*=0.003) and had smaller myomas (≤6.0 cm, adjusted HR = 2.199, 95%CI = 1.141 – 4.241, *P*=0.019). In summary, our study showed that rs314280 AA genotype combined with rs369065 CC genotype of *LIN28B* gene can increase the risk of postoperative recurrence in uterine fibroid patients, which was evident in patient who was younger, and had less or smaller myomas. Our results might be helpful for prevention of myoma recurrence after operation, with considering both protecting fertility and preventing recurrence.

Keywords: LIN28B, Polymorphism, Uterine Fibroid, Recurrence

FoxO3 Reverses 5-fluorouracil Resistance in Human Colorectal Cancer Cells by Inhibiting the Nrf2/TR1 Signaling Pathway

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Abstract: 5-fluorouracil (5-FU) is widely used in chemotherapy for colorectal cancer (CRC), but a high rate of chemoresistance reduces its effectiveness in clinical treatment. We found remarkably decreased expression of forkhead box 3 (FoxO3) protein, a tumor inhibitor, in 5-FU-resistant SW620 and HCT-8 (SW620/5-FU and HCT-8/5-FU) cells. Moreover, FoxO3 overexpression sensitized SW620/5-FU and HCT-8/5-FU cells to 5-FU. Mechanistically, FoxO3 inhibited the nuclear factor erythroid 2-related factor 2 (Nrf2) signaling pathway by directly binding to Keap1 promoter. Thioredoxin reductase 1 (TR1), a pivotal target gene of Nrf2, was observed to promote 5-FU resistance by reducing intracellular ROS levels. Clinical data also revealed that significant upregulation of TR1 was associated with poor outcome in CRC patients. Auranofin (AUR), a FoxO3 agonist and TR1 inhibitor, enhanced the sensitivity of HCT-8/5-FU and SW620/5-FU cells to 5-FU in vitro and in vivo. Taken together, our results suggest that FoxO3 could reverse 5-FU resistance in CRC via inhibiting the Nrf2/TR1 signaling pathway, and increasing the level of intracellular reactive oxygen species. Chemotherapeutic agents targeting FoxO3 and/or TR1, including AUR, might be promising adjuvant sensitizers to reverse chemoresistance in 5-FU-resistant CRC.

Keywords: FoxO3, 5-Fluorouracil, Colorectal Cancer Cells, ChemoresistanceNrf2

AIDS-related Knowledge, Attitudes and High-risk Sexual Behaviors Among Chinese College Students: Across-sectional Survey

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Abstract: Objective: To understand the current situation of HIV-related knowledge, belief, and behavior among college students in a university in Xinjiang, and to provide a basis for targeted behavioral interventions. Methods: Cluster sampling method was used to select college students from a university in Xinjiang, using the AIDS knowledge awareness questionnaire for young students, the AIDS Attitude Questionnaire for adolescents (AAQ), and the Risk Behaviors of AIDS Questionnaire for adolescents (RBAQ) to understand their HIV-related knowledge, attitudes and behaviors, and SPSS25.0 was used for statistical analysis. Results: Of the 2810 respondents, the overall knowledge awareness rate of college students was 79.7% (2239/2810). Among them, the degree of mastery of transmission methods was the worst, of which correct rate was only 59.5% (1672/2810); overall AIDS Attitude score was 91.42±11.11 points, attitude towards AIDS score was 23.34±3.33 points, attitude towards infected persons/patients score was 53.22±7.91 points, and attitude towards AIDS high-risk behaviors score was 14.87±2.26 points, all at a high level, 61.3% (1723) of college students said they were afraid of AIDS, 22.1% (621) of college students thought that AIDS had nothing to do with them, and 48.0% (1350) of college students thought it was understandable for college students to have premarital sex; there was a positive correlation between the scores of AIDS-related knowledge and attitude ($P<0.05$), and knowledge, attitude scores were negatively correlated with high-risk sexual behavior scores ($P<0.05$), respectively; 15.0% (422/2810) of college students reported that they had high-risk sexual behaviors. Conclusion: The overall AIDS knowledge level of college students needs to be improved. The AIDS attitude is generally at a high level, and the incidence of high-risk sexual behavior is relatively high. Targeted AIDS-related education should be designed and offered.

Keywords: College Students, HIV Knowledge, HIV Attitude, HIV Behavior, China

Diagnostic Value of Transbronchoscopic Biopsy Guided by Miniprobe Ulthrasonography (MPS) for Pulmonary Peripheral Lesions

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Abstract: Objective To evaluate the value of transbronchoscopic biopsy guided by miniprobe ulthrasonography (MPS) for pulmonary peripheral lesions. Methods from January 2017 to December 2017, 50 patients with extrapulmonary lesions identified by CT examination at the Clinical College of Yangzhou University were enrolled. During bronchoscopy, MPS was used to guide the biopsy of the lesions. The probability of positive diagnosis, operating time, and incidence of adverse reactions were observed. The correlation between positive diagnosis rate and some factors, including the size of the lesion, whether there are bronchial truncation signs on the chest CT, and whether there is bleeding when the probe is explored. Results 37 of the 50 patients had a definite diagnosis, and the total positive diagnosis probability was 74%. Further sub-group analysis found that the positive rate was 78.6% (22/28) and 68.2% (15/22) respectively with maximum diameter of lesions ≥ 3cm and < 3cm, and the positive diagnosis rate between the two groups was not statistically significant ($x2 = 0.691$, $P = 0.520$); The positive rate was 89.5% (17/19) and 64.5% (20/31) respectively with or without bronchial truncation on the chest CT showed, and there was no statistically significant difference in the positive diagnosis rate between the two groups ($x2 = 3.841$, $P = 0.095$); The positive rate was 95.7% (22/23) and 55.6% (15/27) with or without bleeding at the site of the lesion during probe exploration, and the positive diagnosis rate between the two groups was statistically significant ($x2 = 10.378$, $P = 0.001$). Operating time varies from 10 to 30 minutes, with an average operating time of 17 minutes; The overall adverse reaction rate was 20% and there were no serious complications. Conclusion MPS is of high value in the diagnosis of extrapulmonary lesions by guiding bronchoscopy, and this technique is worth promotion.

Keywords: Miniprobe Ulthrasonography, Bronchoscopy, Pulmonary Peripheral Lesions

Duodenal-jejunal Bypass Restores Intestinal T1R2/T1R3-mediated Glucose Sensing and Absorption in Uncontrolled Diabetes

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Abstract: Objectives: Our previous study demonstrated that duodenal-jejunal bypass (DJB) ameliorated glycemic control in a nonobese diabetic rat model but the underlying mechanisms are unclear. This study aimed to identify the regulatory function of sweet taste receptors and glucose transporters within the DJB-remolded intestine and gut peptide secretion after DJB. Methods: DJB or Sham surgeries were performed in high-fat-diet and streptozotocin (STZ)-induced diabetic Wistar male rats. Oral glucose tolerance tests, food intake and body weight were examined before and after surgery. The alterations of GLP-1 and GLP-2 levels of were evaluated in DJB, Sham and age-matched normal control rats during fasting or fed condition. Villus height and crypt depth of the intestinal duodenum and jejunum were measured in the three groups. Moreover, the expression levels of sweet taste signals and glucose transporters were detected not only in alimentary limb but also in biliopancreatic limb and common limb of the three group rats after DIB. Results: The glucose tolerance was improved in DJB-operated rats compared with Sham rats, similar to that of Ctrl rats without significant difference in body weight and food intake among the three groups. The plasma levels of insulin were increased after DJB in both feeding and fasting conditions. The plasma GLP-1 levels of DJB rats were also increased in diet-fed condition, and GLP-2 levels of DJB rats were increased after fasting. The villus height and crypt depth were decreased in BP limb of DJB rats, but were increased in A limb. Moreover, the crypt depth of C limb was also proliferative in DJB rats with no significant changes in villus height. The expression of glucose sensors (sweet taste receptors, T1R2/T1R3), taste-associated G-protein α-gustducin signal and glucose transporters (SGLT1, GLUT2) was decreased in BP limb and C limb of DJB rats, but the expression T1R2, α-gustducin and SGLT1 was increased in A limb of DJB rats. Conclusions: Our studies indicate that DJB ameliorates glucose control probably via enhancing glucose sensing and restoring glucose transporters-regulated absorption with coordination of GLP-1 and GLP-2.

Keywords: DJB, Sweet taste Receptor, GLP-1, GLP-2, SGLT1

Training Demands of Junior Nurses on Ideological and Moral Course: A Phenomenological Study

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Abstract: Objective: The semi-structured interview method was used to understand the training needs of new nurses, in order to establish a standardized, reasonable and targeted ideological and moral course training system. Methods: Using phenomenological research methods, semi-structured interviews were conducted with 9 new nurses, 7 clinical nursing teachers, and 9 nursing supervisors. Data were collected through face-to-face semi-structured in-depth interviews using phenomenological methods in qualitative research. And the data were analyzed by Colaizzi content analysis method. Result: 25 people were finally included in the interview. A total of 25 interviews were conducted, with an average interview time of 33.96 ± 2.85 min and a total of 50,000 words transcribed. Through analysis and sorting, three themes were extracted: (1) The psychological confusion of newly recruited nurses, for example role transition, communication, occupational stress, occupational planning, emotion regulation, and self-control. (2) Ideological and moral course training were necessary. (3) The diversified training methods such as case analysis, scenario simulation, lectures. Conclusion: The construction of a reasonable, standardized and targeted ideological and moral course training system is helpful for newly recruited nurses to establish correct professional values and reduce the turnover rate of nursing staff.

Keywords: Newly Recruited Nurses, Ideological and Moral Courses, Qualitative Research

Exosomal miR-543 Inhibits the Proliferation of Ovarian Cancer by Targeting IGF2

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Abstract: Ovarian cancer (OvCa) is the most lethal gynaecological malignancy worldwide. We aimed to illustrate the potential function and molecular mechanism of exosomal microRNA-543 (miR-543) in the oncogenesis and development of OvCa. Differentially expressed microRNAs in exosomes derived from OvCa cell lines were identified by bioinformatic analysis and verified by RT-PCR. Cell proliferation ability was estimated by clonogenic and 5-ethynyl-2'-deoxyuridine assays in vitro and in vivo. Potential involved pathways and targets of exosomal miRNAs were analysed using DIANA and verified by pyrosequencing, glucose quantification, dual-luciferase reporter experiments and functional rescue assays. Bioinformatic analysis identified miR-543 and its potential target genes involved in the cancer-associated proteoglycan pathway. The expression of miR-543 was significantly decreased in exosomes derived from OvCa cell lines, patient serum and OvCa tissues, while the mRNA levels of insulin-like growth factor 2 (IGF2) were increased. Furthermore, the overexpression of miR-543 resulted in the suppression of OvCa cell proliferation in vitro and in vivo. Moreover, miR-543 was significantly negatively correlated with IGF2 in OvCa tissues in comparison with paracarcinoma tissues. Notably, upregulation of miR-543 led to increased cell supernatant glucose levels and suppressed cell growth, which was rescued by overexpression of IGF2. Exosomal miR-543 participates in the proteoglycan pathway to suppress cell proliferation by targeting IGF2 in OvCa.

Keywords: Ovarian Cancer, miRNA-543, IGF2, Proliferation, Exosome

Engineered CAR T Cells with Recognition Optimization and Its Application in Solid Tumor Therapy

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Abstract: Chimeric antigen receptor (CAR) T cell therapy has been demonstrated feasible against hematological cancers in clinical trials, but encountered limitation in treating solid tumors. One of the largest challenges is the scarcity of tumor-specific targets that can act as CAR recognition domains, resulting in on-target, off-tumor toxicity. We therefore focus on generating a genetic engineered CAR T cells with peptide affinity specialty, not restricted to a known target. T cells with peptide-CAR can selectively target A549 cells, and exhibit excellent proliferation, cytotoxicity activity *in vitro*. Simultaneously, the peptide-based CAR T cells are effective in inhibiting tumor growth. More importantly, by tuning the sensitivity of CAR to antigen, peptide-based CAR T cells could distinguish tumors from normal tissue. As a result, no off-tumor toxicity is observed on healthy organs in mouse xenograft models during treatment. In summary, we constructed a new engineered CAR T cells by genetic modification. Due to the recognition pattern and sensitivity, these CAR T cells are endowed with ascendancy in solid tumor treatment. Our findings demonstrate that peptide-based CAR T holds great potential in solid tumor therapy due to an excellent targeting ability towards tumors.

Keywords: Chimeric Antigen Receptor, Off-tumor Effect, Peptide, Anti-cancer Therapy, Affinity

Develop a Blockade Peptide of PD-1 for Cancer Immunotherapy

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Abstract: Immunotherapy has become an important means of cancer treatment. Immune checkpoint inhibitors, particularly antibodies that block PD-1/PD-L1 signaling axis, have achieved impressive efficacy in diverse types of cancer. However, some drawbacks of antibodies limit their application in clinic, such as high immunogenicity, high cost, and so on. Peptides in the sweet spot between small molecules and proteins have attracted great interests. In this study, with bacterial surface display technology, we developed a PD-1 blocked peptide (PBP). PBP peptide could bind with free PD-1 and PD-1 expressed on cell surface, and showed cross-reaction with human PD-1 and mouse PD-1. Competing binding assay indicated that PBP peptide could interfere PD-1/ PD-L1 interaction. Molecular docking research demonstrated that PBP peptide and PD-1 binding site was close to the location where PD-1 interacted with PD-L1. Furthermore, the results from T cell activation assay showed that PBP peptide could reinvigorate T cells inhibited by PD-1/PD-L1 pathway. The *in vivo* results demonstrated that PBP peptide could inhibit the growth of tumor in CT26 mouse model through enhancing the function of T cells with more release of IFNγ. In conclusion, all results illustrated that PBP peptide through blocking the PD-1/PD-L1 pathway to exert anti-tumor effect, providing a potential low molecular weight candidate for tumor immunotherapy.

Keywords: Immunotherapy, Checkpoint Inhibitor, PD-1/PD-L1, Bacterial Surface Display, Peptide, T Cell

Prediction of the Acute Levodopa Challenge Test in Parkinsonism Based on Azure Kinect Depth Camera

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Abstract: Background: The acute levodopa challenge test (ALCT) is an important and valuable examination for movement disorders, but the procedure is laborious and time-consuming. Objective: We aimed to explore whether an Azure Kinect depth camera could predict the outcome of ALCT. Methods: Forty individuals with Parkinsonism completed ALCT and the improvement rate (IR) of the Movement Disorder Society-Sponsored Revision of the Unified Parkinson's Disease Rating Scale part Ⅲ (MDS-UPDRS Ⅲ) score was calculated. A logistic regression model was developed using kinematic features extracted from the patients' movements in both the OFF and ON states with an Azure Kinect-based system. Results: The IRs of kinematic features for toe tapping, leg agility and gait were significantly correlated with the IR of MDS-UPDRS Ⅲ. Notably, the IRs of average lifting speed (r_s = 0.689, P < 0.001) and average falling speed (r_s = 0.683, P < 0.001) of toe tapping were significantly correlated with the MDS-UPDRS Ⅲ IR. The resulting model combining kinematic features of toe tapping predicted a clinically significant response to levodopa with an area under the receiver operator curve of 0.946 (95%CI = 0.822–0.993; P < 0.001). The optimal cut-off value was 0.788 with a sensitivity and specificity of 87.50% and 91.30%, respectively. Conclusion: This study demonstrates the possibility of predicting the outcome of ALCT based on kinematic data derived from an Azure Kinect-based system. Especially, the kinematic features of toe tapping showed the best performance for this prediction purpose.

Keywords: Parkinsonism, Levodopa Challenge Test, Depth Camera

Effect of S4D Computer Treatment in Children with Hyperopic Amblyopia and Hyperopic Anisometropic Amblyopia

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Abstract: Objective: To evaluate the effect of stereoscopic 4D (S4D) technology as a visual training system in children with hyperopic amblyopia and hyperopic anisometropic amblyopia. Methods: 48 patients aged 3-9 years with hyperopic amblyopia and hyperopic anisometropic amblyopia were recruited, including 18 hyperopic amblyopia (36 eyes) and 30 hyperopic anisometropic amblyopia (30 eyes). All patients excluded other eye diseases and received stereoscopic4D (S4D) technology training on the basis of refractive correction and reasonable covering. The initial training was mainly to improve visual acuity. Those with visual acuity above 0.6 were treated with disinhibition training and binocular visual function training. The changes of visual acuity and binocular stereopsis before and after training were compared. Results: 18 patients (36 eyes) with hyperopic amblyopia were divided into mild amblyopia group (n = 13), moderate amblyopia group (n = 19) and severe amblyopia group (n = 4). 30 patients (30 eyes) with hyperopic anisometropic amblyopia were divided into mild amblyopia group (n = 5), moderate amblyopia group (n = 13) and severe amblyopia group (n = 12). The visual acuity was significantly improved after 60 times of treatment. After 60 times of treatment, stereopsis was significantly improved, which had nothing to do with the initial diopter, but positively correlated with the visual acuity initially and finally ($P<0.05$), and positively correlated with the amount of anisometropia ($P<0.05$). Conclusion: Stereoscopic4D (S4D) technology training combined with traditional treatment can effectively improve the visual acuity and binocular function of 3-9-year-old children with anisometropic amblyopia and hyperopic anisometropic amblyopia.

Keywords: Stereoscopic 4D Computer Treatments, Hyperopia, Anisometropia, Amblyopia, Children

Molecular Differences of Autoimmune Liver Diseases and HBV/HCV-induced Chronic Hepatitis

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Abstract: Autoimmune liver diseases (AILD) are a kind of autoimmune disease, including autoimmune hepatitis (AIH), primary biliary cirrhosis (PBC), and primary sclerosing cholangitis (PSC). Even though there have been studies on molecular mechanisms, clinical diagnosis and treatments, there are still many problems to be solved. For example, it is still not definitive to determine that a significant increase in serum immunoglobulin is caused by autoimmune hepatitis or HBV/HCV-induced chronic hepatitis. HBV and HCV are common causes of chronic hepatitis. At present, the etiology of chronic disease has not been elucidated. And post-infection immune response is the most likely determinant of liver injury. HCV infection can activate autoreactive CD8T cells through molecular simulation, inducing autoimmunity. This may be because HCV and liver membrane target antigens own the same antigen determinant. Therefore, whether HBV/HCV-induced chronic hepatitis is associated with autoimmune liver damage is interesting, but it still needs to be explored. In our work, we try to determine the underlying molecular basis of the differences between autoimmune liver diseases and HBV/HCV-induced chronic hepatitis, including the regulation of various genes and the associated dynamic network of immune cells. Our results describe basic biological differences and provide possibilities for clinical diagnosis and treatment.

Keywords: Autoimmune liver diseases, HBV, HCV, Chronic hepatitis, Immunology regulation

Effect and Mechanism of Bone Marrow Mesenchymal Stem Cell-derived Exosomes on Neuroinflammation After Brain Injury in Premature Infants

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Abstract: Objective: To explore the effect of the external secretion of the interstitial stem cell source on the inflammation of the neuroinflammation after hypoxia ischemic brain injury and its possible mechanism. Methods: First, in vitro the influence of bv2 and exosomes on the polarization phenotype of bv2 cells was studied by using the transwell culture system and then using the left carotid aortic artery, the effect of the anoxic ischemic brain injury model was made by the lateral ventricle, and the effect of the neuroinflammation and microglia's polarization of the neuroinflammation and microglia cells was tested by the external secretion of the interstitial stem cell cells. In this process, the determined mirna and its possible pathways are verified to determine the target mirna by using the HIE model to determine the target mirna inhibition and expression and by establishing the hie milk mouse model, the verification purpose mirna and its related pathways are used in the inflammatory process after hypoxic ischemic brain injury. Results: the exosomes of BMSCs can promote the polarization of the phenotype in vitro and in the internal environment, and inhibit the inflammatory response of nerve inflammation. In addition, the extracal body of BMSCS can also reduce the apoptosis of neurons and protect the impaired brain tissue, including the mirna-653-3p, which may play a major role in this process by activating the keap1/nrf2 pathway.

Keywords: Pediatric Neonatal, Hypoxic-ischemic Encephalopathy, Exosome, Microglial Phenotype

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Multi-omics Bulk and Single-cell Rna-seq Identify ADCY7 as a Prognostic Biomarker Related to Tumor Immunosuppressive Microenvironment and Drug Sensitivity

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Abstract: Adenylate cyclase 7 (ADCY7) has been demonstrated to play important role in immune response and various cancers, but its role in tumor microenvironment remains uncertain. The aim of the present study was to investigate the correlation between ADCY7 expression, tumor microenvironment, immunotherapy response, drug sensitivity and its functional roles. We analyzed ADCY7 expression and function using single-cell and bulk sequencing including TCGA, GTEx, CCLE, GEO, HPA, PROTTER, OPENTARGET, Tabula Muris and TISCH platform. COX analysis and the Kaplan-Meier method were used to explore the prognostic values. We conducted the investivation of ADCY7 at multi-omics level. We found that ADCY7 was overexpressed and correlated with the prognosis in several types of cancer. Its expression was associated with CNV, methylation, TMB, MSI, ICB treatment, immunosuppressive cells and immune-related genes. GSEA and GSVA revealed that multiple tumor and immune-related pathways were enriched. ESTIMATE, CIBERSORT, ImmuCellAI, XCELL, TIMER, ssGSEA and Single-cell RNA-seq datasets revealed that ADCY7 expression was correlated with immune cells and cancer-associated fibroblasts. Functional experiments showed that knockdown of ADCY7 impeded the malignant phenotypes of both CAFs and cancer cells in pancreatic cancer. In conclusion, ADCY7 may serve as a potential prognostic and tumor environment related biomarker in pan-cancer. It promotes the development of CAFs and cancer cells in pancreatic cancer.

Keywords: ADCY7, Tumor Immune Microenvironment, Cancer-associate Fobroblasts

Effects of Transcranial Alternating Current Stimulation on Working Memory in Healthy Adults

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Abstract: Non-invasive brain stimulation is now widely used in cognitive neuroscience. Transcranial alternating current stimulation (tACS) modulate activity in cortical brain regions and improve cognition by applying a low intensity sinusoidal current to the scalp. The aim of this study was to observe the immediate and after-effects of tACS stimulation on working memory in healthy subjects. Twenty healthy subjects were randomized into sham group (23.9 ± 0.8 yr) and tACS group (24.6 ± 1.6 yr). Three 5 x 5 sponge electrodes with stimulation points F4, P4 and return electrode T8 (10-20 EEG system) were used. The stimulation frequency was 6 Hz and the current intensity was 2 mA (peak-to-peak) (NeuroConn GmbH, Ilmenau, Germany). The duration was approximately 15 minutes. In the sham group, all stimulus parameters were identical to the tACS group except for the stimulus duration of 30 seconds. The n-back paradigm was used in this experiment and subjects complete1-3 back pre- during- and post-stimulation. Repeated measures ANOVA was used to observe the effect of independent variable timing and group on dependent variable - IES (reaction time/accuracy). The study found no interaction effect between 1-back ($F = 0.738$, $P = 0.485$, $\eta^2p = 0.039$) and 2-back ($F = 0.973$, $P = 0.388$, $\eta^2p = 0.051$). However, an interaction effect between 3-back time and group was found ($F = 5.814$, $P = 0.006$, $\eta^2p = 0.244$). Post hoc tests found that the tACS group was significantly improved during-stimulation ($F = 7.288$, $p = 0.015$, $\eta^2p = 0.288$) and post-stimulation ($F = 10.498$, $p = 0.005$, $\eta^2p = 0.368$) compared to sham group. In conclusion, tACS enhances working memory performance in healthy subjects, and potentially high cognitive demand has important implications for the neural effects of tACS. Working memory performance can be enhanced by additional tACS, providing an innovative idea for working memory improvement.

Keywords: Transcranial Alternating Current Stimulation, Working Memory, Non-invasive Brain Stimulation

Molecular Docking and Molecular Dynamics Simulation of Artemisinin Drugs with Hemoglobin

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Abstract: Objective: In order to better study the mechanism of action between hemoglobin and artemisinin series drugs, the molecular docking and molecular dynamics simulation of artemisinin drugs and hemoglobin were carried out. Methods: Based on the crystal structure of hemoglobin, the complex structure models of hemoglobin artemisinin, hemoglobin artemether and hemoglobin dihydroartemisinin were constructed by means of molecular docking, and the molecular dynamics simulation was carried out. Molecular docking work uses discovery Studio 2 on HP Z600 graphics workstation Discovery Studio2.5 software package. Results: Artemether had the strongest binding ability, followed by dihydroartemisinin, and artemisinin had the worst binding ability. For artemether system, van der Waals force is the most important force in binding, but for dihydroartemisinin and artemisinin system, their binding force is determined by van der Waals force, electrostatic force and polar solvent action. Interestingly, the electrostatic force of dihydroartemisinin is much stronger than that of artemisinin and artemether, It shows that there is a hydrogen bond between dihydroartemisinin and hemoglobin. Hemoglobin and artemether have more important residues than dihydroartemisinin and artemisinin system. Conclusion: The order of the binding ability of the three drugs to hemoglobin is artemether > dihydroartemisinin > artemisinin. Due to the strong hydrophobic interaction between artemether and hemoglobin, the binding ability between artemether and hemoglobin is the strongest.

Keywords: Artemisinin, Dihydroartemisinin, Artemether, Hemoglobin, Molecular Docking

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Agglutination of Artemisinin Drugs with Some Substances

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Abstract: Artemisinin is a good antimalarial drug independently developed in China. It is highly effective and low toxic. In the process of studying the antimalarial mechanism of artemisinin drugs, we found that there was agglutination when the drugs came into contact with blood. ABO positive typing test card was used to detect the agglutination reaction of artemisinin and dihydroartemisinin with whole blood, red blood cells, hemolytic solution, hemin chloride, ferrous sulfate, ferric chloride, sodium chloride, DMSO and artemether. Artemisinins can agglutinate with many substances, such as red blood cells, red blood cell hemolytic solution, hemin chloride, ferrous sulfate, ferric chloride, sodium chloride and so on. The agglutination reaction in this paper is not related to antigen and antibody, but the result of the interaction between artemisinin drugs and various substances. Whole blood, red blood cells and hemolytic fluid contain biological macromolecular components. Hemin belongs to low molecular organic compounds, and the rest are simple inorganic compounds. Artemisinin drugs can interact with such a wide range of substances and agglutinate, indicating their strong effect. The mechanism is not clear, but there is a tendency of agglutination in the control, which is contrary to other results. Artemisinin can interact with many substances. This is a phenomenon, indicating that there is interaction, and its mechanism and significance need to be further studied.

Keywords: Artemisinin, Dihydroartemisinin, Agglutination, Hemin, Ferrous Sulfate, Ferric Trichloride, Sodium Chloride

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Expression and Clinical Significance of p-mTOR, p-4EBP1 and p-S6K1 in the Tissue of Colorectal Adenocarcinoma

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Abstract: Objective: To study the expression of p-mTOR, p-4EBP1 and p-S6K1 in colorectal adenocarcinoma and adjacent tissues, and to analyze the relationship between their expression and relevant clinicopathological data, and to explore their possible role and clinical significance in the occurrence and development of colorectal adenocarcinoma. Method: The expression of p-mTOR, p-4EBP1 and p-S6K1 in 60 colorectal adenocarcinoma tissues and 40 adjacent normal tissues were detected by immunohistochemical method. The data were analyzed by SPSS25.0 software, and the differences among the groups were compared, and the relationship between them and related clinicopathological features was analyzed. The correlation between positive rates was analyzed by Spearman correlation analysis, and the test level was α=0.05. Results: The expression levels of p-mTOR, p-4EBP1 and p-S6K1 in colorectal adenocarcinoma tissues were higher than those in adjacent tissues, the difference show statistical significance ($P < 0.05$). The expression of p-mTOR was correlated with lymph node metastasis, TNM stage and differentiation ($P < 0.05$), but not with age, sex, tumor size, location and depth of invasion ($P > 0.05$). The expression of p-4EBP1 was not correlated with age, sex, tumor size, location, depth of invasion, lymph node metastasis, TNM stage and differentiation ($P > 0.05$). The expression of p-S6K1 was not correlated with age, sex, tumor size, location, depth of invasion, lymph node metastasis, TNM stage and differentiation ($P > 0.05$). TNM staging and differentiation were correlated ($P < 0.05$), but not with age, sex, tumor size, location, depth of invasion and lymph node metastasis ($P > 0.05$). There was a positive correlation between p-mTOR and p-4EBP1 expression in colorectal adenocarcinoma ($r = 0.268$, $P < 0.05$). There was a significant positive correlation between p-mTOR and p-S6K1 expression in colorectal adenocarcinoma ($r = 0.433$, $P < 0.05$). There was no correlation between p-4EBP1 and p-S6K1 expression in colorectal adenocarcinoma ($r = 0.105$, $P > 0.05$). Conclusions: Overexpression of p-mTOR, p-4EBP1 and p-S6K1 in colorectal adenocarcinoma tissues may be one of the important mechanisms of colorectal adenocarcinoma. These three phosphorylated proteins may be intrinsically related to the occurrence and development of colorectal adenocarcinoma.

Keywords: Colorectal Adenocarcinoma, P-mTOR, P-4EBP1, P-S6K1, Immuneohistochemistry

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Chelidonine Induced Mitotic Catastrophe and Apoptosis in SGC-7901 Human Gastric Carcinoma Cells

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Abstract: This paper aims to explore the effect and mechanism of Chelidonine on the mitotic catastrophe (MC) and apoptosis of SGC-7901 cells. Originally, MTT assay detection showed that chelidonine played apparent proliferation inhibition on SGC-7901 cells with the IC_{50} of 17.90 μmol·L^{-1} (48h). Then, flow cytometry analysis revealed that chelidonine could induce G_2/M phase arrest of SGC-7901 cells with a proportion of 58.40% after treatment for 24h, whereas the proportion of G_2/M phase cells in the control group is only 9.01%. Furthermore, western blot demonstrated that the expressions of CDK1, cyclinB1 and cdc25c were significantly down-regulated. While the expression of p-H3 (Ser10) was up-regulated, which was also proved by laser confocal microscope observation. In this light, it was determined that chelidonine blocked SGC-7901 cells in the M phase. Furthermore, in SGC-7901 cells treated with Chelidonine for 48h, the expressions of Bub1, BubR1 and Plk-1 protein were significantly reduced ($P<0.01$). Under the same treatment conditions, the morphological features of mitotic catastrophe, such as larger cell volume and more micronucleus than untreated cells, were observed under transmission electron microscopy (TEM). With the prolongation of the chelidonine treatment, a reduction in microvilli was observed, and multinucleated cells appeared with the morphologies of chromatin condensation, nuclear fragmentation and formation of the apoptotic body. AnnexinV-FITC/PI double staining and flow cytometry detection showed that cell apoptosis rates of SGC-7901 after being treated with 10 μmol·L^{-1}, for 24, 48 and 72h were 13.08%, 45.05% and 79.54%, respectively. Finally, the protein expressions of Aurora-A and survivin were detected to be significantly down-regulated ($P<0.01$). However, the expressions of caspase-9 and caspase-3 were markedly increased ($P<0.01$). It could be concluded from the above results that chelidonine could induce mitotic catastrophe and apoptotic-like cell death of SGC-7901 cells with the mechanisms as follows: chelidonine could induce M phase retardation of SGC-7901 cells by reducing the expressions of CDK1, cyclinB1, Bub1 and BubR1 protein and relieving the inhibition on APC to trigger the compromise response in spindle checkpoint, which allowed the cells to undergo mitotic slippage and mitotic catastrophe. Simultaneously chelidonine could reduce the expression of Plk-1 and, raised the expression of Securin to result in a mitotic error and the occurrence of multi-nuclear and large nuclear cells so as to induce mitotic catastrophe of tumor cells. At length, some cells slipped through the mitosis phase into the next cell cycle and underwent apoptotic-like cell death by activating Caspase-9 and Caspase-3.

Keywords: Chelidonine, Human Gastric Cancer SGC-7901 Cells, Cell Cycle Arrest, Mitotic Catastrophe, Apoptosis

Bushen Daozhuo Granules Alleviated Rat Chronic Non-bacterial Prostatitis Via p38 MAPK and Akt Signaling Pathways Based on TMT-based Quantitative Proteomics and Network Pharmacology

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Abstract: Ethnopharmacological relevance: Chronic non-bacterial prostatitis (CNP) is a common urological disorder in men, of which the pathogen and treatment need to be fully expounded. Traditional Chinese Medicine (TCM) formula Bushen Daozhuo Granules (BSDZG) is used in CNP in clinical practice, however, its mechanisms of action are not clear. Aim of the study: Through integration of TMT-based quantitative proteomics and network pharmacology, this study explored the effects of BSDZG on CNP and the mechanisms of action. Materials and methods: The CNP model rats, induced with purified rat prostaglandin solution and immune adjuvant, were treated with BSDZG. The inflammation state of the prostate tissues was assessed by histopathological examination and the level of inflammatory cytokines. The TUNEL assay was used to analyze apoptosis rate in prostate. Differentially expressed proteins (DEPs) were compared between model group and BSDZG-treated group. Through network pharmacology, a herb-composition-target network has been built. In vivo experiments confirmed the predicted signaling pathways. Results: Treatment with BSDZG significantly alleviated the histopathological lesions, reduced the levels of inflammatory cytokines and apoptosis in the prostate. By analyzing TMT and network pharmacology, the herb-composition-target network was constructed from 42 active ingredients and 32 targets of 11 herbs. Analyses of GO terms and KEGG pathways revealed that the Akt and MAPK pathways were mainly related to the effects of BSDZG on CNP. In the prostate tissues, phosphorylation level of p38 MAPK was significantly increased and that of phosphorylatd Akt was markedly decreased in the model group. As a contrast, treatment with BSDZG significantly reduced the phosphorylation of p38 MAPK and elevated the phosphorylated Akt levels. Finally, the p38 MAPK pathway and Akt pathway were validated in CNP model rats. Conclusions: Our study suggested that BSDZG significantly alleviated CNP in histopathological, inflammatory cytokines and apoptosis examinations probably via the p38 MAPK and Akt signaling pathways in rat.

Keywords: Bushen Daozhuo Granules, Chronic Non-bacterial Prostatitis, TMT-based Quantitative Proteomics, Network Pharmacology, p38 MAPK Signaling Pathway, Akt Signaling Pathway

A Study on the Relationship Between Low-density Lipoprotein Variability and Arteriosclerosis Progression in the Elderly

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Abstract: Objective: To study the association between visit to visit LDL-C variability and progressive atherosclerosis in the elderly. Methods: 667 elderly persons were followed up for an average period of 6 years, during which their serum LDL-C and the hs-CRP levels were measured and their LDL-C variability was calculated at each annual follow-up. The elderly persons were divided into LDL-C<0.42mmol/L group (n=221), LDL-C=0.42-0.63mmol/L group (n=224), and LDL-C>0.63mmol/L group (n=222). Their carotid artery IMT and cf PWV were measured every two years. Results: The carodtid artery IMT was significantly thicker, the cf PWV was significantly faster, the serum hs-CRP level was significantly higher in LDL-C=0.42-0.63mmol/L group and LDL-C>0.63mmol/L group than in LDL-C<0.42mmol/L group (P<0.05). Pearson correlation analysis showed that the visit to visit LDL-C variability was positively associated with the carotid artery IMT, cf PWV and serum hs-CPR level (r=0.407, r=0.314, r=0.303, P<0.01). The visit to visit LDL-C variability was an independent risk factor for elevated carotid artery IMT, cf PWV and serum hs-CPR level after adjustment for confunders (P<0.01). Conclusion: Elevated visit to visit LDL-C variability, independent of the serum LDL-C level and anti-lipid treatment, is an important risk factor for progressive atherosclerosis in elderly persons.

Keywords: LDL-C Variability, Atherosclerosis, Elderly Patients

The Influence of Peer Relationship on Adolescents' Leadership Emergence: From the Perspective of Self-conception Clarity

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Abstract: Leadership development has been characterized as an ongoing process that continues throughout a lifetime, a growing number of researchers have emphasized the importance of early antecedents or the developmental experiences on leader behavior. Thereby, this study aims to investigate how leadership emerges in the early environment among teenagers from the viewpoint of socializing. The intent is to look beyond the workplace and consider leadership development as a long-running process that can take place in adolescence, which is also consistent with the notion - that "leaders are both born and made". In a time-lagged field study with 322 adolescents, the results showed that favorable peer relationships significantly promoted adolescents' leader behavior by increasing their self-conception clarity of leader role. Furthermore, this relationship was contingent on the political-oriented mindset, representing that the indirect effect of self-conception clarity of leader role on the relationship between peer relationship and leader behavior was stronger for adolescents with a high level of political-oriented mindset. Overall, these findings reveal that adolescents' leadership develops during social interaction with their peers and their self-conception clarity of leader role plays as a vital factor in the process, which contributes to the literature on leadership development, highlights the importance of adolescence experiences in leadership emergence, and has implications for leadership development as well as future research.

Keywords: Leadership Emergence, Adolescents, Peer Relation, Self-conception Clarity of Leadership

Fitness Qigong May Alleviate the Degradation of Response Inhibition in Patients with Parkinson's Disease

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Abstract: Purpose: Parkinson's disease (PD) is a common neurodegenerative disease in the elderly. As a typical non drug treatment, exercise intervention can effectively delay the decline of executive function of individuals with PD. Fitness Qigong, as one of the exercise intervention methods, is simple to operate, highly participatory and conducive to promotion, and Fitness Qigong can effectively balance the cognitive coordinate function. The stop signal paradigm is used to check subjects' exercise response ability before and after the intervention, so it provides the basis for fitness qigong alleviating the decline of the subjects' response inhibiting before and after the intervention. Methods: the PD volunteers are randomly selected in Shanghai Punan hospital, 35 subjects in phases 1-4 were selected according to the Hoehn-Yahr grading standard for 8 weeks of corresponding modified Fitness Qigong teaching for PD patients, and exercise regularly for one hour every day. The stop signal paradigm: subjects need to respond to go or stop according to the type of stimulation. In go type, subjects are required to respond quickly and accurately. In stop type, they do not respond. Paired sample t-tests were performed on stop signal response time (SSRT), stop signal delay time (SSD), go response accuracy (go ACC), stop response accuracy (stop ACC) and go response time (go RT). Results: before and after the experiment, the p value of SSRT was 0.021 ($P < 0.05$); The p value of SSD is 0.672 ($P > 0.05$); The p value of go ACC was 0.579 ($P > 0.05$); The p value of stop ACC is 0.986; The p value of go RT was 0.428 ($P > 0.05$). The SSRT obtained by subtracting SSD from go RT was significant, and then the difference of reaction inhibition ability before and after intervention was significant ($P < 0.05$). Conclusion: Fitness Qigong may improve PD patients' response inhibition cognitive executive function, which is mainly reflected in alleviating the degradation of PD patients' response inhibition ability. Future research can further combine brain imaging technology to reveal the impact of exercise intervention on PD inhibition function network mechanism and optimize PD exercise prescription.

Keywords: Fitness, Qigong, PD, Stop Signal Paradigm

The Relationship Between Growth Mindset and Subjective Well-being of High School Students: The Mediation Effects of Extrinsic Contingent Self-esteem and Emotion Regulation

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Abstract: The subjective well-being is an important aspect of mental health conditions of high school students. It closely relates to students' development. Drawing on implicit theories, the present study focuses on the subjective sell-being level of high school students with a growth mindset and posits two underlying mechanisms: the cognitive and the emotional paths. To be specific, students who endorse a growth mindset may believe that their intelligence and ability are malleable upon efforts. Therefore, they tend to value the process of learning and growth instead of developing their perceptions of self-esteem based on external standards (lower level of extrinsic contingent self-esteem), which further lead to higher level of subjective well-being. On the other hand, students with a growth mindset usually take challenges and setbacks as opportunities for growth instead of hindrances. They may adopt strategies of emotional regulation more frequently and thus have higher level of positive experiences related to well-being. We tested our hypotheses using online survey. Our samples were students from grade two of high schools in a Chinese city. The final sample included 5,152 students. Results of path analyses suggested that students' growth mindset correlated positively with their subjective well-being (b =.50, SE =.04, p <.001). Emotion regulation played a mediating role in the above-mentioned relationship (b =.02, SE =.01, CI [.009,.033]), yet the indirect effect of extrinsic contingent self-esteem was nonsignificant (b = -.03, SE =.02, CI [-.001,.074]). Extant research has focused primarily on the relationship between students' growth mindset and their academic performance. Our exploration regarding how growth mindset relates to students' well-being may bring insights to the mental health education of high school students.

Keywords: Growth Mindset, Subjective Well-being, Extrinsic Contingent Self-esteem, Emotion Regulation, Implicit Theories

The Relationship Between Phubbing Behavior and Negative Emotion Among College Students During COVID-19: The Mediating Role of Parent-child Conflict and Moderating Role of Coping Style

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Abstract: The lockdown policy and online teaching mode adopted during COVID-19 have seriously affected college students' academic and behavior, and damaged their emotions as well. Previous studies investigated the influence of phubbing behavior on the people being phubbed, but overlooked the impact of phubbing behavior on oneself. They also focused on the effect of parents' phubbing behavior on parent-child relationship, but did not studied the effect of children's phubbing behavior on parent-child conflict. According to the theory of eco-technology-subsystem and theory of limited attention resources, the utilization of technology may affect individuals' emotions and interpersonal relationships. However, different people react differently despite being in the same situation. Although relevant studies have studied the influence of phubbing behavior on one's mental health, the precise mechanisms through which this occurs was unclear. Given that, this study aims to test the influence of college students' phubbing behavior on negative emotions during COVID-19, and examine the mediating role of parent-child conflict and the moderating role of coping style between phubbing behavior and negative emotions. The current study was designed based on a cross-sectional research framework via an online survey tool named Questionnaire Star. A total of 1256 college students in China filled in the questionnaires regarding Phubbing Behavior Scale, Parent-Child Conflict Scale, Simple Coping Style Questionnaire and Self-rated Emotion Scale. The results showed that: (1) College students' phubbing behavior positively predicts negative emotions; (2) Parent-child conflict as a mediator of the relationship of phubbing behavior to negative emotions. Whereas, in comparison to parent-child conflict, phubbing behavior is a significantly stronger predictor of increased negative emotions than parent-child conflict; (3) Coping style negatively moderates the influence of parent-child conflict on negative emotions. Positive coping style can weaken the influence of parent-child conflict on negative emotions, and the risk buffer model is established. When coping style shows negative tendency, the influence of parent-child conflict on negative emotions is stronger. Therefore, reducing phubbing behavior, parent-child conflict and cultivating positive coping tendency can effectively reduce negative emotions in college students. This study extended the influence of phubbing behavior on emotions to the family environment field, and it provided intervention measures for managing students' behavior and reducing negative emotions. This study provides insight into how phubbing behavior impacts negative emotions and has implications for the assessment of phubbing behavior-based interventions.

Keywords: Phubbing Behavior, Negative Emotion, Parent-child Conflict, Coping Style

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The Effect of Proactive Personality on Proactive Behavior of College Teachers: A Moderated Mediation Model

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Abstract: It becomes increasingly important for employees to anticipate opportunities and initiate actions to operate effectively in complex and uncertain work environments. Research has recently started to examine relationships between proactive personality and proactive behavior. Investigating these relationships is important to understand the effects of proactive behavior at work, and whether proactive personality leads to an increase or a decrease in job involvement and proactive behavior. Drawing on goal-setting theory (GST), we explored the relationship between proactive personality and proactive behavior of college teachers by focusing on job involvement as a mediator and self-efficacy as a moderator. Data from 560 college teachers were collected and examined by conducting structural equation modeling. The results revealed that the proactive personality of college teachers had a positive effect on the proactive behavior (β=0.497, P<0.01). College teachers' job involvement partially mediated the relationship between proactive personality and proactive behavior (15.1%). Self-efficacy can strengthen the promoting effect of proactive personality on job engagement (β=0.18, P<0.01). Namely, when college teachers' self-efficacy is high, for those with a proactive personality there is a stronger positive influence on their proactive behavior through job involvement. When college teachers' self-efficacy is low, a proactive personality has a weaker positive impact on their proactive behavior through job involvement. In this study we have, therefore, established a new mediating mechanism and boundary conditions through which proactive personality influences proactive behavior and have expanded existing proactivity theory. These findings have meaningful implications for the literature on proactive behavior. First, proactive personality is a positive work characteristic and should receive the organization's attention. Second, it is crucial for organizations to improve employees' job involvement and proactive behavior. Thirdly, proactive employees who experience high self-efficacy can increase their proactive performance compared to the passive employees. Finally, organizations should identify employees with proactive personality traits and provide different kinds of training and management strategies.

Keywords: Proactive Personality, Proactive Behavior, Job Involvement, Self-efficacy Job Involvement

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