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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 12:02:2023 | Accepted date: 14:02:2023 | Published date: 27:04:2023

Dietary Intakes, Cooking Methods, and Vitamin Supplementation among Women at High Risk of Pregnancy-Induced Hypertension

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Statement of the Problem: Pregnancy-induced hypertension (PIH) is a leading cause of adverse maternal and fetal outcomes. Evidence reveals that maternal dietary intakes and vitamin supplements may play a significant role in the cost-effectiveness and risk-benefit in preventing the development of PIH, although its precise role remains unclear. The purpose of this study is to examine the association between maternal dietary components, cooking methods, and prenatal vitamin use on PIH risk in Taiwan. Methodology & Theoretical Orientation: A cross-sectional study was conducted using purposive sampling. A total of 70 participants in the third trimester of pregnancy (32 with a high risk of PIH and 38 healthy women) were enrolled from an academic medical center in northern Taiwan. Data were collected using self-administered structured questionnaires including demographic characteristics, usual dietary intake, cooking methods, food groups, and prenatal vitamin consumption. Multiple logistic regression analysis was used to estimate the association between factors with the risk of PIH. Findings: High intake of protein (fish, eggs, beans, and meat), high-fat/sugar foods, and daily prenatal vitamins (magnesium, iron, zinc, iodine, folic acid, and vitamins B2 and B6) were not associated with the risk of PIH. Increased levels of vitamins B1, B12, and D were associated with reducing the risk of PIH (OR = 3.2, 95% CI 1.04-9.88; OR = 3.03, 95% CI 1.03-8.93, respectively). The cooking method of pan-frying was associated with a higher risk for PIH(OR = 3.86, 95% CI 1.07-11.86). Participants who reported with daily caffeine consumption had increased odds of developing PIH compared to no consumption (<100 mg of caffeine/day, OR = 7, 95% CI 1.34-36.68; >200 mg of caffeine/day, OR = 25, 95% CI 1.80-54.69, respectively). Conclusion & Significance: Increasing the consumption of vitamins B1, B12, and D, decreasing caffeine consumption, and cooking pan-frying foods may reduce the risk of PIH. Recommendations are made for pregnant women, especially for those with high-risk pregnancies that would help lower maternal mortality and improve maternal, newborn, and women's health.

Keywords: Pregnancy-Induced Hypertension (PIH); Dietary Intakes; Cooking Methods; Vitamin Supplementation

Recent Publications

1. Huang LW, Wang S. Cancer Clinical Trial Enrollment in Older vs Younger Adults. JAMA network open 2022. PMID: 36215075

2. Huang LW, Sheng Y, Andreadis C, Logan AC, Mannis GN, Smith CC, Gaensler KML, Martin TG, Damon LE, Huang CY, Olin RL. Patterns and predictors of functional decline after alloHCT in older adults. 2022. PMID: 35247612

3. Akhtar OS, Huang LW, Tsang M, Torka P, Loh KP, Morrison VA, Cordoba R. Geriatric assessment in older adults with non-Hodgkin lymphoma: A Young International Society of Geriatric Oncology (YSIOG) review paper. Journal of geriatric oncology 2022. PMID: 35216939

Biography

As an Assistant Professor in Hematology/Oncology based at the San Francisco VA with dual training in aging research, Li Wen Huang is passionate about improving care for older patients with cancer. Her research focuses on understanding the interactions between cancer, cancer therapy, and geriatric syndromes such as cognitive impairment. Her ultimate goal is to develop ways to improve the care of older adults with cancer and cognitive impairment.

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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 30:01:2023 | Accepted date: 01:02:2023 | Published date: 27:04:2023

Women's meaning-making about engagement in cancer screening process

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The screening programs for the prevention of breast and cervical cancer are public health interventions to identify early disease risks and offer timely diagnosis and effective treatments. However, still several people in the recommended age groups do not participate in screening programs.vIn patient-care approach, the epistemological framework of shared decision-making recognizing the engagement as an essential part of the process. Engagement is a dynamic process of adaptation and emotional elaboration of the different positions of the subject as co-author of trajectories of well-being within partnership with the healthcare system. The literature highlights 3 phases of engagement process: recruit (why did I get engaged?), retain (why do I stay engaged?) and sustain (what do I need in order to keep being engaged?). Although engagement is a gold standard in healthcare we highlight a gap in the literature in particular about cancer screening. In a socio-constructivist perspective, the aim of this study is to identify how women who participate in breast cancer and cervical cancer screening articulate the relationship with preventive practices and meaning-making their engagement in the screening process. Forty ad-hoc semi-structured interviews were conducted with women involved in the practices of the breast and cervical cancer screenings as part of the Miriade project. The data are analyzed using the qualitative Framework Method. The results show 4 categories for each phase of the engagement. For Recruit: *Cancer Screening Monitoring; Self-Care Mastery; Fear of Death Management; By chance. For retain: A good Healthcare Relationship; Ease of Access; Recurrent Invitation; Informal Preview. For sustain: Continuity of healthcare providers; Driver for the Best Practices Spread Personalized Organization of the Healthcare Exams; Shorter results waiting times.* The study of the engagement meaning-making of the women involved in cancer prevention practices highlights the need for a personalization of preventive practices inserted in a relational dynamic to inform different fields of research in the health context.

Biography

Daniela Lemmo, Psychologist, Psychotherapist, PhD in Gender Studies, Post-doc Researcher Fellow in Clinical Psychology, University of Naples Federico II. Her research activity field is clinical health psychology with a particular focus on women's narratives about oncological prevention and cancer experience. Her studies are dedicated to women's health in a gender perspective. Also, her scientific production is on the themes of prevention choices, genetic mutation and sense-making of breast cancer experience in under-50 women. Today, she is Post-doc Research Fellow of research-action project MIRIADE "An Innovative Model of Research–Intervention for the identification of adherence profiles to cancer screening" aims at developing an integrated theoretical framework to identify the psychological, social, and cultural aspects that can promote or hinder screening decision-making.

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39 YEARS IN ASSESSING THE IMPACT OF HEALTHCARE RESEARCH

12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 21:12:2022 | Accepted date: 23:12:2022 | Published date: 27:04:2023

Technology in healthcare- using digital resources to improve education in oncology research

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Background: Working in oncology health research is an amazing job, we work in some amazing teams looking at how innovative new treatments can help treat different tumour groups that are rarely forgiving. Due to the nature of our work and how vast our team is we've never had a structed induction system, we found depending on what tumour group you worked in, you would need to learn different things, go various departments of the hospital and meet different staff members. As our team had new members join, we received feedback that they felt our induction required more structure, so we have tried to develop new tools to facilitate this, one of those is the induction guide.

Methods: This guide was developed on a platform that allowed us to make it more interactive with videos and links to different helpful websites, but also colourful so it would engage attention and not leave the reader disinterested. We have pulled in information from various reliable sources and have tried to make it as user friendly as possible. We have also used animation to help break up large pieces of information. Making it electronic means we are not wasting resources by printing it out but it also makes it easy to update as information changes, we can easily add or take away information as we get feedback from readers.

Results: Subsequently, we have had some really positive feedback from readers stating they found the guide interactive, colourful, fun but also a resource they will return to in the future. We went further by making it easier to access via a QR code. We also created a very short survey so readers can leave feedback anonymously.

Conclusion: A resource that readers find helpful, fun and that can be easily tailored to specific departments as healthcare changes.

Biography

Cathy Batista have been qualified for over 5 years, her experience in different settings has led me to acquire exceptional skills in delivering holistic care to meet individualised needs and she has become proficient in utilising these in the new situations she encounters. She has developed her communication skills during her working life, which she has implemented throughout her work to build harmonious and trusting relationships with patients, relatives and colleagues. She currently works in intensive care at University College Hospital, her time here has taught her a lot about acutely ill patients and how much can be done to prevent patients becoming acutely ill. She has experience with looking after tracheostomies, laryngectomies and skin flaps. Whilst working at Charing Cross Hospital she ran the plastics dressing clinic for a few months and that helped her develop her time management skills and prioritising her workload, this motivated and structured her ability to work under pressure.

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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 21:12:2022 | Accepted date: 23:12:2022 | Published date: 27:04:2023

A Concept Analysis: Support for Lay Health Care Workers in HIV services

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Background: Different lay health care workers play an important role in the retention of clients to HIV care. Retention to HIV care is crucial to promote treatment continuation, viral suppression and reduced risk of transmission. However, lay health care workers view and perceive support differently.

Objectives: The aim of the study was to investigate perceptions of health care workers regarding support provided to lay health care workers in HIV services. This article is a report of a concept analysis of health care workers' support provided to lay health care workers in HIV services, that was collected during the study. A concept analysis was done to explore the support attributes, clarify meaning and to understand its use within the lay health care workers' context in Bojanala district, South Africa.

Method: The initial phase was data collection from lay health care workers, their supervisors and clients on antiretroviral therapy. Thereafter, the eight concept analysis steps of Walker and Avant were followed. Peer-reviewed articles on the support concept were searched and guided by data saturation.

Results: Responsiveness, provision, reciprocity and integration are key characteristics of support.

Conclusion: Despite support being an interpersonal process, it is perceived subjectively. Support is necessary to continuously promote growth or endurance during adverse times.

Contribution: The concept analysis will provide common understanding of support and information that is responsive to the needs of different lay health care workers.

Keywords: Support concept analysis; Support measures; Instrumental support; Emotional support; Lay health care workers; Health care workers; Retention to HIV care; Integration.

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39 YEARS IN ASSESSING THE IMPACT OF HEALTHCARE RESEARCH

12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 10-06-2022 | Accepted date: 12-06-2022 | Published date: 27-04-2023

Molecular epidemiology of extensively drug-resistant mcr encoded colistin-resistant bacterial strains co-expressing multifarious β-lactamases

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Plasmid-mediated colistin resistance (Col-R) conferred by mcr genes endangers the last therapeutic option for multifarious β-lactamase-producing bacteria. The current study aimed to explore the mcr gene molecular epidemiology in extensively drug-resistant (XDR) bacteria. Col-R gram-negative bacterial strains were screened using a minimum inhibitory concentration (MIC) breakpoint ≥4 µg/mL. Resistant isolates were examined for mcr variants, extended spectrum βlactamase, AmpC, and carbapenemase genes using polymerase chain reaction (PCR). The MIC breakpoints for mcr-positive strains were determined using broth microdilution and E-test strips. Overall, 19/718 (2.6%) gram-negative rods (GNRs) harboring mcr were identified, particularly in pus ($p = 0.01$) and tracheal secretions ($p = 0.03$). Molecular epidemiology data confirmed 18/19 (95%) mcr-1 and 1/19 (5%) mcr-2 genes. Integron detection revealed 15/17 (88%) Int-1 and 2/17 (12%) Int-2. Common co-expressing drug-resistant β-lactamase genes included 8/16 (50%) blaCTM-1, 3/16 (19%) blaCTM-15, 3/3 (100%) blaCMY-2, 2/8 (25%) blaNDM-1, and 2/8 (25%) blaNDM-5. The MIC50 and MIC90 values (µg/mL) were as follows: Escherichia coli, 12 and 24; Klebsiella pneumoniae, 12 and 32; Acinetobacter baumannii, 8 and 12; and Pseudomonas aeruginosa, 32 and 64, respectively. Treatment of XDR strains has become challenging owing to the co-expression of mcr-1, mcr-2, multifarious β-lactamase genes, and integrons.

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39 YEARS IN ASSESSING THE IMPACT OF HEALTHCARE RESEARCH

12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 08-06-2022 | Accepted date: 10-06-2022 | Published date: 27-04-2023

An integrative ligand-based pharmacophore modeling, virtual screening, and molecular docking simulation approaches identified natural lead compounds against lung cancer by targeting acetylcholinesterase

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Lung cancer is the most common cancer-related disease worldwide take millions of lives each year. Despite enormous efforts in lung cancer research, the incidence and mortality rates of lung cancer have not decreased substantially. Acetylcholinesterase (AChE) plays a key role in catalytic hydrolysis of cholinergic neurotransmitters and causes cholinergic overstimulation. The overstimulation caused by AChE enzymes is responsible for enhancing the cell proliferation in lung cancer and inhibition of the enzyme can block the activity cell proliferation responsible for lung cancer. As inhibition of the protein can hinder the activity of the lung cancer, therefore the study aimed to identify potential natural inhibitor against the protein through ligand-based pharmacophore modeling (LBPM) and virtual screening approaches. Initially, 26 active compounds of the protein were retrieved from the ChEMBL database and a LBPM was generated followed pharmacophore model validation, virtual screening, molecular docking and ADME (absorption, distribution, metabolism, and excretion) and toxicity properties analysis. The best pharmacophore model was validated and used to screen 172324 natural compounds from ZINC natural product database. The pharmacophore model based virtual screening process identified of 155 hits, which was further screened through molecular docking. Based on the molecular docking simulation four compounds ZINC03848771, ZINC04293271, ZINC12893621 and ZINC04152233 were chosen, which has binding scores of -11.7, -10.8, -10.8, and -10.4 kcal/mol, respectively. Additionally, analysis of the ADME and toxicity properties demonstrated the efficacy and nontoxic properties of the selected compound. The integrated ligand-based drug design approaches identified four potential natural lead compounds that can inhibit the activity of the desire protein subsequently block the activity of lung cancer. However, in-vitro and in-vivo assay are suggested to confirm their activity against the targeted protein.

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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 14-06-2022 | Accepted date: 16-06-2022 | Published date: 27-04-2023

An integrative ligand-based pharmacophore modelling, virtual screening, and molecular docking simulation approaches identified potential lead compounds against pancreatic cancer by targeting FAK1

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Pancreatic cancer is a deadly disease with a 5-year survival rate, making it one of the leading causes of cancer-related deaths globally. Focal adhesion kinase 1 (FAK1) is a ubiquitously expressed protein in pancreatic cancer. FAK, a tyrosine kinase that is overexpressed in cancer cells, is crucial for the development of tumours into malignant phenotypes. FAK functions in response to extracellular signals by triggering transmembrane receptor signalling, which enhances focal adhesion turnover, cell adhesion, cell migration, and gene expression. Until now, no effective drug candidates have been developed that can block the progression of the cancer caused by the FAK1. Therefore, the study aimed to identify potential drug candidates from the purchasable and natural compounds library, which will be able to block the c progression of cancer by inhibiting the activity of the FAK1. Initially, ligand-based pharmacophore approaches were applied to create a top ten best models. The best one model was utilized for the pharmacophore modelling and validation, pharmacophore-based virtual screening, virtual hit profiling, molecular docking, MD simulation, MM/GBSA and lead identification. Following the retrieval of twenty hits, four compounds were selected for further evaluation based on a molecular docking approach. Four newly discovered compounds, including Pubchem CID24601203, CID1893370, CID16355541, and CID16467343 with binding scores of -10.4, -10.1, -9.7, and -9.5 kcal/mol, respectively, may serve as lead compounds for the treatment of pancreatic cancer associated with FAK1. The ADME (Absorption, distribution, metabolism, and excretion) and toxicity analyses demonstrated that the compounds were effective and nontoxic. However, further evaluation through a wet lab is needed to determine the compounds' effectiveness. Keywords: Pancreatic cancer; FAK1 protein; Ligand-based pharmacophore drug design; purchasable compounds; molecular docking; ADMET; MD simulation; MM/GBSA

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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 19-12-2022 | Accepted date: 21-12-2022 | Published date: 27-04-2023

Dermal delivery of cannabidiol by lipid-stabilized nanoparticles: ın vitro and ın vivo evaluation

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Dermal and transdermal delivery of poorly soluble actives poses a significant formulation challenge. We have developed a nanoparticle (NP) template for encapsulation of the poorly soluble actives, using stabilization by lipids to enhance entrapment and permeability and to allow control over their release rate. Using two model actives – Cannabidiol (CBD) and Curcumin we developed NPs preparation process and defined the parameters influencing on size and distribution of NPs. We showed that incorporating different lipids in the NPs allows different release rates of CBD in-vitro and different release and skin permeation in ex-vivo experiments. Notably, the NPs stabilized with cetyl alcohol (CA) showed a significantly higher permeation compared to NPs stabilized with Stearic acid (SA). CBD has been shown as an effective possible treatment for psoriasis, suggesting that lipid stabilized NPs (LSNs) loaded with CBD might be more effective. In a study on TNF-α induced HaCaT cells, the LSNs showed significantly lower cytotoxicity compared to free CBD (in the same nominal concentrations), indicating its gradual release from the LSNs in the cell culture medium. The LSNs significantly suppressed the release of psoriasis-related interleukins, IL-6 and IL-8, confirming applicability for psoriasis treatment. Further, the LSNs were tested in an Imiquimod (IMQ)-induced psoriasis model in mice. The study was conducted on 8-11 week old C57BL/6 mice. In this study, we have shown that the LSNs loaded with CBD effectively prevented external manifestations of IMQ-induced psoriasis. The LSNs applied in a silica-gel formulations were significantly more effective than a similarly formulated emulsion of CBD, suggesting enhanced delivery of CBD by the SLNs. In contrast, their external effect was comparable to that of the positive control, a commercial clobetasol cream 0.05%.

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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 01-12-2022 | Accepted date: 03-12-2022 | Published date: 27-04-2023

Development of method validation for microbial identification using MALDI-TOF MS

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Recently, emerging industry trends in the biopharmaceutical industry have included drug discovery, drug development, biosimilar study, and drug manufacturing. Microbial contamination of biopharmaceuticals has inevitably been considered to be a significant issue for the process of manufacturing, negatively impacting the drug's potency, stability, and efficacy. Conventional standard microbiological methods, such as 16S rRNA gene sequencing, biochemical testing, etc., are currently used for routine monitoring of biopharmaceutical bacterial contaminants from water, air, and environmental surfaces. However, the rapid expansion of the biopharmaceutical growth has brought new challenges in reducing the time required for microbial identification. We developed the in-house method validation for microbial identification using MALDI-TOF MS. The qualitative parameters, specificity, precision, reproducibility, intermediate precision, and robustness were performed using 6 known microorganisms that are *Bacillus subtilis* subsp. subtilis TISTR 1460, *Bacillus licheniformis* TISTR 1109, *Staphylococcus aureus* NCTC 10788, *Escherichia coli* DH5-alpha, *Pseudomonas aeruginosa* DMST 15501 and Candida albican NCPF 3179. All organisms were cultured in LB agar and incubated at 30°C for 24-48 hours. The single colony of each strain was smeared on MALDI plate, overlaid with 70% Formic acid and 40 mg/ml α-cyano-4-hydroxycinnamic acid (CHCA) in Diluent solution (Acetonitrile, Ethanol, DI water type II, Trifluoroacetic acid (1:1:1:0.1 v/v)). After dried, sample coated MALDI plate was directly analyzed by MALDI-TOF MS, resulting peptide mass fingerprint (PMF) of sample. The PMF of each organism was then compared to the PMF of database to identify microorganism using SARAMIS. For both genera and species, MALDI-TOF MS had a 100% overall accuracy in identification. In all tests, the confidential value percentages (%CV) were higher than 90%, which was within accepted limits. The use of MALDI-TOF MS together with SARAMIS database has the capability to revolutionize microbial contamination identification and thus minimize the risk of microbial contamination occurring in biopharmaceutical production process.

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12th WORLD NURSING FORUM

April 17, 2023 | Webinar

Received date: 07-03-2023 | Accepted date: 09-03-2023 | Published date: 27-04-2023

In Vitro and *In Silico* Potential Inhibitory Effects of New Biflavonoids from *Ochna rhizomatosa* on HIV-1 Integrase and *Plasmodium falciparum*

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The aim of this study was to identify bioactive secondary metabolites from *Ochna rhizomatosa* with potential inhibitory effects against HIV and *Plasmodium falciparum*. A phytochemical study of *O. rhizomatosa* root barks resulted in the identification of three new biflavonoids (1−3), along with four known ones (4−7). Compound 7 (Gerontoisoflavone A) was a single flavonoid present in the rootbark of the plant and was used as a reference. Compound 1 (IC50 = 0.047 µM) was the only one with a noteworthy inhibitory effect against HIV-1 integrase in vitro. Chicoric acid (IC50 = 0.006 µM), a pure competitive inhibitor of HIV-1 integrase, was used as control. Compound 2 exhibited the highest antiplasmodial activity (IC50 = 4.60 µM) against the chloroquine-sensitive strain of *Plasmodium falciparum* NF54. Computational molecular docking revealed that compounds 1 and 2 had the highest binding score (−121.8 and −131.88 Kcal/mol, respectively) in comparison to chicoric acid and Dolutegravir (−116 and −100 Kcal/mol, respectively), towards integrase receptor (PDB:3LPT). As far as Plasmodium-6 cysteine s48/45 domain inhibition is concerned, compounds 1 and 2 showed the highest binding scores in comparison to chloroquine, urging the analysis of these compounds in vivo for disease treatment. These results confirm the potential inhibitory effect of compounds 1 and 2 for HIV and malaria treatment. Therefore, our future investigation to find inhibitors of these receptors in vivo could be an effective strategy for developing new drugs.

Keywords: *Ochna rhizomatosa*; biflavonoids; HIV-1 replication; *Plasmodium falciparum* NF54; structure–activity relationships; molecular docking

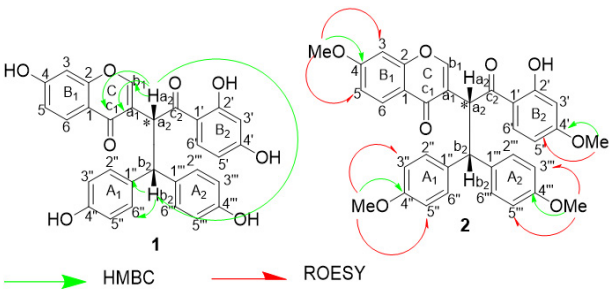

Figure 1. Key HMBC and ROESY correlations of (1–2).

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