UCC
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March 31st, 2023

8:00am-4:00pm

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COVID-19 RESEARCH EXPO
2023
UNIVERSIDAD CENTRAL DEL CARIBE

Abstracts*

Musculoskeletal and Rheumatic Symptomatology Assessment After COVID-19 Vaccination in the Puerto Rican Population

Gerardo E. Sánchez-Navarro, BS1; Humberto R. Nieves-Jiménez, BS1; Christian C. Colón-Vega, BS1; Kristina M. Medina-Agramonte1, Juan D. Mercado-Potes, BS1; Giancarlo Piovanetti-Crespo, BS1; Frances Ramírez de Arellano-Canetti, BS1; Ricardo Rodríguez-Infanzón, BS1; Ariana N. Vélez-Santiago, BS1; Bárbara Riestra-Candelaria, Ph.D2
1Universidad Central del Caribe, School of Medicine, Bayamón, Puerto Rico
2Universidad Central del Caribe, Department of Anatomy, Bayamón, Puerto Rico

Purpose: Our study assessed musculoskeletal/rheumatic afflictions after COVID-19 vaccination in a Puerto Rican population with/without musculoskeletal/rheumatic comorbidities.

Methods: We distributed a questionnaire with musculoskeletal/rheumatic variables after COVID-19 vaccination at vaccination clinics and on social media, and performed bivariate analyses. This study is IRB-approved: 2021-22.

Results: Of 247 participants, 143 were females and 104 were males. When assessing musculoskeletal/rheumatic pain/stiffness during the day, at least three-four days after the first dose: 57.3% had no symptomatology, 28.5% considered it mild, 12.6% as moderate, and 1.6% reported severe pain/stiffness. During the night, 60.2% reported no symptomatology, 24.8% mild, 12.6% moderate, and 2.4% severe pain/stiffness. For the second dose, 47.3% experienced no symptomatology during the day, 27.3% mild, 21.1% moderate, and 4.1% severe pain/stiffness. As for the night, 51.4% experienced no symptomatology, 24.9% mild, 19.2% moderate, and 4.5% reported severe pain/stiffness. Among participants, 9.7% had preexisting musculoskeletal/rheumatic conditions and experienced post-vaccination pain, while 23.8% had preexisting conditions but did not have post-vaccination pain. Moreover, 12.6% had no preexisting conditions and experienced post-vaccination pain, while 53.4% had neither. The second dose suggested an increased moderately to severe pain during the day (p=0.002051) and night (p=0.015468) compared to the first dose. There was no statistical significance regarding musculoskeletal/rheumatic pain after vaccination between participants with or without pre-existing musculoskeletal/rheumatic conditions (p=0.07813).

Conclusion: Vaccine adverse effects were not particular to a specific cohort regardless of preexisting musculoskeletal/rheumatic condition status. This may suggest that diverse degrees of severity might present similarly in the Puerto Rican population.

An Assessment of Stress Levels Among Vaccinated Patients with Psychiatric Disorders During COVID-19 Pandemic

Fabiola I. Umpierre-Lebrón, BS1; Angel M. Negrón-Pantoja, BS1;
Nina Alonso, BS1; Gustavo Rivera-Rodriguez, BS1;
Luz N.Ramos-Vargas, PhD, MHS1
1Universidad Central del Caribe School of Medicine,
Bayamón, Puerto Rico

Purpose: The ongoing COVID-19 global pandemic may prompt the development and exacerbation of stress and mental health disorders. Psychiatric populations have been expected to show an increase in stress levels since the commencement of the pandemic. This prospective study compared the stress levels of individuals with and without psychiatric disorders among the Puerto Rican population.

Methods: A questionnaire inquiring levels of stress and types of stressors was distributed via social platforms. A total of 223 participants were eligible: 168 females, 50 males, and 5 non-binary. Bivariable and multivariable statistics were accomplished. This study is approved by the IRB.

Results: 91.0% of participants were vaccinated against SARS-CoV-2 from which 23.2% had psychiatric diseases. Data was significant for chronic stress in the presence of psychiatric disease ($p<0.05$). 40.4% of participants with psychiatric disease perceived a reduction in stress levels; 36.2%, no change; and 23.4%, an increase. Within participants without psychiatric disease, 53.9% reported a reduction; 30.5%, no change; and 15.6%, an increase. The presence of a psychiatric disease was significant for the persistence of high-extreme stress levels after vaccination ($p<0.05$).

Conclusions: Data from this cohort revealed vaccination against SARS-CoV-2 was beneficial in alleviating stress and that receiving the vaccine was not considered a stressor for the majority of participants with and without psychiatric diseases. However, additional action must be taken to further reduce stress within the psychiatric population as untreated chronic stress may lead to disability and mortality.

A Demographic and Medical Study of a COVID-19 Vaccinated Puerto Rican Cohort

Humberto R. Nieves-Jiménez, BS1; Andrea Firpo-Pabón, BS1;
Sergio J. Báez-Juarbe, BS1; Diego B. Buitrago-Villamizar, BSN1;
Jean Carlos G. Martínez-Izquierdo, BS1; Juan D. Mercado-Potes, BS1;
Fernando A. Sánchez-Pérez, BS1; Sebastián Portela-Colón, BS1;
Eric M. González-Morales, MD, MPH1
1Universidad Central del Caribe School of Medicine,
Bayamón, Puerto Rico

Purpose: Beginning December 2020, COVID-19 vaccination clinics opened to cater for the Puerto Rican population, which paved the way to gather critical data during the ongoing pandemic. In this study, we aim to identify demographic and medical data acquired from a COVID-19 vaccinated Puerto Rican cohort.

Methods: Participant data acquired from a COVID-19 vaccination clinic from December 2020 to June 2021 were assessed. Evaluated variables included sex, age, municipality of origin, number of family members per household, and medical conditions. Bivariate analyses were executed. This study is IRB-approved.

Results: A total of 505 vaccinees (339F/165M/1Other; mean age: 40.5±14.3) were assessed. A majority of vaccinees were healthcare workers (67.5%). The average number of family members per household was 2.9, with the majority having 2 (25.7%), 3 (25.6%) or 4 (23.6%) members living together at time of vaccination. The most common municipalities of origin were San Juan (20.2%), Bayamón (16.4%), and Guaynabo (12.5%). When evaluating medical conditions, 16.6% had hypertension, 14.1% asthma, 8.3% diabetes mellitus, 7.3% hypothyroidism, 2.0% a cardiovascular affliction, 2.0% a rheumatologic condition, and 1.8% a gastrointestinal condition; 54.5% did not indicate a present medical condition. There was a statistically higher prevalence of hypertension in Bayamón than San Juan ($p=0.007921$), but no significant prevalence between Bayamón and Guaynabo ($p=0.421141$) and San Juan and Guaynabo ($p=0.098647$).

Conclusion: This study revealed a diverse Puerto Rican cohort, with a noted prevalence of hypertension in the municipality of Bayamón. Future demographic studies are warranted to further acquire valuable data of the Puerto Rican population.

Effects of the COVID-19 Vaccine's Second Dose among Puerto Rican Men and Women: A Cross-sectional study

Ginette González-Ramírez, BS1; Maria V. Rios, MPH1;
Laura F. Gómez Guzmán, MPH1; Luis Hernández-Rodríguez, BS1;
Natalia Martinez, BS1; Bak-nin Choi, BS1; Bianca Melendez, BS1;
Iris Parrilla- Boria, PhD1
Universidad Central del Caribe School of Medicine Bayamón, PR1

Purpose: Advanced age has been recognized as a significant risk factor for COVID-19 infection, despite the fact that it can impact people of all ages, sexes, and races. Gender-specific vaccination outcomes are thought to be influenced by the biological differences between men and women. The crucial role that genders and sexuality play in health has been underlined throughout the COVID-19 epidemic.

Methods: A retrospective investigation was carried out. Adults under the age of 21 who reside in PR were sought out via social media and in person at UCC vaccination clinics following the second dose of COVID-19 vaccines. This study aims to outline the variety of adverse effects in both men and women following COVID-19 vaccination. Descriptive statistics were used for the data analysis, which was done after the data was gathered using online surveys. IRB Protocol #: 2021-20

Results: Among the 177 participants, 54.2% were women and 45.8% in men. Among women in all age groups, the frequency of arm discomfort (p-value of 0.006), burning in the eyes (p-value of 0.0003), sore throat (p-value of 0.0107), and excessive sleepiness (p-value of 0.0019) was higher in this group.

Conclusion: According to the study's findings, most adverse effects associated with COVID-19 vaccinations were manageable. However, women were more likely to experience these adverse effects than men, which may be explained by differences in their physiologies. A longer-term follow-up study might provide more conclusive findings.

Assessing the Influence of Chronic Diseases on Safety Perception and Precautions before and after COVID-19 Vaccination

Jean A. Pérez-Verdejo, BS1; Humberto R. Nieves-Jiménez, BS1;
Carlos V. López-Aquino, BS1; Andrea B. Lastra Annexy, MPH1;
Julio C. Mantero, MS1; Jorge J. Acevedo-Rico, BS1;
Daniela Medina-Camacho, BS1; and David E. Rivera-Aponte, PhD2
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico
2Department of Biochemistry, Universidad Central del Caribe, Bayamón, Puerto Rico

Purpose: With the increasing number of COVID-19 vaccines being distributed globally, it is essential to understand how this affects individuals in various aspects of their lives. The aim is to determine the influence of chronic diseases on safety perception and precautions taken by individuals before and after COVID-19 vaccination.

Methods: A questionnaire containing sociodemographic inquiries was distributed at vaccination clinics and social media to assess the feeling of safety and precautionary measures taken against COVID-19 during pandemic before vaccination (DPBV) and after vaccination (AV) between participants with and without chronic diseases. This study is Universidad Central del Caribe IRB Approved No. 2021-28.

Results: A total of 203 subjects were recruited. Of those, 42.4% had at least one chronic disease. When assessing safety concerns regarding attending medical appointments AV, 73.5% of participants with chronic disease felt safe to attend. There was no statistical significance between those with and without chronic conditions and their sentiment toward safety to attend medical appointments. Analysis of precautionary measures taken against COVID-19 revealed no significant difference between participants with chronic diseases and those without, with 93.0% and 92.3%. Furthermore, 57.0% of participants with chronic disease felt safe attending work/college, while 23.3% did not and 19.7% did not work or study. However, statistical differences were observed between non-chronic and chronic condition participants in their perceived safety when attending work or college in-person.

Conclusion: This pilot study suggests that individuals with chronic diseases have similar perspectives regarding COVID-19 as those without chronic diseases when attending medical appointments and following precautionary measures, but may have different perspectives regarding attending work or college in-person.

Addressing disparities in genomic surveillance for SARS-CoV-2 in Puerto Rico through multisector collaborations, summer 2021

Fabiola Cruz-López1, PhD, MPH, Vianca Aponte1,BS,
Karolane González1, BS, Andrea Firpo1 , BS, Fabiola Fontanet-Jaime1 , BS,
Tania Mitwalli1 , BS, Patricia Serrano1 , BS, Natalie Machargo1 , BS,
Ernesto Vázquez1 , BS, Martin González2 , Kendall Billig3, MPH,
Nathan Grubaugh3, PhD, David Rivera1, PhD
1Universidad Central del Caribe, Bayamón, PR
2Universidad de Puerto Rico- Recinto de Río Piedras, SJ
3Yale University, CT

Purpose: The emergence of SARS-CoV-2 virus led public health authorities worldwide to implement genomic surveillance as an essential public health tool. These efforts are not spared of global health disparities in which high-income countries have more resources and expertise to expand sequence capacity than other countries. Before June 2021, the lack of funding and expertise on genomic surveillance in Puerto Rico resulted in multiple uncoordinated efforts limiting its effectiveness. Thus, our project aimed to address these disparities by establishing a small-scale surveillance system through multisector collaborations.

Methods: By late May 2021, we established an effort with local laboratories, the University of Yale and Universidad Central del Caribe, to collect SARS-CoV-2 PCR-positive laboratory samples weekly, obtain spatiotemporal data, and perform sequencing and analysis. Analyses were shared weekly with the Puerto Rico Department of Health. IRB protocol ID: 2021-21.

Results: From May 29th to October 5th, 2021, we sequenced 682 genomes representing 57 of 78 municipalities and covering the seven health regions in PR. The period described the Alpha variant's decline and the Delta variant's establishment in Puerto Rico. Our efforts provided 65% of the sequences useful for near-real-time genomic surveillance with a turnaround time of less than 21 days.

Conclusions: The small-scale system demonstrated that a coordinated genomic surveillance effort by experts in academia and local laboratories could provide essential data in near real-time for public health authorities to guide policy. Genomic surveillance in Puerto Rico should be strengthened to observe SARS-CoV-2 variants and other pathogens that could threaten public health.

COVID-19 Vaccine Acceptance Among Puerto Rican Pregnant Females

Camelia M. Del Valle-Torres, BS1; Natalie M. Machargo-Carlo, BS1;
Sara S. Colón-Berríos, BS1; Addyth Miranda-Valle, BS1;
Luar Rodríguez-Gálvez, BS1; Sara Vendrell-González, BS1;
Juan Salgado, MD1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: Infection with COVID-19 poses greater risk of severe illness and death in pregnant females compared to non-pregnant females. However, vaccination rate in the pregnant population is significantly less than that of non-pregnant. To better understand this population, correlations between attitudes and beliefs and COVID-19 vaccine acceptance were studied. These results can allow for a better physician-patient conversation when educating on COVID-19 vaccine administration. This cross-sectional study aimed to highlight influential factors taken into account during the acceptance of the COVID-19 vaccine in Puerto Rican pregnant females.

Methods: An IRB-approved three-part survey that includes demographic and socioeconomic factors, past obstetric history, and attitudes and beliefs on COVID-19 and its vaccine was completed by one-hundred participants, who were pregnant at the time the vaccine was accessible to them. Analysis was done using Kruskal-Wallis test for continuous variables and Fisher's exact test for categorical variables.

Results: 74.5% of women who accepted the COVID-19 vaccine obtained recommendation from their primary care physician or OB/GYN; of which, 61.7% reported physician recommendation being their primary influential factor. Conversely, 53.3% of women who refused to receive the COVID-19 vaccine during and after pregnancy did not receive its recommendation from their physician. 86.7% of such reported other sources as their primary influential factor.

Conclusions: This data highlights the importance of doctor-patient communication and education in promoting patient autonomy and positive health outcomes. By doing so, patients are more likely to accept the COVID-19 vaccine and obtain greater protection against COVID-19 illness.

Systemic and Skin-related Conditions Identified in a COVID-19 Vaccinated Puerto Rican Cohort

Humberto R. Nieves-Jiménez, BS1; Andrea Firpo-Pabón, BS1;
Laura I. Ortiz-López, BS1; Jean Carlos G. Martínez-Izquierdo, BS1;
Manuel A. Colón-Terrón, BS1; Eric M. González-Morales, MD, MPH1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: There is scarce literature focused on the prevalence of systemic and skin-related disorders in Puerto Rico. We aim to characterize the aforementioned conditions in a Puerto Rican cohort.

Methods: A sociomedical questionnaire was administered to participants receiving a CDC-approved mRNA COVID-19 at a COVID-19 vaccination clinic from December 2020 to June 2021. Bivariate analyses were performed. This study is IRB-approved.

Results: A total of 103 participants (78F/25M, mean age: 49.6±18.9) with systemic and skin-related conditions were identified. The most prominent were systemic lupus erythematosus (SLE) (28.1%), dermatitis (26.1%), and psoriasis (19.4%). There was no significant association when comparing sex and prevalence of SLE (p=0.1205), dermatitis (p=0.1281), and psoriasis (p=0.2125). When assessing race, 64.1% of participants identified as White, 21.4% as Other Race, and 14.6% as Black or African American. There was no statistical significance when evaluating racial identity and prevalence of SLE (p=0.7663), dermatitis (p=0.1909), and psoriasis (p=0.1507). The cohort was divided into two age groups: 53.4% were between ages 19-49 and 46.6% were ages 50+. There was no statistical significance when comparing age groups and prevalence of SLE (p=0.8212), dermatitis (p=0.2461), and psoriasis (p=0.7343).

Conclusion: The prevalence of SLE was the most prominent in this cohort, followed by dermatitis and, finally, psoriasis. Data analysis suggested no association between sex, age groups, and race and prevalence of these conditions. Additional studies are warranted in this population.

Severity of COVID-19 Infection and the Development of Long-Term Persistence of Olfactory and Gustatory Disorders in the Puerto Rican Population

Kileisha G. Alicea-Ríos, BS1; María Méndez-Valentín, BS1;
Fabiel Morales-Fontán, BS1; Luis Hernández-Rodríguez, BS1;
Giancarlo Piovanetti-Crespo, BS1; Isis E. Silvestrini-Bonilla, MD1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: Olfactory and gustatory disorders (OGDs) are common during COVID-19 infection and may persist even after the complete resolution of symptoms. Previously, no significant difference has been detected between COVID-19 severity and the development of persistent OGDs. Thus, this study aimed to evaluate the persistence of OGDs in Puerto Rico (PR) and assess the relationship between disease severity and the development of OGDs.

Methods: This is an IRB-approved cross-sectional study. Participants were enrolled using an online questionnaire via social media and printed flyers. Participants were ≥21 years of age living in PR who recovered from COVID-19. We define disease severity as visiting a hospital for management. Bivariate analyses were performed. IRB approval number: 2021-17

Results: 165 subjects (mean age 36±14 years, 67% cisgender women) were recruited. Thirty-eight percent (17/45) of participants with olfactory disorders (ODs) reported persistence after COVID-19 recovery. Similarly, 37% (16/43) of participants with gustatory disorders (GDs) reported persistence. A statistical significance was found when individually comparing the persistence of ODs and GDs with disease severity, mainly in those who experienced symptoms but did not go to the hospital as opposed to those who experienced symptoms and went to the hospital (both $p<0.05$).

Conclusion: Our results suggest that the high prevalence of patients who experienced symptoms but did not go to the hospital, and whose OGDs persisted, could be explained by the management they received. This may indicate why we found a significant difference and is in accordance with studies that reveal that patients treated at home make up most people with persistent OGDs.

Exercise therapy to combat the post-acute sequelae of COVID-19

Ángel S. Pagán Jiménez, BS1; Natalie E. Bonvie-Hill, MSN2; Brian P. Shapiro, MD2;
Tathagat Narula, MBBS, MD3; Augustine S. Lee, MD4; Bala Munipalli, MD5;
Amy L. Lockwood, RT6; Patricia J. Mergo, MD6; Elizabeth M. Johnson, MD6;
Isabel O. Cortopassi, MD6; Scott A. Helgeson, MD3;
Igor A. Fernandes, PhD2; Bryan J. Taylor, PhD2
1 University of Puerto Rico School of Medicine;
2 Cardiovascular Disease, Mayo Clinic FL; 3 Transplant Medicine, Mayo Clinic FL;
4 Pulmonary & Critical Care Medicine, Mayo Clinic FL;
5 General Internal Medicine, Mayo Clinic FL;
6 Radiology, Mayo Clinic FL

Purpose: Post-acute sequelae of SARS-CoV-2 infection (PASC) includes a constellation of clinical symptoms that persist following infection from SARS-CoV-2. The precise pathophysiology of PASC is unknown but likely multifactorial, and intervention strategies are lacking. Our aim was to investigate whether home-based exercise training (HBExT) enhances recovery of and/or improves exercise capacity, symptoms, and overall health-related quality of life (HRQoL) in people with PASC.

Methods: Pulmonary function, cardiopulmonary responses to maximal incremental treadmill exercise (CPET), symptoms, and HRQoL were assessed before and after 8-10 weeks of HBExT in eight adults with PASC and compared to five patients who continued standard care (CTL). HBExT consisted of prescribed weekly aerobic and resistance sessions, which were tracked in each participant. IRB #21-002384

Results: Before to after HBExT, there was a 2.0 ± 1.6min increase in exercise time and a 1.9 ± 1.1mL/beat increase in O2 pulse during CPET not seen in the CTL group. Peak oxygen uptake increased 4.2 ± 1.9mL/kg/min after HBExT vs 0.5 ± 2.1mL/kg/min in the CTL group. HRQoL score increased from 45 ± 12 to 81 ± 20 from before to after HBExT compared to the CTL rise from 52 ±9 to 63 ±25. From before to after HBExT, there was a reported resolution of at least two and up to six of their persistent PASC related symptoms compared to the none or up to two reported by the CTL group.

Conclusions: Prescribed exercise training may increase exercise capacity, at least partially alleviate persistent symptoms, and improve overall HRQoL in people with PASC.

The Impact of COVID-19 Stay-At-Home Orders on Access to Healthcare Among Sexual Minorities Living in Puerto Rico

Kyle Melin1, PharmD, MSc; Ilia M Otero Cruz2, MPH; Gilmary Betancourt Marrero1, BS; Julio M. Babilonia Deynes1, BEd; Nelly Conte Schmidt1, EdD, BSPh; Souhail Malave Rivera2, PhD, MSc; Carlos E. Rodriguez-Diaz3, PhD, MPHE, MCHES
1University of Puerto Rico-Medical Sciences Campus, School of Pharmacy,
2University of Puerto Rico-Medical Sciences Campus, School of Public Health,
3The George Washington University-Milken Institute of Public Health

Purpose: In Puerto Rico, the COVID-19 pandemic compounded existing problems of healthcare access exposed by previous disasters of US-imposed measures in 2016, Hurricanes Irma and María in 2017, and earthquakes in 2019-20. Barries to healthcare do not affect all members equally, as sexual minorities experience more difficulty. With this study, we analyzed how the first months of the pandemic impacted healthcare access among sexual minorities in Puerto Rico.

Methods: An online, cross-sectional survey was conducted among adults in Puerto Rico in July 2020. In addition to sociodemographic characteristics, participants responded to questions assessing access to healthcare services and prescription medications starting the pandemic. Sociodemographic and healthcare access variables were analyzed for association. UPR-RCM IRB Approved Protocol Number: A9650220

Results: A total of 1032 responses were available for analysis; 10.5% of participants reported being unable to reach a healthcare provider for non-COVID concerns, 4.8% reported being unable to reach a healthcare provider for COVID-related concerns, 44.3% reported canceling an appointment or procedure due to the pandemic, and 44.7% reported having an appointment or procedure being canceled on them. Regarding medications, 7.6% of participants reported experiencing problems taking their medications. Compared to heterosexuals, sexual minorities reported higher rates of trouble taking their prescription medications (11.4% vs 6.5%, $p=0.025$), being unable to reach a healthcare provider for non-COVID concerns (14.9% vs 9.1%, $p=0.021$), and being unable to reach a healthcare provider for COVID-related concerns (6.5% vs 4.5%, $p<0.001$).

Conclusions: Consistent with pre-pandemic findings, sexual minorities reported increased barriers to accessing healthcare during the initial 3 months of the COVID-19 pandemic in Puerto Rico.

Joint Pain Assessment and Comparability Following Pfizer-BioNTech and Moderna COVID-19 Vaccination

Gerardo E. Sánchez-Navarro, BS1; Humberto R. Nieves-Jiménez, BS1;
Juan D. Mercado-Potes, BS1; Frances Ramírez de Arellano-Canetti, BS1;
Rafael Morales-Grimany, BS1; Patricia S. Serrano-Boett, BS1;
Diego Buxeda-Lopez, BS1; Bárbara Riestra-Candelaria, Ph.D2
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico
2Universidad Central del Caribe, Department of Anatomy, Bayamón, Puerto Rico

Purpose: The introduction of COVID-19 vaccines from multiple manufacturers engendered rheumatic side effect uncertainty. In this study, we evaluated self-reported joint pain 3-4 days after two to three doses of the Pfizer-BioNTech and Moderna COVID-19 vaccines in a Puerto Rican cohort.

Methods: Musculoskeletal and rheumatic variables were assessed via an online questionnaire distributed at COVID-19 vaccination clinics and social media between January 2022 and October 2022. Multivariate analyses were accomplished. This study is IRB-approved: 2021-22.

Results: We analyzed 213 participants' responses (136 women / 77 men) for each dose. For the first dose, 67.1% received Pfizer-BioNTech and 32.9% received Moderna; 15.4% of those with Pfizer reported joint pain, while 21.2% with Moderna felt joint pain. For the second dose, 67.1% received Pfizer-BioNTech and 32.9% Moderna; 21.0% of those with Pfizer reported joint pain, while 29.0% with Moderna felt joint pain. For the third dose, 67.4% received Pfizer-BioNTech, and 32.6% Moderna; 11.9% of those with Pfizer reported joint pain, while 19.7% Moderna felt joint pain. There was no statistical significance when assessing self-reported joint pain between Pfizer-BioNTech and Moderna COVID-19 vaccine (p=0.9298).

Conclusion: Data revealed that the studied manufacturer mRNA COVID-19 vaccines did not impact self-reported joint pain after vaccination. Further research regarding COVID-19 vaccine manufacturer data is warranted.

The Association of Covid-19 Second-Dose Side Effects with Pre-Existing Chronic Conditions in Puerto Ricans Aged 65 or Older

Ginette Gonzalez-Ramirez, BSc1; Laura Gomez-Guzman, MPH1;
Maria V. Rios, MPH1; Bak-nin Choi, BSc1; Rocio K Vega-Roman, BSc1;
Stephanie A. Quetglas, BSc1; Natalia Martinez, BSc1;
Gabriel I. Figueroa-Martínez, BSc1; Luis D. Oller Payano, BSc1;
Sebastian Portela, BSc1; Kelly L. Rivera Escobar, BSc1;
David E. Rivera-Aponte, PhD1
1Universidad Central del Caribe School of Medicine Bayamón, PR

Purpose: To evaluate the side-effects amongst healthy older adults and those with pre-existing chronic conditions after receiving the second dose of the COVID-19 vaccine. Aiming to help educate older adults by reducing uncertainty and hesitance concerning vaccination.

Methods: An IRB approved cross-sectional study was performed with voluntary participants of the Universidad Central del Caribe vaccination clinics and subjects recruited through social media. Those aged 65 and older were provided an online survey to assess self-reported sociodemographic data and of the side-effects following the second dose of the vaccine.

Results: A total of 34 participants were recruited, with 71% having at least one diagnosed chronic disease. Hypertension was identified in 79.8% of participants, followed by diabetes (34.2%), arthritis (30.4%), hyperlipidemia (22.2%), obesity (15.2%), COPD (12.5%), cardiovascular diseases (11.4%), among others. The most common side effects reported were pain at the injection site (38.2%), swelling at the injection site (32.4%), muscle pain (26.5%), headaches (17.6%), fatigue (26.5%), sleep, (32.4%), loss of appetite (15%), anxiety (11.8%), insomnia (11.8%), among others.

Conclusion: There exists limited socio-medical data regarding side-effects of the COVID-19 vaccine specific to older adults with chronic illnesses. Our results demonstrate that over half of participants had at least one pre-existing chronic condition and their most reported symptoms were neither alarming nor unusual for the vaccine. Further analysis is needed to examine the differences in side effects between those with and without chronic conditions.

SARS CoV-2 spike protein mediated cardiomyocyte fusion as a mechanistic explanation of Cardiovascular Abnormalities

Brian Monge Barrios, BS1,2; Quinlan Mewborne, BS[1]; Jay Schneider, MD, PhD[1]
[1]Department of Cardiovascular Disease, Mayo Clinic Jacksonville, FL
[2]University of Puerto Rico, School of Medicine, Medical Sciences Campus

Purpose: The SARS CoV-2 virus has been linked to the development of cardiovascular disease manifestations post-infection such as hypertension, dysrhythmias, circulatory signs, coronary atherosclerosis, and heart failure, to name some. However, the mechanism of how this pathogen causes direct cardiac injury has yet to be described. This research aims to elucidate the behavior of SARS CoV-2 spike protein-exposed Human Induced pluripotent stem cell-derived cardiomyocytes (hiPSC-CMs).

Methods: Human Induced Pluripotent Stem cell-derived cardiomyocytes were used as a cell model for the SARS CoV-2 spike protein transfection by two methods: (a) Adenoviral transfection encoding the EmGFP-WT spike protein, and (b) mRNA-1273 (Moderna) lipofectomy of the 2P spike protein. Immunofluorescent staining was done to visualize structural elements such as F-actin, and Alpha-Actinin, as well as to detect spike in moderna-treated cardiomyocytes. An EVOS 7000 microscope was used to image cells.

Results: Syncitia formation in WT spike-transfected cardiomyocytes was seen through the fusion of various nuclei. Spike expression was ubiquitous and distributed along the sarcoplasm of cells. On the other hand, Moderna transfected cardiomyocytes showed spike expression in the sarcoplasm of cells, however, no syncytia were seen.

Conclusion: WT spike protein is capable of forming cellular syncytia in hiPSC-CMs, which suggests fusion as a possible mechanism of pathobiological changes at the cellular level in individual cardiomyocytes that may account for clinical cardiac findings. The 2P version of the spike (Moderna) protein renders it fusion inactive.

Different COVID-19 Vaccines and their Effects on Menstruation in the Puerto Rican population

Bianca Meléndez-Nieves, B.S.1, 3; Natalia Prats-Figueroa, B.S.1, 3;
Fabiola Umpierre-Lebron, B.S.1; Myrmarie Cruz-Perez, B.S.1;
Christopher Arnold-Suarez, B.S.1; Gabriel Figueroa-Martinez, B.S.1;
Hector Munoz-Miro, B.S.1; Alexandra Cruz-Serrano, B.S.1;
Maria Santos-Ortiz, B.S.1; Alfonso-Serrano, MD FACOG-FACS 1, 2
1Universidad Central del Caribe, School of Medicine, Bayamón, PR
2OB-GYN Department, Universidad Central del Caribe, Bayamón, PR
3The Hispanic Alliance for Clinical and Translational Research (Alliance)

Purpose: Abnormal Uterine Bleeding (AUB) has been reported following SARS-CoV-2 vaccination and emergent studies have shown relationships between AUB and the type of vaccine received, yet there is a lack of data from the Hispanic community. We aim to evaluate the relationship between the post-vaccination AUB incidence among Puerto Rican recipients of Pfizer-BioNTech, Moderna, and Johnson&Johnson (Janssen) vaccines.

Methods: This is an IRB-approved longitudinal descriptive study in which 87 participants answered 1 Initial and 2 Follow Up surveys that inquired on their pre- and post-vaccination menstrual information. Eligibility criteria included being 21-45 years old, having a uterus and ovaries, and not being pregnant or in menopause. Bivariate analyses were assessed.

Results: Among the participants, 56.1% received Pfizer-BioNTech, 36.1% Moderna, and 7.4% Janssen. Menstrual cycle changes (prolongation, reduction, amenorrhea) reported after the first and second dose, respectively, were Pfizer-BioNTech (33.3%vs36.1%), Moderna (36.2%vs31.2%), and Janssen (60%vs5.6%). A flow >7 days was reported by 5.6% with Pfizer-BioNTech, 6.2% with Moderna and 20% with Janssen after both doses. Changes in menstrual flow (increased, decreased) after the first and second dose were reported by Pfizer-BioNTech (33.3%vs37.6%), Moderna (31.2%vs37.6%), and Janssen (40%vs40%). There was no statistical association between variables and the type of vaccine received (all $p>0.05$).

Conclusion: Even though menstrual irregularities and AUB have been reported following SARS-CoV-2 vaccination, data for this cohort revealed no significant association between these changes and the type of vaccine received. Further research must be conducted to determine the temporality and understand the causality of these findings.

COVID-19 and the Deaf Community: A Human Rights Issue

Fabiola Fontanet-Jaime, BS1; Luis E. Hernández Rodríguez, BS1;
Fabiola Ramos Guzmán, BS, JD1; Tania Mitwalli, BS1;
Addyth Miranda Del Valle, BS1; Andrea Firpo Pabón, BS1 ;
Maricarmen Cruz-Jiménez, MD, FAAPMR1, 2
1Universidad Central del Caribe, Bayamón, PR
2VA Caribbean Healthcare System San Juan, PR

Purpose: Studies have shown that Deaf communities faced additional communication barriers due to protection equipment use and social distancing measures imposed after COVID-19 pandemic. This has significantly affected the access these communities have to healthcare. There is, however, limited data supporting this assertion in the Deaf adult population in Puerto Rico. For this reason, our objectives were to investigate the pandemic's impact on the access Deaf adults have to healthcare in PR and explore their knowledge regarding their rights as established by the Americans Disabilities Act (ADA).

Methods: This is an IRB-approved descriptive cross-sectional study. The participants, who were recruited through social media, were Deaf adults (≥21 years old) living in PR. The data was collected through online questionnaires between 07/12/2021–10/25/2021. IRB approval number: 2021-07

Results: Among the subjects (N=10, 50% between 30–39 years, 80% cisgender women, 80% hard-of-hearing, 20% profoundly deaf), 70% expressed worsening of their access to healthcare post-pandemic. Forty percent reported knowing their ADA-protected rights. Among them, 25% and 75% felt that their rights weren't or were occasionally respected, respectively. Eighty percent of the sample documented that their health insurance didn't educate them on these rights; 30% were self-educated through articles, 10% through providers, and 20% through friends/family.

Conclusion: The Deaf community's access to healthcare suffered a blow due to the pandemic. The urgency of having culturally competent providers that are educated on and comply with ADA should not be disregarded. Equally as important is educating Deaf patients on their rights so that they are equipped to practice self-advocacy. Institutional Grant of $1,700 was awarded to this project.

Women Living with Children in Puerto Rico During the Pandemic: Socioeconomic Problems, Life Disruption, and Health-Related Challenges

Valerie M. Marrero-Acosta, HSDG1; Eduardo Cumba-Avilés, PhD1; Demivette Gómez-Rivera, BA1; & Paola M. Rivera-Arroyo, HSDG1
1University of Puerto Rico, Rio Piedras Campus, School of Social Sciences, Institute for Psychological Research, San Juan, Puerto Rico

Purpose: Pandemic-management measures imposed living conditions that may have a larger impact on women living with children (WLWC). Few studies have examined their socioeconomic problems, life disruption, and health-related challenges during the outbreak. We explored differences in these domains between WLWC (G1; *n*=377) and women with no child at home (G2; *n*=666) during the pandemic.

Methods: Participants (aged 21–79 years) responded to an online survey (June 10, 2020–June 9, 2021; IRB #1920-194) that assessed socioeconomic and health-related variables, and perceptions of lockdown-related life disruption. They had to be Puerto Rico residents for ≥3 months, have Internet access, and understand Spanish. Using chi-square and Student t-tests, we compared groups in categorical and continuous variables, respectively ($p \leq .05$).

Results: Although groups were similar in employment rates, a higher proportion of WLWC faced a hostile work environment. They also reported significantly higher scores on stress at work, risk of losing their homes, worries about food running out, need for social support, fear of infection, emotional problems, and life disruption, but a lower perception of home security. A lower percentage of WLWC reported a lifetime history of mental health or an outbreak history of physical health services. G2 members reported higher scores on the quality and availability of physical health services, quality of mental health services, physical health status, and willingness for physical health services.

Conclusion: Our findings show the extent of the pandemic-related strain experienced by WLWC and the urge for designing specific programs to ameliorate their burden in future public emergencies.

A Report on Adverse Reactions and Perceived Intensity Following Third Dose mRNA COVID-19 Vaccination

Humberto R. Nieves-Jiménez, BS1; Ernesto J. Vázquez-Nevárez, BS1;
Claudia I. Colón-Farrulla, BS1; Manuel A. Colón-Terrón, BS1;
Giancarlo Piovanetti-Crespo, BS1; Adriana B. Sanjenís-Marrero, BS1;
María C. Santos-Ortiz, BS1; Patricia S. Serrano-Boett, BS1;
Rafael E. Morales-Grimany, BS1; Isis Silvestrini, MD1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: Due to the COVID-19 pandemic, the scientific community joined efforts to contain the spread of the virus by means of vaccination. Given the limited information regarding the recently-introduced third dose, we reported adverse effects following Pfizer-BioNTech and Moderna COVID-19 vaccination in a Puerto Rican cohort.

Methods: A questionnaire was provided at a COVID-19 Vaccination Clinic and social media platforms between April 2021 to May 2022. Participants that received a third dose from the Moderna or Pfizer-BioNTech were eligible. A Likert scale was utilized to assess participants' perceived severity concerning vaccine adverse effects. Bivariate analyses were executed. This study is IRB-approved.

Results: A total of 163 participants (101F/62M; mean age: 39.2±16.1 years) were eligible, of which 66.9% received the Pfizer-BioNTech, while 33.1% received the Moderna vaccine. When evaluating perceived Pfizer-BioNTech vaccine severity, on a scale of 0 to 5, ranging from no symptoms to the worst symptoms, 57.8% chose between 0 to 2 and 42.2% between 3 to 5. For perceived Moderna vaccine severity, 57.4% chose between 0 to 2 and 43.6% between 3 to 5. There was no significant difference when assessing perceived severity regarding adverse reactions between vaccine types ($p=0.9621$). For those who perceived a severity of 3 to 5, 73.9% and 78.3% had taken acetaminophen before vaccination with Pfizer-BioNTech and Moderna, respectively.

Conclusion: Based on the data, vaccine type did not influence perceived severity of adverse reactions within the third dose. Further research is warranted to assess for emerging trends regarding the third mRNA COVID-19 vaccine dose.

An analysis: Caregivers' level of education and its potential influence on their decision to vaccinate children against COVID-19

Gisselle M. Freytes Terrada, BS1; Addyth G. Miranda Valle, BS1;
Sara S. Colón Berríos, BS1; Tania Mitwalli, BS1; Llelyanne, P. Rivera Rivera, BA1;
Natalia N. Prats Figueroa, BS1; Bianca P. Meléndez Nieves, BS1;
Natalia M. Martínez Rodríguez, BS1.
Mentor: Dr. Wanda Figueroa Cosme, MD1.
1Universidad Central del Caribe School of Medicine

Purpose: Although vaccination has a critical role in controlling the COVID-19 pandemic, many caregivers face the disjunctive of whether to vaccinate their children against this virus. Potentially, multiple factors may influence this decision. Among these, sociodemographic characteristics may play an important role. This study explores how caregivers' education level may have influenced the decision on whether to vaccinate their children against COVID-19.

Methods: A total of 91 participants answered a questionnaire based on their perspectives regarding their decision to vaccinate their children against COVID-19. Education level was considered upon analysis. This study is IRB approved.

Results: Assessing participant's education level, 32 completed a post-graduate degree (PGD) (35.2%), 38 completed a bachelor's degree (BD) (41.8%) and 14 (15.4%) completed an associate degree or did not graduate from college. Three participants did not disclose their education level. Of the participants that pursued a PGD, 71.9% agreed to vaccinate their children, while 15.6% did not. In comparison, 65.79% of the participants with a BD agreed to vaccinate their children, while 21.05% did not. Of the participants who obtained an associate degree or did not graduate from college, 57.1% agreed to vaccinate their children, while 28.6% did not agree. A statistical test comparing the three groups and their decision to vaccinate their children yielded a p-value of 0.881654, demonstrating no statistical significance.

Conclusion: Regardless of participants' education level, there seemed to be a consensus on whether to vaccinate their child. Most participants were vaccinated and willing to vaccinate their child.

Infants' Outcomes After Intrauterine Covid-19 Exposure In Puerto Rico

Gabriela Ortiz-García(1), Paola Rivera-Dilán(1), Jetzabeth Torres-Dávila(1), Milangelis Machuca-Rodríguez (1), Ivette Bustelo-Ortiz (1), Patricia Morales-Iglesia (1), Inés García-García MD FAAP(2), Juanita Negrón-Pagán MD FAAP(2), Leticia Gely-Rojas MD FAAP(2), Lourdes García-Tormos EdD CCC-SLP BCS-S(2), Norma Claudio-Figueroa MD FAAP(2), Lourdes García-Fragoso MD FAAP(1).
(1) UPR Rio Piedras.
(2) UPR School of Medicine, Department of Pediatrics, Neonatology section. San Juan, PR.

Purpose: The COVID-19 pandemic has infected millions of people causing mild to severe symptoms. The SARS-CoV-2 virus is detrimental to a specific population which includes pregnant women Currently, the information about COVID-19 effects on infants is ambiguous and incomplete. Reports have recently been published linking exposure to SARS-CoV-2 in utero with possible neurodevelopmental sequelae in infants. This study aims to describe the neonatal outcome of infants born to mothers who had COVID-19 infection during pregnancy.

Methods: Retrospective medical records review of infants born to women who had COVID-19 infection during pregnancy, admitted to the UPR affiliated hospitals, or referred for follow-up at the High-Risk Clinics. Epi Info was used for statistical analysis. Institutional Review Board approved.

Results: Subjects included 207 newborns. Most mothers (61%) had active COVID-19 infection at delivery. Infants were mainly born vaginally (56%). Three mothers died from COVID-19. Infants were predominantly born at term (86%). Mean gestational age was 38 weeks (range 26-42) and mean birth weight 3016 grams (range 720-4485). Median 5- minute APGAR score was 9 (range 5-9). Most infants (84%) born to women with active COVID-19 infection were separated from mothers for isolation. Median infant's hospital stay was 3 days (range 1-31). Three infants died due to congenital anomalies.

Conclusion: Based on the preliminary results, most of the birth outcomes from the neonates exposed during pregnancy were positive. However, the developmental outcomes should be monitored and studied since there is insufficient and limited information about the development of children exposed to intrauterine COVID-19.

Impact of the COVID-19 Pandemic on the Mental Health of Socially Vulnerable Youths (10–24 y/o)

Stephanie A. Quetglas Cancel, BSc1; Tani M. O'Neill Galanes, BSc1;
Karolane A. González González, BSc1
and Gustavo Flores Buonomo, BSc1
1Universidad Central del Caribe, PO BOX 60327,
Bayamon Puerto Rico 00960-6032

Purpose: The outbreak of COVID-19 and the resultant institution of quarantines had significant effects on the mental health of youths, including effects associated with social isolation, sexual orientation/identity, and emergence of substance abuse. We aim to assess the necessity of post-pandemic psychological/social resources and call on the scientific community to expand knowledge of the pandemic and its effect on youth mental health.

Methods: This systematic review examined current literature on the effects of the COVID-19 pandemic on the mental health of vulnerable populations between 10-24 y/o. Studies selected were published between 2020-2022 and consist primarily of existing scientific reviews and research that utilize various online surveys.

Results: Around 76% of sexual minorities (gay, lesbian, bisexual) experienced persistent feelings of sadness and hopelessness in a 12-month period, compared to 37% of heterosexual youth (CDC). Studies showed an increase in the use of alcohol (18.2%) and cannabis (35.1%) in 644 youths who also reported increased feelings of anxiety and depression, while 56.4% of 2125 youths reported changes in cigarette and e-cigarette use (32.4% quit, 19.4% reduced amount by half) (Salmon et al, 2022; Bennett et al, 2022).

Conclusion: The COVID-19 pandemic had distinctive effects on youths, primarily those at increased risk of negative ramifications associated to their mental health due to social deprivation and physical distancing compared to the average adult. Further research is needed to understand the long-term impact of the pandemic on the mental health of this population and to develop interventions to support their well-being.

Encouraging Early Research Involvement for Medical Students: A Blueprint Concept Developed During the COVID-19 Pandemic

Humberto R. Nieves-Jiménez, BS1;
Waleska Crespo-Rivera, DrPH, MHSA1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: The COVID-19 pandemic prompted the scientific community to engage in research in the midst of growing uncertainty. Universidad Central del Caribe (UCC) medical students also acknowledged the need to produce COVID-19 research initiatives to cater for the Puerto Rican population and its inclusion in medical literature; thus, the UCC COVID-19 Research Division was created. This blueprint aims to incentivize medical institutions and faculty to encourage students to pursue research ventures at an early phase in their careers.

Methods: 1st year medical students explored possible research topics within the COVID-19 spectrum. Groups formed and leaders were selected, along with faculty members that served as mentors. Students were acquainted regarding the Institutional Review Board documentation, after which they presented their projects and received approval to commence molecular studies and recruitment for clinical ones during the Summer of 1st year. Halfway through 2nd year, groups had already presented data in local and international conferences. During 3rd year, a deeper data analysis was conducted, and groups had written several abstracts and begun writing papers. For 4th year, final paper submission is planned.

Results: Eighteen COVID-19 projects were developed by UCC medical students. 100% from the class of 2024 are involved in projects and 100% have passed the Research course since their inception. More than 30 abstracts and poster presentations have been accomplished.

Conclusion: The early introduction of medical students into research proved efficacious for productivity and timely firsthand experience. Medical institutions can utilize this blueprint as an archetype to develop students' research endeavors.

The Impact of the Covid-19 Pandemic on the Presentation of Colorectal Cancer

Sebastián A. Henríquez López BS a, Maralexa Martínez Valcárcel BS a, Alexandra Schoene Ruiz, MD a,b, Sebastian Castañer Colberg, MD a,b, Guillermo Bolaños Ávila, MD FACS a,b, Nicole Muñoz, PhD a,b
aSt. Luke's Summer Research Program, St. Luke's Memorial Hospital, Ponce, 00733, Puerto Rico
bDepartment of General Surgery, St. Luke's Memorial Hospital, Ponce, 00733, Puerto Rico

Purpose: The purpose of this quantitative, retrospective study was to analyze and compare the impact of the COVID-19 pandemic on the presentation of colorectal cancer (CRC).

Methods: A retrospective analysis was conducted of all patients that were evaluated at San Lucas Hospital during the COVID-19 pandemic from March 2020 to May 2021 with the diagnosis of CRC. Patients' general information and pathology reports were analyzed. The data were compared between pre-Covid group (March 2019-March 2020) and Covid group (March 2020-2021). IRB approved by St. Luke's Episcopal Hospital, Protocol number: 2203094098

Results: 32 patients were in the pre-COVID group and 53 in the COVID group. Most patients were negative for COVID-19. In the pre-COVID group, 53.2% arrived for elective surgery. In the COVID group, 63.4% of cases presented with acute clinical presentation requiring surgical intervention. 53.2% of patients in the pre-COVID group had a colonoscopy within the last year before surgical intervention. In the COVID group, 41.5% of patients had a colonoscopy in the past year while 54.8% had no colonoscopies. In the pre-COVID group, the most common surgical approach was exploratory laparotomy and in the COVID group it was open laparotomy. The most common malignancy in the pre-COVID group was Stage 2 CRC with 21.9%. In the COVID group, the most common malignancy was Stage 3 with 30.8%.

Conclusions: There was a borderline statistical significance in the comparison of both groups with the presence of M0 and M1, resulting in a p-value of 0.053 and an odd ratio of 0.105.

Evaluating Musculoskeletal & Rheumatic Symptomatology in Different Age and Sex Groups After COVID-19 Vaccination

Gerardo E. Sánchez-Navarro, BS1; Humberto R. Nieves-Jiménez, BS1;
Christian C. Colón-Vega, BS1; Ricardo Rodríguez-Infanzón, BS1;
Ariana N. Vélez-Santiago, BS1; Kristina Medina-Agramonte, BS1;
Bárbara Riestra-Candelaria, Ph.D2
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico
2Universidad Central del Caribe Department of Anatomy, Bayamón, Puerto Rico

Purpose: The development of COVID-19 vaccines prefaced an interest of the scientific community to study their adverse effects. We assessed musculoskeletal (MSK) and/or rheumatic (RHU) symptomatology 3-4 days after administration of mRNA COVID-19 vaccines in different age groups and sex identification in a Puerto Rican cohort.

Methods: An online survey with MSK/RHU variables was distributed in a COVID-19 vaccination clinic and social media between January 2022 and October 2022. Multivariate analyses were carried out. This study is IRB-approved: 2021-22.

Results: Out of 219 participants (139 women/80 men), 47.9% presented MSK/RHU symptomatology. Participants in each age cohort reported the following post-vaccine symptomatology: in the 21-30 cohort, 43.4% reported MSK/RHU, where 66.7% represented women and 33.3% were men. In the 31-50 cohort, 53.1% reported MSK/RHU, where 73.1% represented women and 26.9% were men. In the 51-60 cohort, 50% reported MSK/RHU, where 81.5% represented women and 18.5% were men. In the 61+ cohort, 47.5% reported MSK/RHU, where 57.9% represented women and 42.1% were men. While all age cohorts reported MSK/RHU symptomatology, there was no significant difference between the studied age cohorts of the Puerto Rican population and presence of MSK/RHU symptomatology ($p=0.7454$). Furthermore, there was no statistical difference when comparing sex and self-reported MSK/RHU symptomatology ($p=0.3432$).

Conclusion: Data from this cohort revealed similar MSK/RHU symptomatology regardless of age cohort and sex identification. Additional analyses concerning the degree of MSK/RHU symptomatology in specific doses is beneficial.

Potential Influence of Puerto Rican Political Parties Concerning COVID-19 Vaccine Hesitancy

Pedro J. Rodríguez-Ramírez, BS1; Humberto R. Nieves-Jiménez, BS1;
Patricia S. Serrano-Boett, BS1; Gisselle M. Freytes-Terrada, BS1;
Gerardo E. Sánchez-Navarro, BS1; Luis D. Oller-Payano, BS1;
Andrea Firpo-Pabón, BS1; Amanda G. Rodríguez-Cancio, BS1;
Rolando A. Mena-Ventura, BS1; Waleska Crespo-Rivera, DrPH, MHSA1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: Political party preferences in Puerto Rico may influence decision-making regarding the COVID-19 vaccine. This study set out to understand the potential relevance of an individual's political preferences with COVID-19 vaccine hesitancy in Puerto Rico.

Methods: A survey containing political party preferences and decision-making inquiries was distributed at a COVID-19 vaccination clinic between April 2021 and January 2022. Bivariate analyses were accomplished. This study is IRB-approved.

Results: A total of 243 participants (139F/104M) were recruited. Age was distributed as such: 36.9% between 21-29y/o, 17.4% were 30-39y/o, 24.5% between 40-49y/o, 21.2% were 50+. Regarding Puerto Rican political party preference, 15.6% selected the New Progressive Party (PNP), 6.6% Popular Democratic Party (PPD), 5.8% Puerto Rican Independence Party (PIP), 4.1% Citizen Victory Movement, 0.8% Dignity Project, 1.2% supported independent politicians, 39.1% had no preference, and 26.7% preferred not to answer. When assessing vaccine hesitancy, 32.4% of those who selected PNP were hesitant to receive the vaccine, while 31.3% of those who chose PPD were hesitant. None who selected PIP was hesitant. There was no statistical significance when comparing PNP and PPD vaccine hesitancy ($p=0.51$). However, vaccine hesitancy was significant for PNP/PPD compared to PIP ($p<0.05$).

Conclusion: In this cohort, data showed a lack of influence of Puerto Rican political parties on COVID-19 vaccine hesitancy. Further research should analyze political influence on COVID-19 vaccine hesitancy between the individual political parties on the island.

Increased incidence of cutaneous reactions following Pfizer-BioNTech, and Moderna COVID-19 vaccine administration reported in the adult population with pre-existing dermatological conditions in Puerto Rico

Pamela A. Merheb-Finianos BS1,4; Laura I. Ortiz-Lopez BS2,4;
Luar A. Rodríguez-Gálvez BS1,4; Amanda Rodríguez-Cancio BS3,4;
Fabiola M. Fontanet-Jaime BS2,4; Gisselle M. Freytes-Terrada BS1,4;
Andrea Firpo-Pabón BS1,4; David E. Rivera-Aponte PhD4
1University of Puerto Rico, Rio Piedras Campus
2University of Puerto Rico, Mayaguez Campus
3Pontifical Catholic University of Puerto Rico, Ponce Campus
4Universidad Central del Caribe School of Medicine

Purpose: Reports worldwide have raised concern regarding cutaneous manifestations following the administration of the COVID-19 vaccines. They have been shown to produce a Th1-type response similar to the one generated in flares of psoriasis and vitiligo. These cutaneous reactions are rare and initially unrecognizable, making dermatologists uncertain on how to treat them. This study aims to address misinformation regarding the effects of the vaccine and have a better understanding of the risk factors for developing cutaneous reactions post-vaccination.

Methods: We recruited participants 21 years and older using online questionnaires. The first gathered sociodemographic information, while the second, third and fourth were regarding the first dose, second dose, and booster, respectively. The fourth questionnaire (booster) was optional and only for participants who received it. This study is IRB-approved.

Results: Out of 119 entries, 49 were completed successfully. Of these, 23% of participants reported a skin reaction in their first dose, 17% in the second dose, and 22% in the third dose. The predominant reactions were pain, swelling, and erythema. There was no association between cutaneous manifestations and non-dermatologic comorbidities (p-value >0.05). However, an association was found (p-value <0.05) between the post-vaccine cutaneous reactions and pre-existing dermatological conditions.

Conclusion: The first dose caused the biggest percentage of skin reactions out of the three doses. Most of these patients had a pre-existing dermatologic condition such as psoriasis and atopic dermatitis. However, the most common cutaneous reactions are known to be self-limited and should not refrain patients from receiving the vaccine.

Prevalence of Endocrine and Respiratory Diseases in a COVID-19 Vaccinated Hispanic Cohort

Humberto R. Nieves-Jiménez, BS1; Andrea Firpo-Pabón, BS1;
Jean C. Martínez-Izquierdo, BS1; Diego B. Buitrago-Villamizar, BSN1;
Juan D. Mercado-Potes, BS1; Sergio J. Báez-Juarbe, BS1;
Manuel A. Colón-Terrón, BS1; Javier A. Vélez-Martínez, BS1;
Sebastián Portela-Colón, BS1; Eric M. González-Morales, MD, MPH1
1Universidad Central del Caribe School of Medicine, Bayamón, Puerto Rico

Purpose: Prevalence of endocrine and respiratory diseases in Puerto Rico is increasing. However, literature pertaining to the population is scarce. We aim to assess the prevalence of endocrine and respiratory diseases in a Puerto Rican cohort and characterize sociodemographic factors.

Methods: A sociomedical questionnaire was administered to participants receiving a CDC-approved mRNA COVID-19 vaccine at a COVID-19 vaccination clinic between December 2020 and June 2021. Bivariate analyses were performed. This study is IRB-approved.

Results: A total of 505 participants were eligible (339F/165M/1Other; mean age: 40.49±14.29). Endocrine disorders included: 8.3% of participants with diabetes mellitus and 7.3% with hypothyroidism. Respiratory diseases included: 14.1% asthma, 1.0% COPD, and 0.2% bronchitis. Females had a significantly higher prevalence of hypothyroidism than males ($p<0.05$). No statistical significance was found when relating sex to the prevalence of diabetes mellitus ($p=0.3255$) or asthma ($p=0.9818$). Regarding race: 59.6% identified as White, 31.2% Other Race, and 8.1% Black or African American. There was a statistically higher prevalence of asthma in the Black or African American population than those who identified as White or Other Race ($p<0.05$). No significant association was found between race and the prevalence of diabetes mellitus ($p=0.1808$) and hypothyroidism ($p=0.3823$).

Conclusions: The analyzed data suggested an increased prevalence of hypothyroidism in females. Hispanics who identified as Black or African American saw a higher prevalence of asthma. Further studies would achieve a greater understanding of this population.

Published by:

PRHSJ

Puerto Rico Health Sciences Journal

for the

UCC Interdisciplinary Health & COVID-19 Research Expo

Universidad Central del Caribe

Bayamón, Puerto Rico

2023