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Effect of COVID-19 infection on female sexual function

A prospective controlled study

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Abstract

This prospective controlled study investigates the effects of coronavirus disease 2019 (COVID-19) on female sexual function, comparing recovered COVID-19-positive women with those uninfected by the virus. It aims to elucidate the broader impacts on sexual health and psychological well-being. This prospective controlled study included nonpregnant women of reproductive age and their partners, divided into COVID-19- positive (recovered) and negative groups. Data collection took place on average 6 months after COVID-19 recovery. Information was collected on the number of people exposed to COVID-19 and the severity of infection (mild, moderate or severe). Participants completed validated questionnaires assessing sexual function (female sexual function index [FSFI]), anxiety (state-trait anxiety inventory [STAI]) and depressive symptoms (Beck Depression Inventory). We compared sexual function, psychological well-being and demographic characteristics between the groups using statistical analyses to identify significant differences. The study reveals significant resilience in sexual function, psychological well-being, and demographic characteristics among the participants, regardless of COVID-19 status. No marked differences were found in sexual desire, arousal, lubrication, orgasm, satisfaction, or pain during sexual activity between the groups. Psychological assessments indicated uniform anxiety levels across both cohorts, underscoring a theme of psychological resilience. The analysis of partners' sexual function highlighted minimal indirect impacts of the pandemic on intimate relationships. Despite the extensive global health implications, this study demonstrates resilience in female sexual function and psychological health among those affected by the virus. These findings emphasize the need for ongoing research and targeted interventions to support individuals navigate the pandemic-evolving challenges, highlighting resilience and adaptability as key factors in maintaining well-being.

Abbreviations: BMI = body mass index, COVID-19 = coronavirus disease 2019, FSFI = female sexual function index, SARS-CoV-2 = coronavirus 2 from severe acute respiratory syndrome, STAI = state-trait anxiety inventory, WHO = World Health Organization.

Keywords: COVID-19, female sexual function, psychological well-being, resilience, sexual health

1. Introduction

The outbreak of the coronavirus disease 2019 (COVID-19) pandemic, instigated by the new coronavirus 2 of severe acute respiratory syndrome (SARS-CoV-2), has dramatically reshaped the landscape of global public health, catalyzing a multifaceted crisis that extends far beyond the immediate physical ailments associated with virüs.[1] This unprecedented health emergency has not only burdened healthcare systems around the world but has also significantly impacted various dimensions of human life, including mental health, social interactions, and notably, aspects of sexual health and function.[2] Among the burgeoning body of research investigating the myriad effects, a critical area that deserves to be delved into thoroughly is the specific impact of COVID-19 on female sexual function, an essential aspect of overall well-being that is intricately linked to both physical and psychological health.[3]

Sexual health, as an integral component of general health, plays a crucial role in individual well-being, with disturbances in sexual function closely associated with a spectrum of negative outcomes, including diminished life satisfaction, elevated levels of psychological distress, and potential disruptions in intimate partnerships.[4] The complex challenges introduced by the COVID-19 pandemic, such as increased stress due to health-related anxieties, financial uncertainties, and the profound sense of isolation resulting from prolonged lockdowns and social distancing measures, have the potential to significantly influence sexual health. Initial observations and reports have indicated the pandemic capacity to exacerbate existing sexual health problems or incite new concerns within this domain, thereby

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underscoring the urgency of dedicated empirical investigations into its effects on sexual well-being.[5]

Despite the acknowledged importance of sexual health for overall quality of life and the suggestive evidence that points to the pandemic potential impacts of the pandemic in this area, there is a conspicuous scarcity of rigorous and empirical research dedicated to understanding how recovery from COVID-19 influences female sexual function.[6] This notable gap in the literature is particularly concerning given the widespread prevalence of the virus and its enduring presence on a global scale. The need for comprehensive research is evident that specifically targets the repercussions of COVID-19 infection and recovery in aspects such as sexual desire, arousal, orgasmic function, satisfaction, and pain during sexual activity. Such an inquiry is vital to elucidate the broader implications of the pandemic on women sexual health and to inform targeted interventions aimed at addressing these challenges.[7]

Anxiety, depression, and sexual function may be affected by different factors such as time of infection, severity of the disease, number of infections, etc. Consequently, this study aims to bridge this gap by conducting a detailed examination of the effects of previous COVID-19 infection on female sexual function. By comparing a cohort of reproductive-aged women who have recovered from the virus with a control group of women unaffected by COVID-19, the research aims to shed light on the nuanced ways in which the pandemic influences sexual health outcomes.[8] Furthermore, recognizing the intricate link between psychological well-being and sexual health, this study also seeks to investigate the interrelations between COVID-19 recovery and various dimensions of mental health, thus contributing to a more holistic understanding of the multifaceted impacts. Through this comprehensive approach, research aspires to provide valuable information that could significantly improve clinical practices and health interventions, ultimately helping mitigate the adverse effects of the pandemic on female sexual function and overall health.[9]

In doing so, this study not only addresses an important research gap, but also contributes to the broader discourse on the long-term consequences of the COVID-19 pandemic, offering essential knowledge that is crucial to supporting women health and well-being in these challenging times.

2. Methods

Our research began with a prospective controlled study aimed at unraveling the effects of past COVID-19 infection on female sexual function, particularly among those who have recovered from the disease. The study meticulously compiled demographic data, psychological assessments, and sexual function evaluations from a cohort of reproductive-aged, nonpregnant women aged between 18 and 55 years, and their partners. This cohort was divided into 2 groups: the study group, consisting of women who had tested positive for COVID-19 and had since recovered, and the control group, consisting of women who had not contracted the virus.

The selection of participants was based on specific inclusion criteria: being within the reproductive age range (18–55 years), willing to participate in the study, and absence of pregnancy. Exclusion criteria were identified as the presence of any systemic or psychiatric illness that could influence sexual function or psychological well-being, as well as the current use of medications that could affect sexual function. This rigorous selection process ensured the homogeneity of the study sample and the reliability of the findings.

To capture the comprehensive scope of our investigation, participants were informed verbally about the study aims and procedures, followed by obtaining their written consent. This process adhered strictly to the ethical standards outlined in the Declaration of Helsinki, with the study receiving approval from the local institutional review board. The ethical commitment of the study was further underscored by obtaining an ethics committee registration number, ensuring that all participants were fully aware of their participation and consented to participate in the study.

The methodological framework of the study was designed to provide a holistic view of the impact of COVID-19 on female sexual health. Participants who had recovered from COVID-19 infection were included if they had tested positive at least 6 months prior to data collection. Information on the number of exposures to COVID-19 and the severity of the infection (mild, moderate, or severe) was gathered. Participants completed validated questionnaires evaluating sexual function (female sexual function index [FSFI]), anxiety (state-trait anxiety inventory [STAI]), and depressive symptoms (Beck Depression Inventory). We compared sexual function, psychological well-being, and demographic characteristics between the groups using statistical analyses to identify any significant differences. Follow-up for participants involved periodic check-ins every 3 months post-recovery to assess any long-term impacts. Participants were also asked to complete questionnaires based on their past experiences of sexual function before the pandemic for comparison.

Although we acknowledge the relative smallness of our sample size and its possible generalizability constraints and impact on statistical power, given our stringent methodology, we argue that creativity may be suppressed in other sentences because they are not necessary. However, these findings should be confirmed by larger-scale future research.

Our approach to data collection involved reaching out to potential study participants through hospital databases and surrounding primary care databases, identifying those who met the study criteria. Suitable candidates were contacted by telephone, provided with detailed information about the study, and invited to the hospital to complete the survey forms. This method ensured a thorough and ethical recruitment process, facilitating a comprehensive dataset for analysis.

Statistical analysis was designed to identify any significant differences in sexual function, psychological well-being, and demographic characteristics between the 2 groups. Statistical methods were carefully chosen to ensure the robustness of the analysis and the reproducibility of the results. Through this detailed methodology, our study aimed to provide insightful findings on the nuanced impacts of COVID-19 on female sexual function and psychological health, contributing valuable knowledge to the existing body of research on the long-term effects.

3. Results

In our comprehensive investigation into the impacts of COVID-19, we meticulously analyzed a spectrum of human health and behavior aspects, discerning the pandemic effects of the pandemic on demographic characteristics, reproductive health, psychological well-being, and sexual function. The findings, distributed in several detailed tables, offer a nuanced understanding of how people who are positive for COVID-19 compare to those testing negative.

The study begins by examining the demographic and lifestyle characteristics of the participants, revealing that the age distributions for the individuals and their partners are comparable in the negative and positive groups. This initial finding suggests that the virus indiscriminately affects people in a wide age range, emphasizing the pandemic extensive demographic reach. Further analysis delves into education and occupation, where the data show a diverse range of educational backgrounds and occupational statuses among participants, highlighting the virus widespread impact beyond specific demographic confines. Lifestyle factors such as smoking, alcohol consumption, and body mass index (BMI) are also examined, with results indicating no significant lifestyle differences between the 2 groups. This

segment of the research suggests that the impact transcends typical lifestyle boundaries, affecting individuals with varied habits and health practices uniformly (Table 1).

Turning attention to reproductive health, the study meticulously investigates gravidity, parity, abortion rates, and the prevalence of different modes of delivery among participants. It also assesses the regularity of menstrual cycles, contraception methods, medication use, and existing illnesses, alongside gynecological complaints. The analysis extends to evaluate the impact of the COVID-19 status on these reproductive health metrics. In all of these measures, the findings consistently indicate minimal differences between COVID-19-positive and negative individuals, suggesting that the virus has a negligible impact on the reproductive health aspects explored in this investigation (Table 2).

In assessing psychological well-being and sexual function, the study uses several respected assessment tools, including the Beck Depression Inventory for depressive symptoms, the FSFI for sexual function, and the state-trait anxiety inventory (STAI) for anxiety levels. Interestingly, the results demonstrate that the scores on these psychological and sexual health measures are similar between the groups. This parity suggests that, despite the widespread impact, individuals' psychological well-being and sexual function of individuals exhibit a remarkable degree of resilience, with no significant differences observed between those who have and those who have not contracted the virus (Table 3).

Our exploration into the realm of sexual health through the FSFI provided a detailed perspective on how COVID-19 affects sexual function in various domains. This comprehensive analysis covered key areas such as sexual desire, arousal, lubrication, orgasm, satisfaction, and pain experienced during sexual activity. The FSFI scores, as detailed in Table 4, offer critical insights into the nuanced aspects of sexual health, with the findings indicating that there are no statistically significant differences in sexual function between individuals who tested positive for COVID-19 and those who did not. This consistency in all domains of sexual function underscores a remarkable resilience in sexual health, suggesting that the psychological and physiological stresses associated with the pandemic do not adversely affect sexual well-being. This revelation is particularly noteworthy, highlighting an area of human health that remains steadfast in the face of the global crisis brought about by the pandemic (Fig. 1).

When examining the intersection of psychological health and sexual function, we juxtaposed the Beck Depression Inventory scores against the Arizona sexual experience scale scores for both genders, as presented in Table 3. This comparative analysis sought to uncover any potential correlations between depressive symptoms and sexual dysfunction among study participants. Interestingly, the investigation did not reveal significant disparities in depression scores or rates of sexual dysfunction between the negative and positive groups. This finding is instrumental in illustrating the minimal impact of COVID-19 on both the psychological and sexual health dimensions. It suggests that despite the widespread emotional and societal disruptions caused by the pandemic, individuals' sexual health and psychological well-being, particularly in the context of depression and sexual dysfunction, exhibit a notable degree of resilience (Fig. 2).

Our study further delved into the psychological impact of the pandemic by assessing anxiety levels using the STAI, with the results detailed in Table 3. This assessment provided a dual perspective on anxiety, evaluating both the current state anxiety (how individuals feel at the moment) and trait anxiety (general levels of anxiety as a personal characteristic). The findings of this analysis revealed uniform anxiety levels among participants, regardless of their COVID-19 status. This uniformity in anxiety levels is significant, emphasizing that the pandemic does not disproportionately affect individuals' anxiety levels. This aspect of the study underscores a broader theme of psychological resilience, highlighting that individuals maintain psychological equilibrium despite the uncertainties and stresses induced by the pandemic (Fig. 3).

The study concluded with an analysis of sexual function among COVID-19 positive and negative subject partners, as depicted in Table 4. This comparative analysis aimed to discern whether the impact extends to the sexual health of partners of those affected by COVID-19. Interestingly, the results show that there is no significant difference in sexual dysfunction between partners of COVID-19-positive and negative individuals. This finding is particularly revealing, suggesting that the ripple effects of the pandemic on sexual health do not extend significantly to partners, further strengthening the narrative of resilience and minimal impact. This aspect of the research not only sheds light on the direct effects of COVID-19 on individuals but also explores the indirect impact on their intimate relationships, concluding that sexual health among partners remains robust in the face of the challenges of the pandemic.

Through these detailed analyses, our study paints a comprehensive picture of resilience in the face of COVID-19, showing that despite the varied challenges posed by the pandemic, key aspects of human health and behavior, including sexual function, psychological health, and intimate relationships, remain largely unaffected. This resilience, observed in multiple dimensions of health and well-being, underscores the ability of individuals to withstand and adapt to the profound changes and stresses caused by the global health crisis.

Table 1

Demographic and lifestyle characteristics of COVID-19 positive vs negative individuals.

Variable	COVID (–) n:43	COVID (+) n:27	*P* value
Age	34.19 ± 6.83	35.26 ± 5.84	.502*
Partner age	36.88 ± 7.8	38.07 ± 7.04	.521*
Education level			
Primary school	4 (9.30%)	1 (3.70%)	.689+
High school	11 (25.58%)	8 (29.63%)	
Bachelor degree	23 (53.49%)	13 (48.15%)	
Master/PhD	5 (11.63%)	5 (18.52%)	
Occupation			
Housewife	6 (13.95%)	4 (14.81%)	.542+
Civil servant	11 (25.58%)	4 (14.81%)	
Worker	3 (6.98%)	1 (3.70%)	
Doctor	9 (20.93%)	10 (37.04%)	
Nurse	8 (18.60%)	5 (18.52%)	
Freelancer	5 (11.63%)	1 (3.70%)	
Dentist	1 (2.33%)	2 (7.41%)	
Income level			
Low	2 (4.65%)	1 (3.70%)	.335+
Medium	38 (88.37%)	21 (77.78%)	
High	3 (6.98%)	5 (18.52%)	
Smoking			
No	26 (60.47%)	20 (74.07%)	.243+
Yes	17 (39.53%)	7 (25.93%)	
Alcohol			
No	36 (83.72%)	22 (81.48%)	.809+
Yes	7 (16.28%)	5 (18.52%)	
BMI	25.38 ± 5.33	25.91 ± 5.21	.688*

BMI = body mass index.
*Independent t-test.
+Chi-Square test.

4. Discussion

Given the extensive and meticulous investigation of the multifaceted impacts of COVID-19, particularly focusing on female sexual function, psychological well-being, and broader health behaviors, our study provides a nuanced and comprehensive understanding of the effects.[10] In-depth analysis, supported by

Table 2

Reproductive health in COVID-19 positive vs negative individuals.

Variable	COVID (–) n:43	COVID (+) n:27	*P* value
Gravida	1.21 ± 1.04	1.33 ± 0.68	.583†
Parity	1.02 ± 0.89	1.19 ± 0.74	.431†
Abortions	0.23 ± 0.75	0.11 ± 0.32	.430†
Mode of delivery			
None	16 (37.21%)	5 (18.52%)	.376+
Normal	12 (27.91%)	8 (29.63%)	
C/S (Cesarean Section)	14 (32.56%)	13 (48.15%)	
Both	1 (2.33%)	1 (3.70%)	
Are menstrual periods regular?			
No	4 (9.76%)	3 (12.00%)	.774+
Yes	37 (90.24%)	22 (88.00%)	
Method of contraception			
None	12 (27.91%)	7 (25.93%)	.397+
Withdrawal	10 (23.26%)	6 (22.22%)	
Calendar method	4 (9.30%)	0 (0.00%)	
IUD (intrauterine device)	4 (9.30%)	5 (18.52%)	
Oral contraceptive pills (OCPs)	3 (6.98%)	1 (3.70%)	
Tubal ligation (BTL)	1 (2.33%)	3 (11.11%)	
Condom	9 (20.93%)	5 (18.52%)	
Medication used			
None	33 (76.74%)	21 (77.78%)	.920+
Yes	10 (23.26%)	6 (22.22%)	
Known illness			
None	35 (81.40%)	21 (77.78%)	.713+
Yes	8 (18.60%)	6 (22.22%)	
Gynecological complaints			
None	36 (83.72%)	24 (88.89%)	.548+
Yes	7 (16.28%)	3 (11.11%)	
Spouse had COVID?			
COVID (–)	37 (86.05%)	13 (48.15%)	.0001+
COVID (+)	6 (13.95%)	14 (51.85%)	

BTL = Bilateral tubal ligation.
†Mann–Whitney U test.
+Ki square test.

a series of detailed tables and figures, contrasts the experiences of people who have tested positive for COVID-19 with those who have not, revealing intriguing findings that contribute significantly to the existing body of literature.

We had similar results to Aolymat et al, who evaluated how COVID-19 affected female sexual function in Jordan. In this cross-sectional investigation, we observed that there was an increase in the frequency of sexual intercourse during the pandemic; however, sexual satisfaction also decreased, with no significant differences observed in such important components of sex as desire, arousal, orgasm, lubrication and pain. Additionally, our inquiry did not show substantial changes in terms of sexual desire, arousal, lubrification, orgasm, or pain during sex between the COVID-19-positive and negative groups. Both studies highlight that despite the challenges of the pandemic on aspects of sexual functioning, such as desire, satisfaction may be impacted more by stressors than other aspects.[3]

In contrast, the study by Ak et al study explored biological-organic mechanisms involved in SARS-CoV-2 infection and its influence on women sexuality. The authors measured oxytocin and prolactin levels along with sexual function in women affected by SARS-CoV-2. They found that hormonal changes might serve as intermediaries for any sex modification in sex due to the severity of COVID-19. Nevertheless, our investigation showed no differences in terms of sexuality between infected and noninfected people, meaning this resilience might have been brought about by nonbiological factors as opposed to direct effects caused by the virus itself.[11]

Examination of demographic and lifestyle characteristics offers initial information on the pervasive reach of the COVID-19 pandemic, demonstrating that the virus does not discriminate based on age or lifestyle factors such as smoking, alcohol consumption, and BMI.[12] The observation that COVID-19 has universal impact, affecting people of various backgrounds without discrimination, underscores the need for public health strategies and interventions to be broadly targeted. This approach is essential to address the wide-reaching effects of the pandemic effectively. The World Health Organization (WHO) has highlighted the pandemic extensive impact of the pandemic on global health, including the disruption of essential health services in 90% of countries, indicating the profound challenges healthcare systems worldwide have faced during this crisis.[13] Furthermore, despite the challenges posed by COVID-19, WHO efforts in leading the global response, including the largest vaccination drive in history, demonstrate significant achievements in global health amidst pandemic.[14] These insights from WHO reports emphasize the critical need for comprehensive public health measures to combat the ongoing effects of the pandemic.

The meticulous investigation of reproductive health, detailed in Table 2, underscores the minimal differences observed between COVID-19-positive and negative individuals in various reproductive health measures. This aspect of the study challenges initial concerns about the potential adverse effects of COVID-19 on reproductive health, offering reassurance that the virus impact in this domain may be less severe than anticipated. However, it is crucial to interpret these findings within the broader context of reproductive health research, which has shown that stressors, in general, can affect reproductive health outcomes.[15] The findings suggest that the resilience observed may be specific to the populations studied or indicative of the complex interaction between biological and psychosocial factors that influence reproductive health during the pandemic.

Investigation into psychological well-being and sexual function, using established assessment tools such as the Beck Depression Inventory, the FSFI, and the STAI, unveils notable resilience among participants.[16] Despite the broad and significant impacts of the pandemic, the psychological health and sexual function of people have largely remained stable. This finding contrasts with other research documenting significant psychological distress and changes in sexual health during the pandemic.[17] Our results add to the debate on the diverse impacts of COVID-19, suggesting that social support, individual coping mechanisms, and access to healthcare can significantly influence these outcomes.

Our detailed analysis of sexual health during the COVID-19 pandemic, using the FSFI, indicates stability in sexual function in several domains, including desire, arousal, lubrication, orgasm, satisfaction, and pain. This consistency suggests a significant resilience among individuals, contrary to the expected decline in sexual well-being due to the psychosocial and physiological stresses of the pandemic.[18,19] These findings contribute to the discussion on sexual health in these unique times, challenging the narrative of a universal decrease in sexual health and calling for a nuanced understanding of individual and contextual factors influencing sexual well-being. This perspective is crucial as it emphasizes the need for personalized approaches to comprehend and addressing the pandemic effects of the pandemic on sexual health, highlighting the diverse impacts across different populations.[20,21]

Our investigation into the intricate dynamics between psychological well-being and sexual function, using the Beck Depression Inventory and the Arizona sexual experience scale, unveils the complex interplay between mental health and sexual well-being. The lack of significant differences in depression scores and sexual dysfunction rates between COVID-19 negative and positive individuals sheds light on the multifaceted relationship between psychological health and sexual function.[22,23] This insight is vital for clinical practice, underscoring the need for comprehensive care strategies that address both psychological and sexual health concerns. Our results advocate for a holistic

Table 3

Comparison of psychological well-being and sexual function in COVID-19 positive and negative individuals.

Metric	COVID (–) n:43	COVID (+) n:27	*P* value
Beck score	12.09 ± 8.49	12.48 ± 9.28	.858*
Minimal	21 (48.84%)	11 (40.74%)	.841+
Mild	12 (27.91%)	10 (37.04%)	
Moderate	9 (20.93%)	5 (18.52%)	
Severe	1 (2.33%)	1 (3.70%)	
FSFI desire	3.56 ± 0.87	3.62 ± 1.18	.795*
FSFI arousal	2.82 ± 1.29	2.99 ± 1.44	.609*
FSFI lubrication	3.20 ± 1.13	3.27 ± 1.35	.830*
FSFI orgasm	3.21 ± 1.10	2.96 ± 1.21	.382*
FSFI satisfaction	2.18 ± 1.26	2.20 ± 1.15	.938*
FSFI pain	4.39 ± 1.74	4.60 ± 2.04	.641*
FSFI total	19.35 ± 4.82	19.64 ± 5.84	.822*
No sexual desire	41 (95.35%)	24 (88.89%)	.307+
Sexual desire present	2 (4.65%)	3 (11.11%)	
STAI I state anxiety	37.81 ± 10.73	39.56 ± 13.06	.546*
No anxiety	27 (62.79%)	13 (48.15%)	.228+
Anxiety present	16 (37.21%)	14 (51.85%)	
STAI II trait anxiety	44.33 ± 10.07	43.89 ± 12.02	.870*
No anxiety	16 (37.21%)	14 (51.85%)	.228+
Anxiety present	27 (62.79%)	13 (48.15%)	
Arizona score women	13.12 ± 4.6	15.85 ± 5.12	.024*
No sexual dysfunction	40 (93.02%)	19 (70.37%)	.011+
Sexual dysfunction present	3 (6.98%)	8 (29.63%)	
Arizona score men	9.76 ± 3.22	10.19 ± 3.7	.617*
No sexual dysfunction	42 (100%)	27 (100%)	-

*Independent t-test.
+Chi-Square test.

Table 4

Comparison of sexual function scores among partners of COVID-19 positive and negative subjects.

Variable	Spouse COVID (–) n:50	Spouse COVID (+) n:20	*P* value
Arizona women total score	14.06 ± 4.65	14.45 ± 5.78	.769*
Sexual dysfunction (–)	44 (88.00%)	15 (75.00%)	.177+
Sexual dysfunction (+)	6 (12.00%)	5 (25.00%)	
Arizona men total score	9.52 ± 3.25	11.00 ± 3.62	.106*
Sexual dysfunction (–)	50 (100.00%)	19 (100.00%)	-

*Independent t-test.
+Chi-Square test.

approach to care, extending beyond symptom management to consider the broader psychosocial influences on individual sexual and psychological well-being. This perspective is crucial to improving therapeutic outcomes, especially in the context of the COVID-19 pandemic, which has profoundly transformed the social and emotional landscape.[24]

These insights collectively signal a critical juncture in the discourse on sexual and psychological health amidst COVID-19, advocating for a multidimensional perspective that appreciates the complex interplay of factors at play. They call for a departure from generic narratives, urging healthcare providers, researchers, and policymakers to adopt more nuanced, individualized, and context-aware frameworks to address the challenges posed by the pandemic. This shift toward a more integrative perspective on health could pave the way for more effective interventions, ultimately improving the quality of life and well-being of people navigating the multifarious impacts of COVID-19.[16,25]

Our research on anxiety levels within the study population reveals a uniform pattern, diverging from expectations of increased anxiety due to the global impact of the pandemic. This uniformity in anxiety levels, regardless of the COVID-19 status, suggests a narrative of psychological resilience across the demographic data in our study.[26] It indicates that anxiety levels may not be a direct result of pandemic-related stressors, but reflect individual resilience and coping strategies. This aligns with research suggesting that psychological resilience can significantly mitigate mental health challenges in crisis situations. Our findings contribute to the debate by emphasizing that maintaining psychological balance during the pandemic can depend more on inherent resilience and adaptability than on direct exposure to the virus.[27]

In our exploration of sexual health dynamics within intimate relationships during the pandemic, we uncover nuanced insights into the indirect effects of COVID-19 on sexual well-being. The absence of significant differences in sexual function between partners, regardless of their COVID-19 status, highlights resilience that transcends individual experiences to encompass the realm of intimate relationships.[28] This resilience underscores the crucial role of relationship quality and strength in mitigating the potential adverse impacts on sexual health due to stress related to pandemics. The protective role of intimate relationships, as suggested by existing literature, illuminates the importance of the relational context in assessing the impacts of the pandemic on sexual health. It suggests that intimate bonds can serve as a critical support system, alleviating stressors induced by the pandemic and preserving sexual function between partners. These findings contribute to a deeper understanding of the complex impacts of COVID-19 on sexual health and highlight the potential of leveraging strong intimate connections to navigate global health crisis challenges.[29]

5. Limitations

Our study on the impact on health has limitations. Reliance on self-reported data introduces potential bias, especially in sensitive areas such as sexual and psychological health. The cross-sectional design limits our ability to establish causality between COVID-19 and observed health outcomes, indicating a need for longitudinal research for deeper insights.

The specificity of our sample geography and demographics may also restrict the generalizability of our findings to broader populations. Additionally, not accounting for confounding factors such as preexisting health conditions could affect the accuracy of our results.

The use of validated instruments, while beneficial, has its own set of limitations related to their sensitivity and specificity. Despite these challenges, our research offers important insight into the pandemic effects, suggesting directions for future studies to build upon our findings with more comprehensive methodologies.

6. Conclusion

The comprehensive examination of the impacts of COVID-19 from our study reveals a broad spectrum of resilience in demographic characteristics, reproductive health, psychological well-being, and sexual function. Despite the unprecedented challenges posed by the pandemic, our findings indicate that individuals, regardless of their COVID-19 infection status, have maintained their health and well-being in these critical areas. The absence of significant differences between those who have contracted the virus and those who have not suggests that the direct impacts of COVID-19 may be less severe on these aspects of human health than initially feared. This resilience, observed in various health domains, underscores the human capacity to adapt to and cope with the stresses induced by the pandemic.

In conclusion, while COVID-19 has undeniably affected global health and well-being, the ability of people to sustain key aspects of their health amidst the pandemic highlights the importance of resilience and adaptability. Our findings contribute to

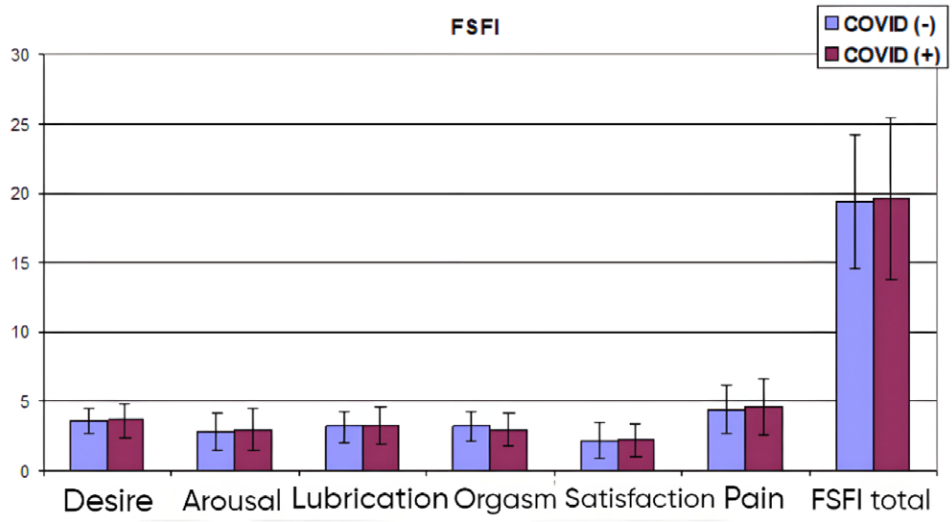

Figure 1. Comparison of state-trait anxiety inventory (STAI) scores between COVID-19 negative and positive participants.

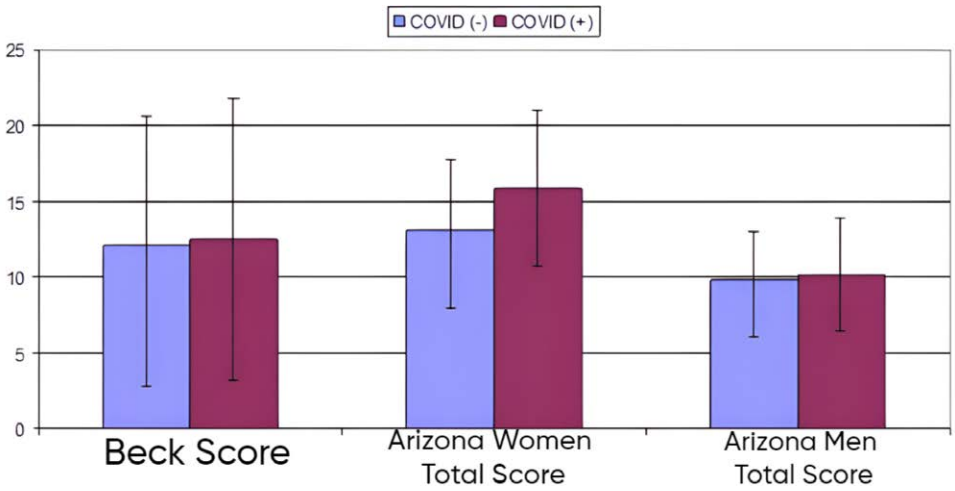

Figure 2. Beck depression inventory and Arizona sexual experience scale scores.

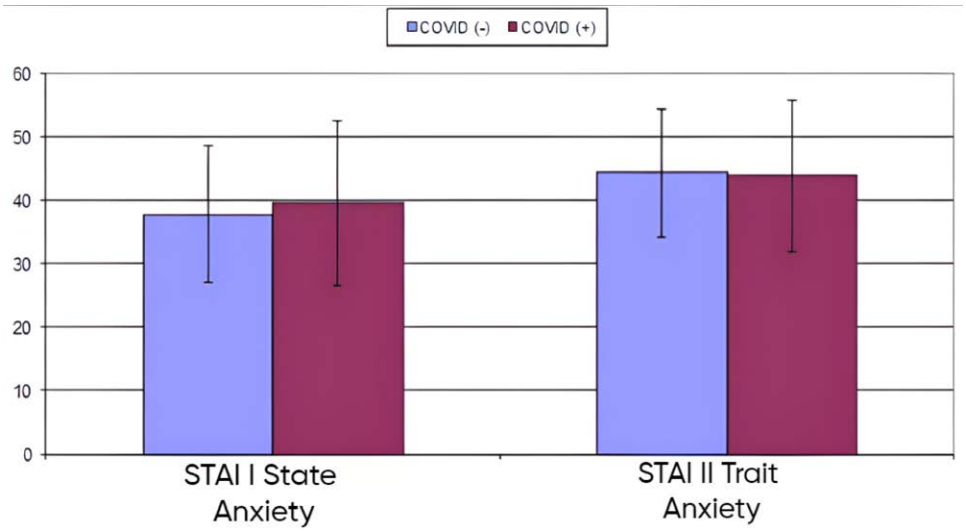

Figure 3. Female sexual function index (FSFI) scores.

a deeper understanding of the multifaceted impacts and emphasize the need for continued research and targeted interventions to support individuals as the pandemic evolves. Future studies should aim to build on these insights, exploring the long-term effects of COVID-19 and identifying strategies to improve resilience and well-being in the face of ongoing and future global health crises.

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