was 2.10 ± 1.22 cm. A majority of the patients (78.9%) were White. Over one-half of these patients were neither current nor past smokers. Only 3% of the patient had a baseline stage IIIA or higher. About 49% of the patients underwent a mastectomy. Radiation therapy was used by 63.5% of the patients, and Tamoxifen users accounted for 78% of the study cohort. We found a statistically significant association between Her2 and breast cancer recurrence ($HR = 1.33$, log-ran p-value $= 0.006$). However, the HRs of breast cancer recurrence comparing Her2+ and Her2− patients decreased over time. We also investigate the effect of combined Her2, estrogen (ER), and progesterone (PR) on breast cancer recurrence and found that patients with Her2+/ER+/PR− had the highest risk of breast cancer recurrence. The hazard of recurrence for this group of patients was 85% higher than patients with Her2−/ER+/PR+. We also investigate the prognostic accuracies of Her2 in terms of time-dependent sensitivity and specificity. Using Her2 as the prognostic biomarker resulted in a specificity consistently over 80% from baseline up until 15 years post-baseline. The time-dependent sensitivity of Her2 was above 90% between baseline and 1.5 years. Then, the sensitivity dropped gradually to 40% from 1.5 years to 3 years post-baseline. For prognosis of breast cancer over 3 years from baseline, the sensitivity was between 30% and 40%. DISCUSSION/SIGNIFICANCE OF IMPACT: As a single biomarker and risk factor, Her2 was statistically significantly associated with the recurrence of breast cancer among patients in the LACE cohort. A composite biomarker by combining Her2, ER, and PR status was also significantly associated with the breast cancer recurrence. However, the HRs of breast cancer recurrence comparing Her2+ and Her2− patients decreased over time, implying that the Her2 status had a high impact on early recurrent breast tumors. Single biomarkers, usually, have very limited ability for prognosis of future events. However, we found that using HER2 as a single biomarker can give a relatively larger specificity consistently over 15 years of the study period. The sensitivity of Her2 is high for detecting early breast cancer recurrence. However, after 2.5 years from baseline, using Her2 for breast cancer recurrence detection is not reliable. Due to the relatively high accuracies of using Her2 status for prognosis of breast cancer recurrence, we conclude that Her2 should be considered in clinical studies related to prognosis of breast cancer recurrence. Future studies will investigate if prognostic accuracies can be improved by combining Her2 with baseline clinical risk factors such as age, tumor size and lymph nodes. In conclusion, our study has the clinical impact on prognosis (or early detection) of breast cancer recurrence among women with previously diagnosed and treated breast cancers.

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Determinants of depression among women from a large community engagement project

Deepthi S. Varma, Jasmine Mack and Linda Cottler

Clinical and Translational Science Institute, University of Florida, Gainesville, FL, USA

OBJECTIVES/SPECIFIC AIMS: Depression is one of the leading causes of diseases and disability among women of all ages in the United States. Lack of resources to meet one's daily needs, access to health care, job opportunities, and drug use significantly contribute to depression among women. This paper aimed to explore the determinants of depression among women from a large community-based sample. METHODS/STUDY POPULATION: HealthStreet is a community engagement research initiative at the University of Florida that utilizes the community health worker (CHW) model to assess health concerns and conditions of community members and link them to available social and medical services and health research. From October 2011 through December 2016, CHWs assessed 8469 community members from various locations in the community such as grocery stores, bus stops, health fairs, laundromats, and others. Among these 8469 participants contacted and assessed by the CHWs, 4952 (58.5%) were women. RESULTS/ANTICIPATED RESULTS: Of the total 8469 participants, 4952 were women and 1839 (37.1%) reported ever having depression. Mean age of women who reported depression was 44.1 years (SD ± 14.4). Women who were current users of 3 or more drugs were 10 times more likely (95% CI: 5.73, 18.40; OR 10.27) to report depression compared with those who did not currently use any drugs. Those who were food insecure in the past 12 months (95% CI: 1.970, 2.576; OR 2.253) were twice more likely to report depression, while never married (95% CI: 0.576, 0.771; OR 0.666), and currently unemployed (95% CI: 0.535, 0.715; OR 0.619) women were less likely to report depression. Chronic health conditions such as hypertension (41.6% vs. 33.7%), diabetes (14% vs. 10.5%), and cancer (12.1% vs. 8.3%), and comorbid psychiatric symptoms such as anxiety (54.2% vs. 10.8%) and bipolar disorder (23.8% vs. 2.8%) were significantly higher ($p < 0.001$) among women with depression compared with their counterparts. Significantly more women without a history of depression had medical insurance (68.8% vs. 64.3%) as compared with women with depression. DISCUSSION/SIGNIFICANCE OF IMPACT: Depression was associated with food insecurity and drug use. The impact of drug use continues to be a major mental health concern among community-based women. Further, these findings emphasize the importance of community engagement programs such as HealthStreet, which utilizes the CHWs' model to link community members to social and medical services within the community, in improving the mental health of women.

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Among heart failure patients, cannabis use is an independent predictor of hospitalization and discharge against medical advice: Data from the 2012 Nationwide Emergency Department Sample (NEDS)

Adeyinka C. Adejumo, Samson Alliu, Nnaemeka Onyeakusi, Tokunbo Opeyemi Ajayi, Adegbala Oluwole Muyiwa, Akintunde Akinjero, Kelechi Adejumo and Edgar Lichstein

OBJECTIVES/SPECIFIC AIMS: To assess the effect of cannabis on impaired judgment and health outcomes among heart failure patients in the emergency room. METHODS/STUDY POPULATION: Patients with heart failure presenting to the emergency room. Cannabis with confounders such as income level, insurance type, tobacco use, and age. Discharged against medical advice to assess impaired judgment. Hospitalization rates, length of stay, and death rate to assess health outcomes. Multivariate logistic regression to access the odds of each of these outcomes from cannabis RESULTS/ANTICIPATED RESULTS: Cannabis is associated with impaired outcome (increase in discharge against medical advice). Cannabis have poorer health outcome in terms of more hospitalizations from the emergency department. Cannabis also have better health outcome in terms of shorter length of stay and death rate among cannabis users Versus nonusers. DISCUSSION/SIGNIFICANCE OF IMPACT: This is crucial to inform health care providers to ensure better counseling of cannabis users. This result should also be considered to interpret other publications that shows better outcomes in patients taking cannabis. Cannabis users might only seem to have a better outcome because they tend to discharge against medical advice and thereby die outside the hospital, etc.

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Optimal study design for Diagnostic Accuracy Studies: Differential verification Versus partial verification

Yizhe Xu, Joseph B. Stanford, Kristina Allen-Brady and Nan Hu

The University of Utah School of Medicine, Salt Lake City, UT, USA

OBJECTIVES/SPECIFIC AIMS: To compare the accuracy and precision for estimating the diagnostic accuracies (sensitivities and specificities) between differential verification (DV) and partial verification (PV) methods. Comparisons were made under scenarios with different values of design parameters including disease prevalence, proportion of verification for positive results, proportion of verification for negative result, sensitivity and specificity of the brass standard (BS) test in DV method. Through comparing 2 different verification methods under different scenarios, we give suggestions that which verification method is optimal under different design settings. METHODS/STUDY POPULATION: For both PV and DV methods, simulation studies were performed using statistical package R, version 3.1.3. We were primarily interested in studying how the unbiasedness and precision for estimation of diagnostic accuracies (sensitivity and specificity) of an index test change with the following design parameters: disease prevalence, proportion of verification for positive test results, the proportion of verification for negative test results, and the sensitivity and specificity of a BS test. We chose different values for each of the above parameters. For each estimation, we allowed values in only 1 parameter to change by fixing the other 2 parameters, so that the effect of each design parameter on the unbiasedness and precision of both sensitivity and specificity can be determined. For the DV method, we also developed an analytical method to estimate the sensitivity and specificity of an index test using a quadratic equation with a unique solution of the specificity and sensitivity. RESULTS/ANTICIPATED RESULTS: For rare disease with prevalence less than 1%, the PV method resulted in a less biased and more precise estimate of sensitivities and specificities of the index test. If the disease prevalence was between 1% and 10%, the DV method using a BS test with moderate or high sensitivity and specificity (sensitivity and specificity >90%) resulted in a less biased and more precise estimate of diagnostic accuracies of the index test. When the disease prevalence was greater than 10%, the PV method was superior when the BS test had sensitivity and specificity <80%, and the DV method was superior when the BS test had both sensitivity and specificity