

New Research Shows Promise and Perils of Digital Technology

BALTIMORE, May 15, 2020 /PRNewswire/ -- Digital technologies are emerging as a means for patients to access health information and healthcare services, particularly in recent months. New abstracts published this year in *The Journal of Urology*[®] highlight both the benefits and risks of using technology when managing health conditions. These abstracts will be presented during a special event for media on Friday, May 15 at 10:00 a.m. moderated by AUA Public Media Committee member Dr. Stacy Loeb. The following abstracts will be highlighted during this important session:

Urologic Telehealth: Substitution or Expansion? (#MP02-15): The incorporation of telehealth into medical practice is rapidly expanding, but the impact of video visits on revisit rates is unknown. Researchers in Michigan reviewed 30-day revisit rates for patients who utilized telehealth versus those who received in-person care at an established patient clinic to determine whether virtual visits resulted in an increase in services and found no statistical difference between the two groups. These data suggest video visits could be an effective substitute for traditional clinic visits for a broad range of urologic conditions, and expanded coverage of telehealth services by payors may not necessarily increase healthcare utilization.

The Utilization of eConsults in Urology (#PD32-08): eConsults are a feasible alternative to traditional in-person clinic visits for some diagnoses, according to the multi-institutional study from researchers in Michigan, California, Washington and New York, who examined the effectiveness of asynchronous telehealth services, measuring conversion rates (recommendation for in-clinic evaluation), completion time, physician response time and diagnosis categories. eConsults were found to be expedient, with the majority of inquiries taking less than 20 minutes to resolve (96.9 percent) and responses sent in one day or less (82.1 percent).

An Evaluation of Misinformation for Erectile Dysfunction Following Radical Prostatectomy on YouTube (#PD-09-12): Despite the popularity of YouTube, misinformation is highly prevalent, and raises concern, particularly when online videos are used by patients to obtain health information. In this study, researchers evaluated the quality and accuracy of more than 80 top YouTube videos on the topics of erectile dysfunction following prostate cancer surgery and found 20 percent of the videos contained false statements and scored poorly against the validated DISCERN quality criteria for medical health information for consumers.

Fake News About Prostate Cancer: Distinguishing Language Patterns in Misinformative Online Videos (#MP64-02): Though it is the most commonly used social platform for video content, YouTube videos have been demonstrated to have misinformative or biased content. In this inter-disciplinary study, a collaboration by urologists and computer scientists trained a language model using prostate cancer language used in medical publications to develop a learning algorithm, which was then used to examine the perplexity of language between both trustworthy and misinformative YouTube videos about prostate cancer. The algorithm showed known trustworthy videos were found to have lower language perplexity, suggesting learning algorithms may be a way to help identify trustworthy online video content about prostate cancer and other health conditions.

"Use of digital technology for urology communications has recently exploded, especially during the COVID19 pandemic. On the positive side, these studies verify the feasibility of telemedicine for management of a variety of urologic conditions, and that e-consults can be effectively used to expedite urologic consultation by primary care providers," Dr. Loeb said. "Conversely, patients must be cautious about the accuracy of urologic information obtained through social media networks like YouTube. In the future, it may be possible to develop automated methods to help vet the quality of online content. In the meantime, health consumers should carefully review the source and date of online information and discuss management options with a health professional."

About the [American Urological Association](#): *Founded in 1902 and headquartered near Baltimore, Maryland, the American Urological Association is a leading advocate for the specialty of urology, and has nearly 22,000 members throughout the world. The AUA is a premier urologic association, providing invaluable support to the urologic community as it pursues its mission of fostering the highest standards of urologic care through education, research and the formulation of health care policy.*

PD09-12

An Evaluation of Misinformation for Erectile Dysfunction Following Radical Prostatectomy on YouTube

Zeyad Schwen, Hiten Patel, Michael Biles, Joseph Cheaib, Ridwan Alam, Christian Pavlovich

Introduction: Recent studies have highlighted YouTube as a heavily used educational resource for patients diagnosed with prostate cancer that is often fraught with misinformation. We sought to characterize the content and quality of resources available to patients on YouTube regarding erectile dysfunction (ED) following radical prostatectomy (RP) which may heavily influence their post-operative expectations and treatment.

Methods: We performed a thorough evaluation on the first 100 YouTube videos using a search criteria of radical prostatectomy and erectile dysfunction. We characterized the publishers, content of the videos and scored the quality of the information by quantifying the number of false statements as well as using the validated DISCERN quality criteria for medical health information for consumers.

Results: Of the first 100 consecutive YouTube videos, 19 videos were excluded due to a lack of relevance to either ED or RP. Videos were viewed by a total of 529,428 users with a mean 22.1 thumbs up and 1.8 thumbs down. 44.4% (36/81) of videos were published by hospital systems while 9.8% and 3.7% of videos were published by companies or advocacy groups, respectively. 2/3rds of videos featured an MD, however 59.3% (32/54) were promoting their practice or institution. False statements were made in 20% (16/81) of videos. For patient counseling, only 12.3% of videos mentioned expected rates of ED after RP which ranged from 10-100%. 28.4% of videos commented on nerve sparing and 17.3% acknowledged a return of function over time, which most commonly was quoted at 24 months. Surprisingly, a large number videos (22.2%) endorsed penile rehab as a proven method of preserving and recovering erections. Median DISCERN scores were 29 (IQR 21-40) out of a maximum score of 80. There was no association found between DISCERN score and false statements, source of videos including medical institutions, user views, or presence of an MD.

Conclusions: The quality of the YouTube videos regarding ED after RP was low and reached over half a million viewers with a significant amount of false statements and self-promoting information. Better quality resources are required to ensure accurate and balanced educational resources regarding erectile function after radical prostatectomy.

Funding Source: none

MP64-02

Fake News About Prostate Cancer: Distinguishing Language Patterns in Misinformative Online Videos

Veronica Perez-Rosas, Ashkan Kazemi, Rada Mihalcea, Rui Hou, Nataliya Byrne, Stacy Loeb

Introduction: YouTube is the most commonly used social media platform in the United States. We previously reported that most of the top 150 videos about prostate cancer on YouTube contained potentially biased and/or misinformative content in the video or comments section. Concerningly, lower quality videos had a greater amount of viewer engagement. Since it is not logistically feasible for medical experts to manually vet the large quantity of online content about prostate cancer, our goal is to develop automated solutions for identification of misinformation.

Methods: Through an inter-disciplinary collaboration between urologists and computer scientists, we introduced a new dataset of 250 prostate cancer YouTube videos which were annotated as misinformative versus trustworthy. First, we quantified content differences between misinformative and trustworthy videos, compared to medical publications about prostate cancer. For this analysis, we used 354 publications in the PubMed Central Open Access dataset under the Prostate, Prostate Cancer, Prostate Cancer and Prostatic Disease categories to train a bigram prostate cancer language model. We then measured the perplexity of each video transcript with respect to the prostate cancer language model as an indicator of how related the video content is to trustworthy language on prostate cancer. Perplexity is a standard measure of language-model fit, in which lower perplexity values are associated with better language fit. The Mann-Whitney test was used to compare perplexity between trustworthy versus misinformative YouTube videos. Machine learning was used in a series of experiments to differentiate trustworthy from misinformative videos based on meta-data, linguistic and acoustic features.

Results: Using the language model derived from prostate cancer publications on PubMed Central, we found that trustworthy YouTube videos about prostate cancer had significantly lower perplexity values than misinformative videos (1733 vs 7033, $p < 0.001$). Our preliminary algorithm using a combination of YouTube meta-data, linguistic and acoustic features could separate trustworthy versus misinformative YouTube videos about prostate cancer with 74% accuracy.

Conclusions: There is a significant amount of misinformative content about prostate cancer on YouTube. Our results suggest that the language used in trustworthy videos about prostate cancer is closer to the published prostate cancer literature. In the future, automated detection of misinformation through machine learning algorithms may provide a scalable solution to help the public identify trustworthy online content about prostate

cancer and other health conditions.

Funding Source: *SL is supported by the Prostate Cancer Foundation, and the Edward Blank and Sharon Cosloy-Blank Family Foundation.*

MP02-15

Urologic Telehealth: Substitution or Expansion?

Juan Andino, Parth Shah, William Roberts, Alon Weizer, James Dupree, Todd Morgan, Stanley Mukundi, Chad Ellimoottil

Introduction: While insurance companies are increasingly providing coverage for telehealth services, such as video visits, and healthcare providers are increasingly utilizing these modes of healthcare delivery, the impact of video visits on cost and quality is largely unknown. One important question is whether a video visit can serve as a substitute for in-person care or whether the use of video visits will lead to additional downstream in-person visits (i.e., expansion of healthcare utilization).

Methods: We reviewed 141 consecutive, established patient video visits completed with four urologists at our institution. We then randomly sampled 141 established patient clinic visits to serve as our comparison group. After evaluating baseline demographics of the patients in the two groups, we determined whether video visits served as a substitute for in-person care or as an expansion of healthcare services, by comparing the number of additional visits (i.e., revisits) that occurred within 30 days of each type of encounter.

Results: There was no difference in revisit rates after video visits (4%, n=6) compared to clinic visits (6%, n=9; p=0.42). Patients that were seen via video visits tended to be younger (54.9 vs 62.7 years, p<0.001). Differences in the distance from the hospital (72 vs 64.5 miles, p=0.65) and median income (\$51,402 vs \$53,239, p=0.46) were not statistically significant. The most common diagnoses evaluated through video visit encounters were urolithiasis (38%), kidney or upper tract malignancy (18%), followed by elevated PSA (10%), prostate cancer (7%), and voiding issues (7%).

Conclusions: Video visits served as a substitute for traditional clinic visits and were used by patients with a broad range of urologic conditions. These findings suggest that the expansion of synchronous telemedicine coverage by private payers may not necessarily increase the utilization of healthcare services.

Funding Source: *None*

PD32-08

The utilization of eConsults in Urology

Adam Gadzinski, Milan Patel, Alexander Bell, Kara Watts, Anobel Odisho, Claire Yang, Chad Ellimoottil

Introduction: An eConsult is an asynchronous form of telehealth whereby a primary care provider requests electronic consultation with a specialist to replace a clinic visit. While eConsults have been used successfully in medical specialties, the use of eConsults in urology is relatively uncharacterized.

Methods: Four academic institutions contributed to our study: University of Michigan at Ann Arbor, University of California-San Francisco, University of Washington, and Montefiore Medical Center. We included all urological eConsults performed at each institution from the launch of their program through August 2019. An eConsult was considered "converted" when the reviewing urologist recommended a full evaluation in clinic instead of an electronic response to the clinical question. We report eConsult conversion rate, completion time, response time by physicians, and diagnosis categories.

Results: A total of 462 urological eConsults were reviewed. Of these, 36% (n=166) were converted to a standard consult, with an in-person office visit recommended. Among resolved eConsults with data on provider completion time (n=283), 50.2% were completed in 1-10 minutes, 46.7% in 11-20 minutes, 2.8% in 21-30 minutes, and less than 1% in 31 or more minutes. Among eConsults with time to response from urologist (n=202), 56.9% of eConsults were responded to in <1 day, 25.2% in 1 day, 6.9% in 2 days, 5.9% in 3 days, and 5% in =4 days. The distribution of eConsult diagnosis categories is summarized in Figure 1.

Conclusions: Our study suggests that eConsults are a feasible alternative to traditional in-person visits in the field of urology for a wide range of common urological diagnoses. Further investigations are needed to understand the impact of eConsults on healthcare costs and access to urological care.

Funding Source: *None*

MP78-01

Trends in Serum Testosterone Levels Among Adolescent and Young Adult Men in the United States

Premal Patel, Richard Fantus, Soum Lokeshwar, Joshua Halpern, Cecilia Chang, Atil Kargi, Ranjith Ramasamy

Introduction: Testosterone deficiency has a prevalence of 10-40% among adult males and 20% among adolescent and young adult (AYA) men (males 15-39 as per the National Cancer Institute). With increasing prevalence of low testosterone in general population, we hypothesized that serum total testosterone (TT) levels will decline in AYA men. The objective of this study was to analyze serum TT levels in AYA males using data from the National Health and Nutrition Examination Surveys (NHANES) 1999-2016. We hypothesized that serum TT levels in AYA men have decreased over time.

Methods: NHANES is a nationally representative cross-sectional survey that examines the US population and over samples targeted populations, to obtain adequate samples for subgroup analysis and more reliable variable estimates. We found data cycles which had values for serum TT and analyzed changes in serum TT over time controlling for year of study, age, race, body mass index (BMI), comorbidity status, alcohol and smoking use, and level of physical activity. During the study periods, three different assays (Biotin-Streptavidin from 1999-2004, IS-Liquid Chromatography from 2011-2012 and High-Performance-Liquid-Chromatography Tandem Mass Spectrometry from 2013 onwards) were used; they have shown comparable testosterone values with only some additional accuracy in the latest modality.

Results: A total of 4,045 men had TT measured from 1999-2016. After controlling for confounders, TT was lower among men in the later (2011-2016) versus earlier (1999-2000) cycles (all $p < 0.001$). Mean TT decreased over time: 605.39 ng/dL, 567.44, 424.96, 431.76 and 451.22 for 1999-2000, 2003-2004, 2011-2012, 2013-2014 and 2015-2016, respectively ($p < 0.0001$). Elevated BMI was associated with reduced TT levels ($p < 0.0001$) with mean BMI increasing from 25.83, 27.21, 27.12, 27.81, 27.96 for 1999-2000, 2003-2004, 2011-2012, 2013-2014 and 2015-2016, respectively, $p = 0.0006$. Even in men with normal BMI (18.5-24.9), TT levels have declined from 664.79 ng/dL to 529.24 ng/dL between 1999-2000 and 2015-2016 ($p < 0.05$).

Conclusions: This is the first study to report declining testosterone levels in adolescent and young adult men. Further studies are required to understand the etiology of low testosterone in AYA men.

Funding Source: None

PD25-03

The Association Between Exercise and Serum Testosterone Among Men in the United States

Richard Fantus, Cecilia Chang, Nelson Bennet, Brian Helfand, Marah Hehemann, Joshua Halpern, Robert Brannigan

Introduction: Diet and exercise coupled with weight loss have been shown to improve serum testosterone (T) in overweight individuals. However, the association between T and clinically practical, guideline-based exercise levels have not been examined. We used the recently updated Physical Activity Guidelines Advisory Committee (PAGAC) recommendations for average weekly physical activity to investigate the relationship between recommended activity levels and serum testosterone.

Methods: We queried the National Health and Nutrition Examination Survey (NHANES) database from 2011-2016, including men between the ages of 18 to 80 who answered the physical activity questionnaire and underwent serum T testing. We converted all activity into metabolic equivalent of task (MET) minutes per week. Using the PAGAC recommendations, we divided the cohort into three groups based on activity level: less than recommended (<500 MET minutes/week), recommended (between 500 and 1000 MET minutes/week) and greater than recommended (>1000 MET minutes/week). We used multivariable logistic regression controlling for known confounders to analyze the association between activity level and low T (<300ng/dL).

Results: 7597 men met inclusion criteria. Most men (4461, 58.7%) had > 1000 MET minutes/week, 703 men (9.3%) met the recommended activity level (between 500 and 100 METS minutes/week), and 2433 (32%) did not meet the recommended level of activity (<500 MET minutes/week). Low T was detected in 2201 (29%) men. In multivariable analysis, men whose activity exceeded the recommended amount showed a significantly decreased likelihood of low T (odds ratio [OR] 0.678, 95% confidence interval [CI] 0.587-0.783, $p < 0.001$) compared to those with lower than recommended activity levels (Table).

Conclusions: This is the largest, nationally representative cohort to demonstrate that men whose activity exceeded recommendations had a decreased likelihood of low T. While future prospective studies are required to validate these findings, these data provide a basis for counseling patients regarding the positive association

between exercise and serum T.

Funding Source: None.

MP78-08

Can Organic Diet be Protective against Hypogonadism and Erectile Dysfunction?

Farouk M. El-Khatib, Mohamad M. Osman, Linda M. Huynh, Sharmin Dianatnejad, Qiaqia Wu, Maxwell Towe, Natalie Yafi Roberts, Faysal A. Yafi

Introduction: There is increasing evidence supporting relationships between diet, hypogonadism, and erectile dysfunction (ED). We sought to assess the dietary patterns of patients presenting to a men's health clinic and to look for any correlations between dietary habits and signs and symptoms of hypogonadism and ED.

Methods: Men who presented to our men's health clinic between August 2018 and June 2019 were enrolled. Clinical demographics were collected and patients completed the Androgen Deficiency in the Aging Male (ADAM), the International Index of Erectile Function (IIEF-5), STOP-BANG questionnaire screens for obstructive sleep apnea (OSA), Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder 7-item (GAD-7) questionnaires, as well as an expansive dietary survey. This included questions about consumption of water, coffee, sugary drinks, drinks with artificial sweeteners, alcoholic drinks, as well as dietary preferences such as organic diet, processed foods and intermittent fasting, amongst others. Laboratory values including total testosterone (TT), free testosterone (FT) and estradiol (E) were also collected. Univariate and multivariate analyses were constructed to identify demographics and dietary habits that were predictive of hypogonadism or ED. In this study, men were included if they answered all the questionnaires and were excluded if they received testosterone replacement therapy.

Results: During this period, 445 men presented to the clinic, of which 297 were included. Organic diet was followed by 30 (10.1%) men, 52 (19.4%) did not consume processed foods and 31 (11.7%) performed intermittent fasting. On univariate analysis, organic vs non-organic diet was significantly associated with higher SHIM scores 19.1 ± 5.9 vs 16.4 ± 7.9 ($p = 0.03$). Hypogonadism and ED were diagnosed in 3.3% and 33.3% in men who followed an organic diet vs 15.7% and 41.9% in men who did not ($p = 0.069$ and $p = 0.366$, respectively). After adjusting for age and BMI, adherence to an organic diet was significantly associated with higher SHIM scores ($p = 0.045$). Hypogonadism, ED and LUTS were diagnosed in 6.5%, 29.0% and 19.4%, respectively, in men who performed intermittent fasting compared to 15.5%, 41.4% and 31.9% in men who did not ($p = 0.178$, $p = 0.187$ and $p = 0.154$). Men who consumed processed foods were younger ($p = 0.05$) and had higher body mass index (BMI) ($p = 0.033$).

Conclusions: This is the first reported study showing that adherence to an organic diet may potentially be protective against hypogonadism and ED. Larger prospective interventional studies are needed to validate these results.

Funding Source: none

PD58-03

A Systematic Review and Evidence-Based Analysis of Ingredients in Popular Male Fertility Supplements

Manish Kuchakulla, Yash Soni, Premal Patel, Neel Parekh, Ranjith Ramasamy

Introduction: Many men take over-the-counter Fertility supplements that promise increasing their likelihood for conception. However, these supplements are not always supported by evidence. We sought to evaluate the evidence available for evidence available for the ingredients.

Methods: A total of 17 male fertility supplements were identified from popular online retailer A1 Supplements, Amazon, Vitamin Shoppe, and Walmart. Individual ingredients were identified for each supplement. The PUBMED and Cochrane Controlled Trials Register online databases were reviewed for randomized control trials studying the efficacy of each individual ingredient. We then categorized each ingredient based on the availability of evidence using an adapted version of the scoring system used by the American Heart Association. Scores were assigned to each categorical level of evidence for each ingredient and a composite score for each supplement was calculated to assess their overall level of evidence.

Results: A total of 90 unique ingredients were identified from the 17 supplements. The most commonly used ingredients were Vitamin E, Folic Acid, Zinc, Vitamin C, Selenium, Vitamin B12, L-Carnitine, and Maca. Whilst the most studied ingredients are L-Carnitine, Vitamin E, Vitamin C, CoQ10, and Zinc. In all, only 22% of ingredients

used were found to have published evidence with respect to male fertility. Of these only 17% of ingredients had data published showing a positive effect. None of the supplements had any published evidence of their use in a randomized clinical trial. Our scoring system gave an average composite rating of 1.66 (on a scale to 5) for the evidence level of the popular supplements. Evolution 60 and Conception XR had the highest composite scores with 3.6 and 3.5, respectively. Strengths include a validated and standardized scoring system, as well as being the first to evaluate the level of evidence in a uniform manner. Limitations include the lack of granularity and heterogeneity in the RCT's that were included.

Conclusions: Many fertility supplements claim to improve fertility; however, their promises are rarely backed by evidence. Only 17% of ingredients used in popular fertility supplements had positive evidence demonstrated in randomized clinical trials, while only 20% have any evidence in RCTs at all. These products should be used with extreme caution and this information should be used when counseling patients.

Funding Source: *Supported in part by Summer Medical Student Fellowship Program from AUA / Florida Urological Society*

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