Abstract

Crocin is the major component of saffron, which is used in phytomedicine for the treatment of several diseases including diabetes, fatty liver, depression, menstruation disorders, and, of special interest in this review, inflammatory diseases. Promising selective anti-inflammatory properties of this pharmacological active component have been observed in several studies. Saffron has been shown to exert anti-inflammatory properties against several inflammatory diseases and can be used as a novel therapeutic agent for the treatment of inflammatory diseases either alone or in combination with other standard anti-inflammatory agents. This review summarizes the protective role of saffron and its pharmacologically active constituents in the pathogenesis of inflammatory diseases including digestive diseases, dermatitis, asthma, atherosclerosis, and neurodegenerative diseases for a better understanding and hence a better management of these diseases.
Abstract

**Objective:** Increased demands from healthcare services have led to new roles for healthcare professionals (HCPs). Simulation based learning (SBL) can offer multidisciplinary HCPs and students a format to train for such emerging roles. The aim of this work was to adapt existing nursing SBL to involve pharmacy students and evaluate perceptions and effectiveness of SBL when used for interprofessional education (IPE).

**Methods:** Settings were a simulated hospital ward and a general practitioner (GP) practice. Participants were pharmacy and nursing students. Evaluation was by questionnaires and interviews. Ethical approval was obtained from the University Ethics Committee.

**Key Findings:** A total of 440 students participated. The majority of respondents (317/330; 96%) found the sessions useful. All elements were highly rated: briefing (315/340; 93%), setting (301/321; 94%), scenario (325/338; 96%), feedback (303/327; 93%), interaction with the “patient” (328/338; 97%), interactions with other HCP trainee (293/329; 89%). The majority (304/327; 93%) agreed that they felt the sessions had enhanced their skills. Significant (p ≤ 0.05) enhancement in communication confidence was perceived by the students. Students gained understanding of each other’s roles, and appreciated practicing communication and teamwork.

**Conclusions:** Students recognised the importance, usefulness and need for IPE. SBL has the potential to support a variety of HCPs to facilitate uptake of new roles and working in multidisciplinary teams.
Abstract

In 2017, the US Food and Drug Administration approved the first two novel cellular immunotherapies using synthetic, engineered receptors known as chimeric antigen receptors (CARs), tisagenlecleucel (Kymriah) and axicabtagene ciloleucel (Yescarta), expressed by patient-derived T cells for the treatment of hematological malignancies expressing the B-cell surface antigen CD19 in both pediatric and adult patients. This approval marked a major milestone in the use of antigen-directed “living drugs” for the treatment of relapsed or refractory blood cancers, and with these two approvals, there is increased impetus to expand not only the target antigens but also the tumor types that can be targeted. This state-of-the-art review will focus on the challenges, advances, and novel approaches being used to implement CAR T-cell immunotherapy for the treatment of solid tumors.
Abstract

This study examined differences in food-related Attentional Bias (AB) between patients with Anorexia Nervosa (AN) and adolescents without an eating disorder. AB was assessed with an Attentional Response to Distal versus Proximal Emotional Information (ARDPEI) task that was specifically designed to differentiate between attentional engagement with and attentional disengagement from food. We tested if patients with AN would show less attentional engagement and less difficulty to disengage their attention from food cues than individuals without an eating disorder. Both might contribute to patients' ability to refrain from eating even in a state of starvation. Participants were adolescents with AN (n = 69) and a comparison group with healthy weight, matched on age and educational level (n = 69). No differences were found in attentional disengagement. However, patients with AN did show less attentional engagement when food cues were shown briefly (100 ms). Given that the adolescents without an eating disorder showed a significant engagement bias to food cues, the results suggest that patients with AN lack the bias involved in healthy eating behavior. Future studies should further examine the direction of the relationship between decreased attentional engagement with food cues and anorexia nervosa.
Abstract

Dropout from psychotherapy is frequent and limits the benefits patients can receive from treatment. The study of factors associated with dropout has the potential to yield strategies to reduce it. This study analyzed data from a large sample of adults (N = 1,092) receiving naturalistic cognitive behavioral therapy (CBT) to test the hypotheses that dropouts, as compared to completers, had (1) higher symptom severity at treatment termination, (2) a slower rate of symptom change during treatment, and (3) a higher odds that the therapist rated treatment as ending for reasons related to poor outcome. Results showed that although dropouts ended treatment with higher symptom severity than completers, dropouts and completers did not differ in their rate of symptom change during treatment, suggesting that dropouts had higher symptom severity at termination because they received fewer sessions of treatment, not because their symptoms changed at a slower rate. Dropout was also associated with a higher odds of having a therapist-rated termination reason indicating a poor outcome, suggesting that dropout is more likely if patients are dissatisfied with some aspect of the therapy outcome or process. These findings suggest that strategies for monitoring and enhancing patient satisfaction with the process and outcome of treatment may help patients stay in treatment longer and end treatment with fewer symptoms than if they had dropped out.
Title: Prediction of Lymph Node Maximum Standardized Uptake Value in Patients With Cancer Using a 3D Convolutional Neural Network: A Proof-of-Concept Study

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Abstract

OBJECTIVE. The purpose of this study is to determine whether a convolutional neural network (CNN) can predict the maximum standardized uptake value (SUVmax) of lymph nodes in patients with cancer using the unenhanced CT images from a PET/CT examination, thus providing a proof of concept for potentially using deep learning to diagnose nodal involvement.

MATERIALS AND METHODS. Consecutive initial staging PET/CT scans obtained in 2017 for patients with pathologically proven malignancy were collected. Two blinded radiologists selected one to 10 lymph nodes from the unenhanced CT portion of each PET/CT examination. The SUVmax of the lymph nodes was recorded. Lymph nodes were cropped and used with the primary tumor histology type as input for a novel 3D CNN with predicted SUVmax as the output. The CNN was trained using one cohort and tested using a separate cohort. An SUVmax of 2.5 or greater was defined as FDG avid. Two blinded radiologists separately classified lymph nodes as FDG avid or not FDG avid on the basis of unenhanced CT images and separately using a short-axis measurement cutoff of 1 cm. Logistic regression analysis was performed.

RESULTS. A total of 400 lymph nodes (median SUVmax, 6.8 [interquartile range (IQR), 2.7–11.6]; median short-axis, 1.1 cm [IQR, 0.9–1.6 cm]) in 136 patients were used for training. A total of 164 lymph nodes (median SUVmax, 3.5 [IQR, 1.9–8.6]; median short-axis, 1.0 cm [IQR, 0.7–1.4 cm]) in 49 patients were used for testing. The predicted SUVmax was associated with the real SUVmax (β estimate = 0.83, p < 0.0001). The predicted SUVmax was associated with FDG avidity (p < 0.0001), with an ROC AUC value of 0.85, and it improved when combined with radiologist qualitative assessment and short-axis criteria.

CONCLUSION. A CNN is able to predict with moderate accuracy the SUVmax of lymph nodes, as determined from the unenhanced CT images and tumor histology subtype for patients with cancer.
Abstract

**Background:** The serum lipid profile has become a routine clinical test and used as an important predictor for Alzheimer’s disease (AD), although its predictive value remains undetermined.

**Objective:** To evaluate the role of serum lipid levels in predicting the risk of AD.

**Methods:** Meta-analyses were conducted using Comprehensive Meta-analyses (CMA) software to investigate the association between four conventional serum lipid profile parameters and the risk of AD, focused on samples from Asian.

**Results:** In total, 3423 AD patients and 6127 healthy participants were involved. The results demonstrated that AD patients showed higher LDL-C and TC levels (SMD = 0.27, 95% CI: 0.04 ~ 0.51, P = 0.02 for LDL-C; SMD = 0.25, 95% CI: 0.05 ~ 0.46, P = 0.02 for TC) compared with those of healthy controls. People with higher LDL-C and/or TC levels had an increased risk of AD (OR = 1.64, 95% CI: 1.07 ~ 2.51 for LDL-C and OR = 1.58, 95% CI: 1.10 ~ 2.92 for TC).

**Conclusions:** This study provided evidence that serum LDL-C and TC levels were associated with the risk of AD in Asian individuals. The routine lipid profile may be useful for Alzheimer’s disease (AD) diagnosis, monitoring and treatment.

Database

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Abstract

Objective: The objective of the current investigation was twofold: i) describe a remote fitting procedure for upper limb 3D printed prostheses and ii) assess patient satisfaction and comfort with 3D printed prostheses fitted remotely.

Design: A qualitative study using content and score analysis to describe patient satisfaction after remote prosthetic fitting. Research participants reported QUEST and OPUS scores that allow for perceived rating of general aspects and functionality of upper limb prostheses.

Subjects: 6 children (three girls & boys, 6 to 16 years of age) and 2 adult males (25 and 59 years of age) with congenital (n=7) and acquired (n=1) upper limb loss participated in this study.

Results: Highest device satisfaction items of the QUEST include weight (4.50 ± 0.76), safety (4.38 ± 0.52), and ease of use (4.13 ± 0.64). Functional tasks of the OPUS observe that prosthesis donning and doffing (1.5 ± 0.84) and drinking from a paper cup (1.75 ± 0.89) were the easiest functional tasks.

Conclusions: The presented methodology for remote fitting of 3D printed upper-limb prostheses exhibits significant potential for rapid fabrication of functional prostheses to developing countries due to increased availability of digital devices in rural areas.
Abstract

**Introduction**: Ischemic stroke is becoming a primary cause of disability and death worldwide. To date, therapeutic options remain limited focusing on mechanical thrombolysis or administration of thrombolytic agents. However, these therapies do not promote neuroprotection and neuro-restoration of the ischemic area of the brain.

**Areas covered**: This review highlights the option of minimal invasive, intra-arterial, administration of biological agents for stroke therapy. The authors provide an update of all available studies, discuss issues that influence outcomes and describe future perspectives which aim to improve clinical outcomes. New therapeutic options based on cellular and molecular interactions following an ischemic brain event, will be highlighted.

**Expert opinion**: Intra-arterial administration of biological agents during trans-catheter thrombolysis or thrombectomy could limit neuronal cell death and facilitate regeneration or neurogenesis following ischemic brain injury. Despite the initial progress, further meticulous studies are needed in order to establish the clinical use of stem cell-induced neuroprotection and neuroregeneration.

Database

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Abstract

Three-dimensional (3D) printing now allows rehabilitation professionals to design and manufacture assistive technologies in a few hours. However, there is limited guidance for researchers and clinicians for implementing 3D printing assistive technology interventions and measuring their outcomes. The goal of this study was to develop a standardized 3D printing assistive technology intervention and a research methodology, using pillboxes as an example. Fourteen pillbox users engaged in a study comparing their use of an off-the-shelf pillbox to a customized 3D printed pillbox. Study outcomes were evaluated on feasibility (recruitment capability, study procedures and outcome measures, acceptability of the study procedures, the research team’s ability to manage and implement the study, and the participant’s preliminary response to intervention). Participant outcomes were measured on satisfaction with the device and medication adherence. Fourteen participants completed the study and received customized 3D printed pillboxes. The study design performed well on all aspects of feasibility except the research team’s ability to manage and implement the study, as they experienced several technical issues. Notably, the participants reported improved device satisfaction and medication adherence with the 3D printed device with large effect sizes. The 3D printed assistive technology intervention is a replicable process that supports professionals in printing their own assistive technologies. Recommendations are made to further enhance feasibility of 3D printing assistive technology studies. Future research is warranted.