

# Effect of COVID-19 Pandemic on Mental Health Status of Different Age Groups in a Sample Population in Aruba

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**How to cite this paper:** Davies, L., Dusic, A., Adam, A.E., Khan, K.W., Dol, D., Leonardo, X., Ram, K., Tromp, V., Acosta, J., Ahmed, F. and Haque, N. (2025) Effect of COVID-19 Pandemic on Mental Health Status of Different Age Groups in a Sample Population in Aruba. *Open Journal of Internal Medicine*, 15, 294-301.

<https://doi.org/10.4236/ojim.2025.154026>

**Received:** September 8, 2025

**Accepted:** October 17, 2025

**Published:** October 20, 2025

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## Abstract

**Background:** COVID-19 pandemic posed unprecedented challenges to global mental health. This cross-sectional study explored its impact on adults in Aruba, with emphasis on variations across ethnicity, gender, age, and sexual orientation. **Methods:** Data were collected from 83 participants ( $\geq 18$  years) recruited during health fairs at Xavier University School of Medicine, Aruba. Standardized instruments (PHQ-9, GAD-7) were administered. Between-group comparisons were analyzed using ANOVA and Kruskal-Wallis tests. **Results:** Significant differences were observed by ethnicity ( $p = 0.008$ ), with Dutch participants reporting a mean composite score of  $4.05 \pm 3.91$ , compared to Hispanic/Latin Americans ( $6.39 \pm 5.72$ ) and Arubans ( $3.90 \pm 5.25$ ). Women reported more fatigue and anxiety symptoms than men ( $p < 0.05$ ). Age differences were significant for discomfort thinking about COVID-19 ( $p = 0.037$ ), with the 30 - 39 group most affected (mean  $5.84 \pm 5.68$ ). Differences were also found by sexual orientation ( $p = 0.021 - 0.005$ ), with same-sex attracted participants reporting higher burden (mean  $9.20 \pm 6.76$ ). **Conclusions:** COVID-19 pandemic had unequal mental health impacts across demographic groups in Aruba. Ethnic disparities were particularly pronounced, underscoring the need for culturally sensitive interventions.

## Keywords

COVID-19 Pandemic, Mental Health, Anxiety, Depression, Ethnic Disparities, Age Groups, Aruba, Cross-Sectional Study

## 1. Introduction

The outbreak of the novel coronavirus, SARS-CoV-2, in early 2020 rapidly esca-

lated into a global pandemic, causing widespread confusion and fear worldwide [1] [2]. The COVID-19 pandemic has ushered in unprecedented global public health challenges, with significant impacts on mental health due to social isolation, economic uncertainties, and the disease's morbidity and mortality. While numerous studies have explored these effects globally, localized research, such as in Aruba, remains crucial for understanding the pandemic's nuanced impacts across diverse communities. Aruba's unique demographic composition, characterized by a rich mosaic of ethnicities, presents an invaluable opportunity to investigate the differential mental health outcomes among its population. For the purposes of this study, participants self-identified their ethnicity. Categories were consolidated into four groups for analysis: Aruban, Hispanic/Latin American, Caucasian/Dutch (participants of European descent, including Dutch nationals), and Other. The terms "Hispanic" and "Latin American" are used interchangeably to reflect participant self-reports, while "Dutch" participants were classified under the broader Caucasian category [2].

Aruba heavily relies on tourism as a key economic driver, faced significant challenges during the pandemic [3]-[5]. The stringent measures taken to contain the spread of the virus led to a notable economic downturn, amplifying the country's challenges. This economic downturn had a ripple effect impacting various sectors, resulting in measures such as salary reductions for public employees [4] [5].

The mental health implications of the pandemic in the Aruban population are potentially long-lasting [3] [4] and must be acknowledged and understood to address the situation effectively [6]. In this study, our primary objective is to explore the experiences of individuals in Aruba during the lockdown period, specifically examining the impact on their lives, mental health, and financial well-being. Aruba's population is characterized by its diversity, encompassing various ethnicities and languages. By gathering reliable data on the mental health and well-being of individuals from different racial backgrounds in Aruba, we aimed to better understand the enduring consequences of the pandemic. Through this understanding, we hope to develop targeted strategies to address and prevent similar challenges in the future.

As the COVID-19 pandemic continues to pose significant global challenges, conducting research at the local level was crucial in uncovering the specific impacts on distinct populations [7]. This study seeks to contribute to the existing body of knowledge on the mental health implications of pandemics and provide valuable insights for policymakers and healthcare professionals in Aruba and beyond. Recognizing the distinct experiences of diverse ethnic groups, we can foster more inclusive and effective approaches to support mental health and well-being in times of crisis.

This study aims to fill the gap in literature by examining the mental health impacts of the COVID-19 pandemic in Aruba, focusing on potential disparities across ethnic groups and genders. Given the island's distinctive ethnic diversity, understanding these impacts is essential for developing targeted interventions that ad-

dress the specific needs of its communities. Prior to this research, the extent to which this pandemic has affected mental health among Aruba's various ethnic groups had not been thoroughly explored, underscoring the importance of this study.

By integrating updated COVID-19 statistics and emphasizing the study's rationale and objectives, we seek to contribute to the broader understanding of the pandemic's mental health implications in specific, ethnically diverse settings. Moreover, this research is guided by the hypothesis that the COVID-19 pandemic has disproportionately affected the mental health of certain ethnic groups in Aruba, underlining the need for culturally sensitive mental health resources and interventions.

## **2. Methods**

### **2.1. Study Population and Sample Size**

The target population consisted of individuals from diverse communities residing in Aruba, who attended health fairs at Xavier University School of Medicine (XUSOM) Aruba. The study included both men and women in three age groups: 18 - 39, 40 - 59, and  $\geq 60$  years. Participants were selected based on the inclusion criterion of being  $\geq 18$  years of age. A total of 83 respondents completed the questionnaires and were included in the final analysis conducted by the research team. This study was approved by the Institutional Review Board of XUSOM Aruba (approval number: 1972) and conforms to the principles embodied in the Declaration of Helsinki. All study participants provided written informed consent.

In the development and execution of this research, we highly value the role of participants. While participants contributed by providing data and offering feedback on consent processes and confidentiality, they were not directly involved in the design, analysis, or dissemination of the study.

### **2.2. Study Design and Recruitment**

This study employed a cross-sectional design to investigate the impact of the COVID-19 pandemic on mental health among various ethnic groups in Aruba. The recruitment process involved distributing questionnaires in person at health fairs to ensure a diverse participant pool. We aimed to reach a broad demographic by leveraging community centers, and local health services. Efforts were made to contact individuals from all major ethnic groups residing in Aruba, with a targeted outreach strategy to include underrepresented communities.

### **2.3. Period of Study**

The data collection period spanned from September, 2021 to April, 2022, covering a significant phase of the pandemic to capture its evolving impact on mental health. This timeframe was selected based on the onset of pandemic-related restrictions in Aruba and aimed to encompass various stages of the public health response.

Consequence: Participants also provided feedback on consent processes, confidentiality, and the overall ethical conduct.

## 2.4. Data Collection

To ensure the confidentiality and reliability of data, the research team utilized a structured and anonymous questionnaire to assess participants' mental health during the COVID-19 pandemic.

## 2.5. Ethical Considerations

Ethical approval for the study was obtained from Xavier University School of Medicine Aruba Ethics Committee. All participants provided informed consent before participating in the study, with assurances of confidentiality and the right to withdraw at any time without consequence. Participants also provided feedback on consent processes, confidentiality, and the overall ethical conduct.

## 2.6. Data Analysis

The primary objective of this cross-sectional study was to examine the impact of the COVID-19 pandemic on the mental health status of individuals living in Aruba. Specifically, the study aimed to assess the mental health of Arubans during the COVID-19 outbreak using standardized rating instruments, namely the Patient Health Questionnaire-9 (PHQ-9) and the General Anxiety Disorder-7 (GAD-7) questionnaires. The items for the GAD-7 originated from a pool of 13 items based on the criteria for GAD in the Diagnostic and Statistical Manual for Mental Disorders, Fourth Edition. Additional items were included from other anxiety measures [8] [9]. GAD-7 and PHQ-9 scales were utilized to assess anxiety and depression levels among participants. Based on established cutoff points, responses were categorized into no, mild, moderate, and severe levels. The parameterization of these scores allowed for a nuanced analysis of mental health outcomes across different demographic groups. Statistical analyses examined differences in mental health scores by gender, age, and ethnicity. The significance of disparities was assessed using chi-square tests for categorical variables and ANOVA for continuous variables, with a p-value of <0.05 considered statistically significant. The Non-parametric Kruskal-Wallis test was employed for between-group comparisons, considering the categorical variables such as gender, ethnicity, and age groups. The findings were then interpreted to gain insights into the mental health outcomes within the Aruban population during the COVID-19 pandemic [9].

## 2.7. Patient and Public Involvement

Patients and the public were not directly involved in the design, conduct, reporting, or dissemination of this research. Their involvement was limited to participation in the survey and providing feedback on ethical procedures (e.g., consent and confidentiality).

# 3. Results

## 3.1. Participant Characteristics

Eighty-three participants completed the survey (**Table 1**). Sample included men

and women across three age groups (18 - 39, 40 - 59,  $\geq 60$ ) and represented diverse ethnic and sexual orientation backgrounds.

**Table 1.** Demographic characteristics of participants (n = 83).

Variable	n	%
Gender—Male	43	51.80%
Gender—Female	38	45.80%
Gender—Other	2	2.40%
Age—18 - 39	50	60.20%
Age—40 - 59	25	30.10%
Age— $\geq 60$	8	9.60%
Ethnicity—Aruban	30	36.10%
Ethnicity—Hispanic	25	30.10%
Ethnicity—Caucasian	20	24.10%
Ethnicity—Other	8	9.60%
Sexual orientation—Heterosexual	60	72.30%
Sexual orientation—Same-sex attracted	10	12.00%
Sexual orientation—Sexually attracted to both male and female	8	9.60%
Sexual orientation—Other	5	6.00%

Note: Percentages may not total 100% due to rounding. Age groups were categorized as 18 - 39, 40 - 59, and  $\geq 60$  years.

**Ethnicity Differences:** Ethnic categories were analyzed as Aruban (n = 30), Hispanic/Latin American (n = 25), Caucasian/Dutch (n = 20), and Other (n = 8). To ensure consistency, the term “Hispanic/Latin American” is used throughout, and “Caucasian/Dutch” indicates Dutch participants who self-identified as Caucasian.

### 3.2. Results (Post-Hoc Analyses)

#### Ethnicity

Analysis of variance indicated overall differences in composite mental health scores by ethnicity (p = 0.008). Post-hoc Tukey HSD comparisons, however, did not reveal any specific group contrasts that survived correction (all adjusted p's  $\geq 0.31$ ; **Table S1**). Mean scores ranged from 3.0 in Hispanic/Latin American participants to 15.1 in the “Other” category. Age.

Kruskal-Wallis tests showed significant differences across age groups for Q2 (“It makes me uncomfortable to think about COVID-19”),  $H(2) = 9.88$ , p = 0.007. Follow-up Mann-Whitney tests (Holm corrected) indicated trends toward lower discomfort in the  $\geq 60$  group compared with both 18 - 39 (p = 0.084) and 40 - 59 (p = 0.084), but these contrasts did not remain statistically significant after correction (**Table S2**).

### Sexual orientation

Omnibus tests suggested differences in several outcomes (Q5: news-related anxiety, Q6: insomnia worry, MH5: appetite changes). However, post-hoc pairwise comparisons using Holm-adjusted z-tests of proportions did not yield significant contrasts among heterosexual, same-sex attracted, attracted to both male and female, and other orientation groups (all adjusted  $p$ 's  $\geq 0.23$ ; **Table S3**).

### 3.3. Discussion (Post-Hoc Interpretation)

Although omnibus tests suggested significant differences across ethnicity, age, and sexual orientation, post-hoc analyses did not confirm robust pairwise contrasts after correction for multiple testing. For ethnicity, the Dutch and “Other” groups showed higher mean scores than Aruban but less than Hispanic/Latin American participants, yet these contrasts did not survive Tukey adjustment. Similarly, while older adults ( $\geq 60$ ) reported lower discomfort on COVID-19—related worry compared to younger groups, the pairwise comparisons did not reach corrected significance. Sexual orientation effects observed at the omnibus level (Q5, Q6, MH5) also did not yield reliable pairwise differences. These patterns suggest that the omnibus findings may reflect broader group-level dispersion rather than specific, replicable contrasts, possibly influenced by the small sample sizes within certain categories. Future research with larger, more balanced samples will be necessary to determine whether these demographic trends represent true disparities or sample-specific variability.

## 4. Discussion

One of the most notable findings of this study was the distinct pattern of mental health burden among Dutch participants. Dutch participants showed comparable or slightly higher mean scores than Arubans (4.05 vs. 3.90), but lower scores than Hispanic/Latin American participants (6.39). This suggests nuanced differences across groups rather than a uniformly higher burden in the Dutch population. Several factors may underlie these patterns, including challenges related to social integration and cultural adjustment, pandemic-related restrictions on travel and employment, and stressors linked to immigration status. Although post-hoc contrasts were not statistically significant after correction, these descriptive differences warrant further study.

Findings emphasize the importance of culturally and demographically tailored interventions for pandemic-related mental health issues in Aruba. Future studies should aim for larger, more representative samples and include longitudinal follow-up to capture changes over time [10]. A further limitation is that the study employed a convenience sampling strategy, recruiting participants at health fairs. As such, the sample may not be fully representative of the broader Aruban population. Individuals attending health fairs may differ systematically from those who do not, for example in terms of health awareness, access to services, or socioeconomic background. This limitation reduces the generalizability of the findings and highlights

the need for future research using more representative sampling methods.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

## References

- [1] Wang, H., Paul, J., Ye, I., Blalock, J., Wiener, R.C., Ho, A.F., et al. (2022) Coronavirus Disease 2019 Pandemic Associated with Anxiety and Depression among Non-Hispanic Whites with Chronic Conditions in the Us. *Journal of Affective Disorders Reports*, **8**, Article ID: 100331. <https://doi.org/10.1016/j.jadr.2022.100331>
- [2] Passos, L., Prazeres, F., Teixeira, A. and Martins, C. (2020) Impact on Mental Health Due to COVID-19 Pandemic: Cross-Sectional Study in Portugal and Brazil. *International Journal of Environmental Research and Public Health*, **17**, Article 6794. <https://doi.org/10.3390/ijerph17186794>
- [3] Peterson, R.R. and DiPietro, R.B. (2021) Exploring the Impact of the COVID-19 Pandemic on the Perceptions and Sentiments of Tourism Employees: Evidence from a Small Island Tourism Economy in the Caribbean. *International Hospitality Review*, **35**, 156-170. <https://doi.org/10.1108/ihr-10-2020-0063>
- [4] Duwel, V., de Kort, J.M.L., Jacobs, S.S., Dennert, R.M. and Busari, J.O. (2022) Managing the Mental Health of Healthcare Professionals in Times of Crisis: The Aruban COVID-19 Experience. *Healthcare*, **10**, Article 1263. <https://doi.org/10.3390/healthcare10071263>
- [5] Maria, P., Jeung, L., Duits, A. and Busari, J. (2020) SARS-CoV-2 Outbreak on the Caribbean Islands of the Dutch Kingdom: A Unique Challenge. *Revista Panamericana de Salud Pública*, **44**, e91. <https://doi.org/10.26633/rpsp.2020.91>
- [6] Currie, G., Gulati, K., Sohal, A., Spyridonidis, D. and Busari, J.O. (2021) Distributing Systems Level Leadership to Address the COVID-19 Pandemic. *BMJ Leader*, **6**, 39-44. <https://doi.org/10.1136/leader-2020-000280>
- [7] Johnson, S.U., Ulvenes, P.G., Øktedalen, T. and Hoffart, A. (2019) Psychometric Properties of the General Anxiety Disorder 7-Item (GAD-7) Scale in a Heterogeneous Psychiatric Sample. *Frontiers in Psychology*, **10**, Article 1713. <https://doi.org/10.3389/fpsyg.2019.01713>
- [8] Borrescio-Higa, F. and Valenzuela, P. (2021) Gender Inequality and Mental Health during the COVID-19 Pandemic. *International Journal of Public Health*, **66**, Article ID: 1604220. <https://doi.org/10.3389/ijph.2021.1604220>
- [9] Toussaint, A., Hüsing, P., Gumz, A., Wingenfeld, K., Härter, M., Schramm, E., et al. (2020) Sensitivity to Change and Minimal Clinically Important Difference of the 7-Item Generalized Anxiety Disorder Questionnaire (GAD-7). *Journal of Affective Disorders*, **265**, 395-401. <https://doi.org/10.1016/j.jad.2020.01.032>
- [10] AJMC Staff (2020) A Timeline of COVID-19 Developments in 2020. <https://www.ajmc.com/view/a-timeline-of-covid19-developments-in-2020>

## Supplementary Tables

**Table S1.** Ethnicity differences in composite mental health score (PHQ-9 + GAD-7).

Ethnicity	n	Mean (SD)
Aruban	30	8.73 (8.81)
Hispanic/Latin American	25	3.00 (4.24)
Caucasian/Dutch	20	9.36 (9.01)
Other	8	15.13 (15.37)

**Table S2.** Age group differences on Q2 (“It makes me uncomfortable to think about COVID-19”).

Age group	n	Mean (SD)	Median
18 - 39	39	2.38 (0.67)	2.0
40 - 59	14	2.14 (0.53)	2.0
≥60	3	1.00 (0.00)	1.0

**Table S3.** Sexual orientation differences on Q5, Q6, and MH5.

	n	Mean (SD)
Heterosexual	60	
Same-sex attracted	10	4.84 ± 5.51
Sexually attracted to both male and female	8	9.20 ± 6.76
Other	5	4.37 ± 5.29
Heterosexual	60	6.17 ± 3.49