

Research Article

**IMPACT OF SOCIO-ECONOMIC FACTORS ON MENTAL
HEALTH AND FAMILY LIFE OF WORKING WOMEN
DURING COVID-19 PANDEMIC**

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Abstract

This study examined the link between mental health and family life of working women during the Covid-19 restrictions using primary data collected from 250 working women serving in private and public sector organizations. through a questionnaire survey during May-June, 2023. The standardized tools of Depression, Anxiety, Stress Scale (DASS-21), and Beach Centre Family Quality of Life Scale (FQOL Scale) were used to assess mental health and quality of women's family life. SPSS software was used for statistical analysis. According to findings, majority of working women experienced depression and anxiety during Covid-19 pandemic, whereas working mothers were specifically affected because they had to balance childcare, household tasks, and financial obligations simultaneously. The findings further revealed that the working women having family support reported better mental health and increased life satisfaction compared to those who had nuclear family, uncomfortable working condition, and low income were suffered poor mental health during COVID-19.

Key Words: Mental health; family life; Family support; working women; COVID- 19 Pandemic.

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1. Introduction

The fatal disease that directly affected human respiratory syndrome broke out all over the world, killing thousands of people, and send a wave of uncertainty and fear of death among young, old and children. This unknown disease was declared as SARS-COV-2 pandemic and it was originated from Wuhan City of China and spread in differently countries within no time. The World Health Organization (WHO) on December 31,2019 confirmed that the COVID-19 is a global health crisis and suggested various preventive measures including social isolation and complete lockdown to reduce its fatal effects. It was the first time in history that all countries restricted human social and new business models were developed to continue economic and educational activities. However, the fatal disease spread rapidly across the world and millions of people infected and hundreds of thousands of people including health professionals and paramedical staff became its victims (WEF, 2020). By June, 2020 almost every country in the world had confirmed the outburst of COVID-19 pandemic and, according to WHO, the disease infected around 76.77 million people and caused around 6.9 million deaths globally. The top ten hard-hit countries were the United States, India, Germany, France, Italy, UK, Russia, Spain, Iran and Brazil (WHO, 2023). As of May 23, the US reported over 103 million confirmed cases of infection cases, causing more than 1 million deaths According to IMF data, the US alone suffered financial loss of \$16 trillion, extinguishing 20 million jobs. (Bouteska et al., 2023).

From April 1,2020 to December ,2021 Pakistan faced five waves of COVID-19 pandemic. The first wave started in April, 2020 and ended in August ,2020 and its peak was in June 2020. The second wave was started in December 2020 and ended in March 2021 and its peak month was December

2020 and January 2021. The peak months of wave third and wave fourth were June 2021 and August 2021 and the last wave was brief and ended in February 2022. The employment of active workers was decreased approximately from 55.74 million to 35,04 million, a decline of 22 =% in employment, raising unemployment level to more than 9%. According to World Bank report, (2024), progress with poverty reduction has recently slowed amid due to difference factors including the COVID-19 pandemic, and the estimated lower-middle income poverty rate was 40.1 percent (US\$3.65/day 2017 PPP) for the year 2023-24, virtually the same as the poverty rate in 2018, but falling 7 million more Pakistanis below the poverty line. According to the estimate of the Ministry of Finance, total job loss was around 3 million, and poverty increased from 24.3% to 33.5%, exports fell to \$22 billion from \$25.5 billion, fiscal deficit increased from 7.5% to 9.4% of GDP. The reported cases and deaths were 470,294 and 8398, respectively, while total recovered cases were 356,542 as is shown in Figure 1 and Figure 2.

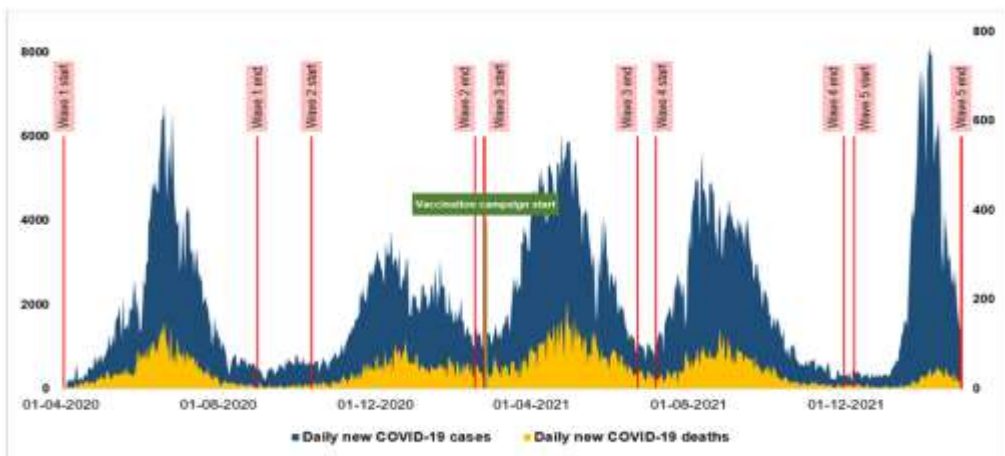


Fig 1: Daily new cases reporting and deaths during April, 2020 and Dec, 2021.

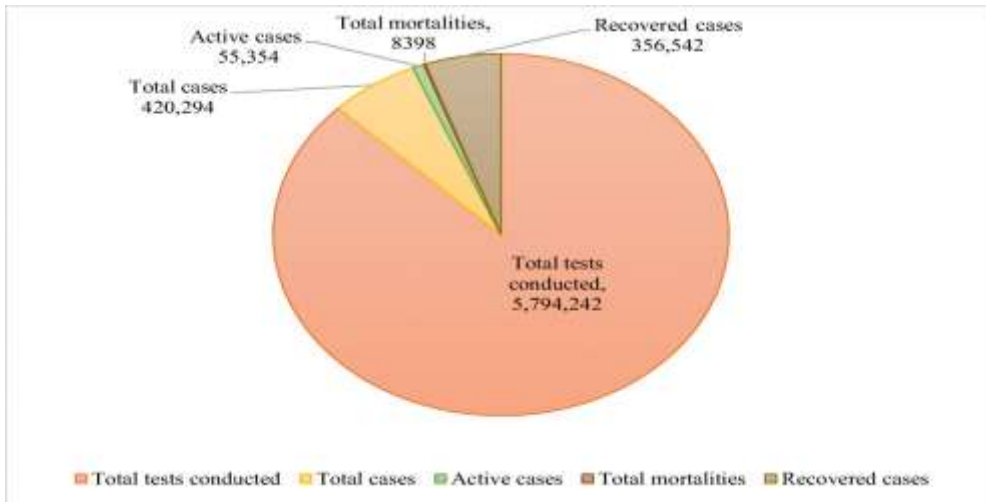


Fig 2. Total cases reported deaths, and recoveries.

Source: [Ahmad, et al., \(2023\)](#)

In Pakistan, final demand contracted by 19%, with total output losses amounting to approximately \$75.6 million. The primary sector experienced the most significant decline, shrinking by 31%, while the secondary and tertiary sectors contracted by 18% and 16.4%, respectively ([Syed, Nazir, Asmat Ullah, 2023](#)). COVID-19 had a profound effect on human lifestyles, as almost all economic activities came to a halt, and people were compelled to quarantine. This led to financial and mental stress, resulting in severe mental and physical health challenges. To curb the virus's spread, people were instructed to self-quarantine at home. Despite these efforts, the pandemic affected every aspect of society.

Lockdowns negatively impacted mental well-being, causing issues such as hopelessness, anxiety, and dissatisfaction. Women, in particular, were more affected by stress and anxiety than men during COVID-19 ([Maslakçı et al., 2024](#)). Research indicates that men exhibited more externalized issues, such

as substance abuse and antisocial behaviors, which disrupted those around them. In contrast, women were more prone to internalized conditions, such as depression and anxiety. Studies revealed that men had higher rates of external illnesses like high blood pressure, while women faced internal disorders like migraines and headaches.

Physical illness was a key factor affecting mental health, compounded by financial crises that caused widespread mental stress. Evidence suggests that economic downturns adversely impact various health indicators, including mortality and self-harm. Many European and Western economies suffered massive losses, with significant repercussions on daily life and mental health (Volkos et al., 2021). Financial crises increased psychological stress and led to higher utilization of counseling services. Heightened anxiety and depression often resulted in violence, suicide attempts, and premature deaths. Job-related challenges during the pandemic caused anxiety and despair among both men and women (Matsubayash et al., 2022). Fear of poverty and concerns about COVID-19 further amplified stress levels (Salameh et al., 2020).

Women experienced a disproportionately higher degree of stress, anxiety, and post-traumatic stress symptoms compared to men (Wang et al., 2020; Liu et al., 2020a). Pregnant women were particularly vulnerable due to their increased susceptibility to respiratory infections and elevated levels of anxiety and depression (Berthelot et al., 2020; Liu et al., 2020b). Prolonged lockdowns and social restrictions affected everyone, but their impact was more severe on women, especially working women. According to Flor et al. (2022), women lost their jobs at a higher rate (26%) compared to men (20.4%). By September 2021, women were more likely to sacrifice their careers to care for others, with

female students being 1.21 times more likely than males to drop out of school for reasons beyond institutional shutdowns.

Additionally, women were 1.23 times more vulnerable to stress, isolation, and anxiety, which exacerbated gender-based violence. Before the pandemic, women already shouldered the majority of unpaid caregiving responsibilities globally. Lockdowns intensified these duties, reducing paid work hours and increasing stress levels (Power, 2020). Women faced unique stressors, balancing financial responsibilities with household chores and childcare, tasks often deemed essential for women in Asian societies. Working women who lost their jobs or incurred business losses were particularly affected (Adams et al., 2020). The pandemic's dual impact on health and employment created significant challenges, further aggravated by school closures, lack of daycare facilities, and limited healthcare access. Various factors, including gender, marital status, education, social relationships, income, household size, and belief systems, were disrupted, further impacting the family lives and mental health of working women. This discussion highlights that the COVID-19 pandemic disproportionately affected women compared to men. Therefore, the objectives of this research are to:

- Investigate the specific mental health challenges, such as stress, anxiety, depression, and post-traumatic stress symptoms, faced by working women during the pandemic.
- Compare the mental health outcomes of working women to those of working men.
- Assess the impact of these challenges on working women's family responsibilities, including childcare, household chores, and unpaid caregiving duties.

- Explore socioeconomic factors, such as job loss, financial crises, and educational disruptions, that intensified the burden on working women.
- Examine the long-term implications of pandemic-induced changes in family life and gender roles on workplace and societal dynamics.

The primary research question of this study is: "How were the mental health and family lives of working women affected by the COVID-19 pandemic, and what were the main causes of these effects?"

By addressing these objectives, this study aims to enhance our understanding of the long-term socioeconomic impact of COVID-19 on mental health, family dynamics, and work-life balance.

This study uniquely highlights the disproportionate impact of the pandemic on women compared to men. It integrates a literature review, data analysis, qualitative interviews with women from diverse socioeconomic backgrounds, and statistical analyses of selected variables. Covering the period from early 2020 through the later stages of the pandemic, the study examines the experiences of women across different countries and cultural contexts.

The comprehensive analysis provides valuable insights into gender-related and mental health issues, urging policymakers to take effective measures to improve mental health and work-family balance. The findings contribute to current knowledge by addressing the socioeconomic and health challenges faced by working women during the pandemic. Policymakers, employers, and mental health professionals can use these insights to design targeted interventions and support systems for working women during future crises. Moreover, the study emphasizes the need for equitable sharing of family

responsibilities, offering guidance on promoting gender equality in both workplaces and households during pandemic-like situations.

The paper is organized as follows: Section Two: Theoretical background and review of empirical studies. Section Three: Methodology, including variable selection, sampling methods, and analytical techniques. Section Four: Empirical results. Section Five: Discussion, theoretical contributions, limitations, and recommendations for future research.

2. Literature Review and Hypotheses development

The COVID-19 pandemic brought a dual global crisis, posing significant threats to public health and societal structures. Key economies such as China, the U.S., and the European Union, which are pivotal to global production and GDP, experienced profound disruptions. Economic analyses reveal that the global GDP in 2020 declined to \$85.97 trillion, marking a \$2 trillion reduction compared to 2019 (Aaron, 2023). The literature highlights the pandemic's impact on specific industries, with sectors like travel, hospitality, and retail suffering severe losses due to widespread lockdowns and social distancing measures. In contrast, industries such as technology and e-commerce thrived, driven by the increased reliance on online services and remote work. Areas of the socio-economic fabric, including poverty, women's welfare, employment, and global trade, were among the hardest hit (Wei et al., 2021). Women entrepreneurs, in particular, faced heightened economic challenges, as their businesses received comparatively less financial and legal support from governments and communities (Torres et al., 2021). Many women were compelled to leave their jobs to care for their children during school closures (Kotlar et al., 2021), making it difficult for them to re-enter the labor market after the pandemic (Alon et al., 2020). The pandemic also significantly disrupted social life. For instance, school closures affected the education of

nearly 1.5 billion children globally (Paul et al., 2020), while travel restrictions, particularly international travel bans, worsened challenges for working women (Erick, 2022). Social activities, such as religious gatherings (Danijel et al., 2020) and visits to fitness centers (Mutz et al., 2021), were also curtailed, diminishing opportunities for interpersonal interactions.

During lockdowns, individuals were compelled to maintain physical distance to prevent virus transmission, severely impacting social connections, even within families. The COVID-19 pandemic had a devastating effect on mental health globally, with many individuals experiencing stress, anxiety, despair, and other psychological disorders. Those who lost loved ones, jobs, or faced difficulties adjusting to new socio-economic realities were particularly vulnerable. Prolonged isolation heightened feelings of loneliness, further exacerbating stress and anxiety (WHO, 2020). Women were disproportionately affected, as they often faced greater challenges in balancing work and family responsibilities, making them more prone to mental health issues such as depression and stress (Jacques et al., 2020).

In summary, the reviewed academic literature categorizes the pandemic's impact into four major areas: global economies, industries, social activities, and individual health, employment, and psychological well-being. For instance, Aaron (2023) analyzed the pandemic's effects on global GDP, including key economies such as the U.S., European Union, China, and Japan. Wei et al. (2021) examined specific industries, concluding that while travel, hospitality, and retail suffered significant losses, technology and e-commerce thrived during lockdowns. Torres et al. (2021) identified the financial crises faced by women entrepreneurs, and Kotlar et al. (2021) and Alon et al. (2020)

explored the challenges working mothers encountered, including school closures and difficulties re-entering the workforce. [Paul et al. \(2020\)](#) discussed the educational disruption caused by school closures, while [Erick \(2022\)](#) examined travel restrictions and their effects on working women. [Danijel et al. \(2020\)](#) and [Mutz et al. \(2021\)](#) analyzed the limitations on social gatherings and their broader implications. [WHO \(2020\)](#) and [Jacques et al. \(2020\)](#) highlighted the psychological toll of the pandemic, particularly on women, who faced compounded challenges balancing work and family obligations.

Notably, no study has explicitly examined the relationship between mental health and family life among working women in Pakistan during the COVID-19 pandemic. This study addresses this gap by focusing on the interplay between economic strain, mental health issues, and intensified family responsibilities. It provides a comprehensive analysis of how the pandemic deepened existing gender inequalities in both workplaces and households.

Hypotheses development

Based on the reviewed literature and study objectives, the following hypotheses are proposed:

H₀: The working environment has no significant impact on the life satisfaction of working women.

H₁: The working environment has a significant impact on the life satisfaction of working women.

H₀: Mental health has no significant impact on the life satisfaction of working women.

H₁: Mental health has a significant impact on the life satisfaction of working women.

H₀: Income level has no significant impact on the life satisfaction of working women.

H₁: Income level has a significant impact on the life satisfaction of working women.

H₀: Marital status has no significant impact on the life satisfaction of working women.

H₁: Marital status has a significant impact on the life satisfaction of working women.

H₀: Education has no significant impact on the life satisfaction of working women.

H₁: Education has a significant impact on the life satisfaction of working women.

H₀: Family system has no significant impact on the life satisfaction of working women.

H₁: Family system has a significant impact on the life satisfaction of working women.

Testing these hypotheses will enhance understanding of the relationships between independent variables (mental health, marital status, education, income level, working environment, and family system) and the dependent variable (life satisfaction of working women) during the COVID-19 pandemic. This study will provide valuable insights for policymakers to develop strategies for managing future crises effectively.

3. Data and Methodology

This quantitative research was designed to investigate the association between mental health and family life satisfaction among working women of Punjab, Pakistan during COVID-19. The study measured the impact of socio-economic factors on mental wellness and family life of working women during

pandemic. The study used primary data, which were collected through survey method. A questionnaire was structured, comprising three sections: socio-demographic profile of respondents, family quality of life and mental wellbeing of respondents. The Beach Center Family Quality of Life Scale (FQOL Scale) was adopted as a standard instrument to evaluate quality of family life. While Depression, Anxiety and Stress Scale (DASS-21) was adopted to evaluate mental healthiness of participants. All women working in public and private organizations or self-employed were the population of study out of whom 250 working women were selected. The sample size is sufficient to represent the population and allows for reliable statistical analysis. It is targeted sample which focus on to identify work life balance and mental health of working women during COVID-19 pandemic. The area of study was Punjab province because it was hard-hit by COVID-19 pandemic (OCHA, June, 2020). Data were gathered using a non-probability sampling technique, convenient sampling. Life satisfaction was dependent variable whereas education, income, Mental health, marital status, working women and family system were independent variables. Each variable is unique because it captures different aspects that may impact life satisfaction. SPSS software was employed to analyze the quantitative data and draw meaningful results. Descriptive and inferential statistics were applied. Levene's Test and Multiple Regression analysis were used to investigate the association of variables. An econometric model containing independent and dependent variables engraved. The functional form of the model is as follows:

The model specified for this study is given below: -

$$LS = f(MH, MS, FS, Inc., WE, Edu.)$$

This model is transformed into an Econometric model, which is given below:

$$LS = \beta_0 + \beta_1 \cdot MH + \beta_2 \cdot MS + \beta_3 \cdot FS + \beta_4 \cdot Inc + \beta_5 \cdot WE + \beta_6 \cdot Edu + \epsilon$$

Where:

- *Life Satisfaction (LS)* is the dependent variable, representing the overall quality or satisfaction of family life of working women.
- *Education (Edu.)*, *Income (Inc.)*, *Mental Health (MH)*, *Working Environment (WE)*, *Marital Status (MS)*, and *Family System (FS)* are independent variables, each capturing distinguished aspects that influences life satisfaction.
- β_0 is the intercept term, representing the baseline level of life satisfaction when all independent variables are zero.
- $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are the coefficients indicating the impact of each independent variable on the dependent variable.
- ϵ is the error term, representing unobserved factors that affect life satisfaction.

4. Empirical Results

To assess the mental health and life satisfaction of working women during COVID-19, Beach Centre Family Quality of Life Scale (FQOL Scale) was used as a standard instrument (Babincak et. al, 2023). While the Depression, Anxiety and Stress Scale (DASS-21) has been utilized to examine the mental health of respondents (Henry et. al, 2005). Data were collected from working women serving in different public or private organizations, or were self-employed.

4.1 Demographic Profile of the Respondents

The data display that out of 250 respondents 55% were married, 42% were single while participation of divorced or widowed respondents was pintsized. As far as the respondents' education level is concerned, 38% had 18 years of education, 5.2% had 14 years education, and 40% had 16 years education. Whereas 13.6% respondents were highly educated, having more than 18 years

of education. Data related to family system reflects that 61.2% participants lived in nuclear family system and remaining 38.8% were a part of joint family system. Only 2% of respondents earned over Pak Rs 150,000 monthly income, over 16% earned between PKR 100,000 and 150,000 while 39.2% participants earned between Pak Rs. 50,000 and 100,000, and 40.4% earned below Pak Rs. 50,000 per month.

4.2 Analysis of Response of Participants

4.2.1 Working Environment

Table 1 shows that half (51.6%) of the respondents agreed that their work place environment is comfortable. While more than 20% slightly agreed, 14% remained neutral whereas nearly 14% found it uncomfortable. Majority of participants confirmed that their working environment is conducive.

Table 1

Working Environment

			Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree		129	51.6	51.6	51.6
	slightly agree		51	20.4	20.4	72.0
	Neutral		36	14.4	14.4	86.4
	slightly disagree		32	12.8	12.8	99.2
	Disagree		2	.8	.8	100.0
Total	250	100.0	100.0			

4.2.2 Mental Health and Education

Table 2 presents the results of independent samples t-test when applied on variables of mental health and education. The significance value of Levene's test for equality of variance is greater than alpha ($p > \alpha$, $p = .137$, $\alpha = 0.05$). Therefore, the homogeneity exists in data. As the significance value of t-test for equality of means is greater than alpha ($p > \alpha$, $p = .415$, $\alpha = 0.05$) it shows that there is no change in the respondent's state of mental health on the basis of education level.

Table 2

Relationship between Mental Health and Education

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Mental health		
Equal variances are assumed	.137	.391
Equal variances are not assumed		.415

4.2.3 Mental Health and Income

The outcomes of independent samples T-test are presented in Table 3, when it is applied on variables of mental health and income level. The significance value of Levene's test for equality of variance is .735 which is greater than alpha ($\alpha = 0.05$). It means that the data is homogenous. The significance value of t-test for equality of means is 0.041 which is less than the value of alpha (p

$< \alpha$, $\alpha = 0.05$). Therefore, there is a difference in mental health level on the basis of income level. During the period of Covid-19 health crisis was accompanied with economic crisis. In that situation, most of people were worried about their source of income. Individuals having high income and surety of their job at that time showed better mental health.

Table 3

Relationship between Mental Health and Income

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Mental health		
Equal variances are assumed	.735	0.045
Equal variances are not assumed		0.041

4.2.4 Mental Health and Working Environment

Table 4 reflects the outcome of independent samples T-test when applied on variables of mental health and work place environment. The significance value of Levene's test for equality of variance is .305, which is greater than alpha ($\alpha = 0.05$). It means that homogeneity exists in data. While the significance value of t-test for equality of means is 0.047, which is lesser than the value of alpha ($p < \alpha$, $\alpha = 0.05$). Therefore, the work place environment affects the mental wellness. During Covid-19 pandemic, the mental health of individuals working online with flexible timings were less affected compared to those who served on workplace.

Table 4

Relationship between Mental Health and working Environment

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Mental health		
Equal variances are assumed	.305	0.041
Equal variances are not assumed		0.047

4.2.5 Mental Health and Marital Status

Table 5 shows the results of independent samples t-test when applied to variables of mental health and marital status. The significance value of Levene's test for equality of variance is .256, which is greater than alpha ($\alpha=0.05$) and it reflects the homogeneity of data set. The significance value of t-test for equality of means is 0.049, which is less than the value of alpha ($p < \alpha, \alpha=0.05$). Thus, the results depict a link between marital status and mental health. During Covid-19 pandemic married women especially mothers felt more stress due to number of reasons like family health, school closures and inaccessibility of house help, child care, and home chores along with work from home pressure.

Table 5

Relationship between Mental Health and Marital Status

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Mental Health		
Equal variances are assumed	.256	0.041
Equal variances are not assumed		0.049

4.2.6 Mental health and Family System

Table 6 shows the findings of independent samples t-test when applied to the variables of mental health and family system. The significance value of Levene's test for equality of variance is .735, which is greater than alpha ($\alpha=0.05$). It means the data is homogenous. The significance value of t-test for equality of means is 0.039, which is less than alpha value ($p < \alpha, \alpha=0.05$). Therefore, there is a close relationship between mental health and family system. During Covid-19, pandemic, nuclear family system faced more loneliness or socially isolated compared to joint family system because there was complete lockdown and restriction of social mixing. It means family system is more valuable during crisis and has positive impact on human health.

Table 6

Relationship between Mental health and Family System

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Mental Health		
Equal variances assumed	.735	0.045
Equal variances not assumed		0.039

4.2.7 Life Satisfaction and Education

Table 7 presents the results of independent samples T-test when applied to the variables of family life quality and education. The significance value of Levene's test for equality of variance is 0.941, which is greater than alpha ($p > \alpha$, $\alpha = 0.05$). So, there is homogeneity in data. The findings suggest that there is no difference in family life satisfaction levels of respondents on the basis of their education because the significance value of t-test for equality of means is greater than alpha ($p > \alpha$, $p = .471$, $\alpha = 0.05$).

Table 7

Relationship between Life Satisfaction and Education

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig (2 tailed)

Life satisfaction		
Equal variances are assumed	0.941	0.477
Equal variances are not assumed		0.471

4.2.8 Life Satisfaction and Income

Table 8 presents the results of independent samples T-test when applied to the variables of family life quality and income level. The significance value of Levene's test for equality of variance is .901, which is greater than alpha ($p > \alpha$, $\alpha = 0.05$), indicating the existence of homogeneity in data. The findings suggest that there is some difference in family life quality levels of respondents on the basis of their income. As the significance value of t-test for equality of means is greater than alpha ($p > \alpha$, $p = .047$, $\alpha = 0.05$). It means economic crisis during COVID-19 pandemic did not affect those whose income level was high and they felt less stress due to availability of basic necessities. It means that high income level smoothens quality of family life during economic recession.

Table 8

Relationship between Life Satisfaction and Income

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Life satisfaction		
Equal variances are assumed	.901	0.041
Equal variances are not assumed		0.047

4.2.9 Life Satisfaction and Working Environment

Table 9 exhibits the findings of independent samples T-test. The significance value of Levene's test for equality of variance is .537, which is greater than alpha ($\alpha = 0.05$). It means homogeneity exists in data set. The significance value of t-test for equality of means is 0.035. which is less than alpha value ($p > \alpha$, $\alpha = 0.05$), indicating a difference in life satisfaction on the basis of working environment.

Table 9

Relationship between life satisfaction and working Environment

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Life satisfaction		
Equal variances are assumed	.537	.039
Equal variances are not assumed		.035

4.2.10 Life Satisfaction and family System

Table 10 demonstrates the results of independent samples T-test. The significance value of Levene's test for equality of variance is 0.641, which is greater than alpha ($\alpha = 0.05$), indicating the existence of homogeneity in data set. The significance value of t-test for equality of means is 0.046, which is less than alpha value ($p > \alpha$, $\alpha = 0.05$). So, family system has a close link with life satisfaction.

Table 10

Relationship between life satisfaction and family system

	Levene's test for equality of variance	t-test for equality of means
	Sig.	Sig. (2 tailed)
Life satisfaction		
Equal variances are assumed	.641	.038
Equal variances are not assumed		.046

4.3 Empirical analysis

After analyzing the statements of participants, now we examine the relationship between variables of the study through statistical techniques, such as descriptive statistics, correlation matrix, Multiple Regression.

4.3.1 Descriptive Analysis

Table 11 shows the descriptive statistics of variables. These descriptive statistics provide a summary of the central tendency, variability, and range of each variable in the dataset.

Marital Status: The mean score of marital status is 1.53, with a standard deviation of 0.666. This suggests that, on average, respondents tend towards the lower end of the scale (Single or married). Most of the participants of study were either married or single, a few were otherwise.

Education: The mean score of education level is 4.59, with a standard deviation of 1.003. This suggests that, on average, respondents have attained

a relatively high level of education (16 or 18 years of education), with some variability in educational attainment within the sample.

Family System: The mean score of family system is 1.33, with a standard deviation of 0.472. This indicates that, on average, respondents tend to one type of family system, which is nuclear family system, but there is variability in family structures among the respondents.

Working Environment: The mean score of working environments is 1.87, with a standard deviation of 1.182. This suggests that, on average, participants perceive their working environment as moderately positive, but there is considerable variability in these perceptions within the sample.

Monthly Income: The mean score of monthly income level is 1.89, with a standard deviation of 0.771. This suggests that, on average, respondents have a moderate monthly income, but there is variability in their income levels in the sample.

Life Satisfaction: The mean score of life satisfaction is approximately 68.82, with a standard deviation of 10.28058. This indicates that, on average, respondents report relatively high levels of life satisfaction, but there is variability in life satisfaction levels within the sample.

Mental Health: The mean score of mental health is approximately 46.94, with a standard deviation of 9.35875. This suggests that, on average, respondents report moderate levels of mental health, but there is variability in mental health status in the sample.

Table 11-

Descriptive analysis results

	N	Minimum	Maximum	Mean	Std. Deviation
Marital status	250	1	4	1.53	.666
Education	250	1	6	4.59	1.003
Family system	250	1	2	1.33	.472
Working environment	250	1	4	1.87	1.182
Monthly income	250	1	4	1.89	.771
Life satisfaction	250	37.00	90.00	68.8200	10.28058
Mental health	250	21.00	61.00	46.9360	9.35875
Valid N (listwise)	250				

4.3.2 Multiple regression analysis

Table 12 shows the results of Multiple Regression Analysis.

The coefficient of "mental health" is 0.248 (unstandardized) with a standard error of 0.060. Its standardized coefficient (Beta) is 0.267, the t-value is 4.139, and the significance level is 0.031. This suggests that mental health has a statistically significant positive effect on life satisfaction, with higher levels of mental health being associated with higher levels of life satisfaction. During the period of Covid-19 pandemic women with better mental health showed higher level of life satisfaction compared to other working women

The coefficient for "Marital status" is 6.542, indicating a one-unit increase in the predictor variable "Marital status" is associated with an increase of 6.542

units in the "life satisfaction," holding all other variables constant. The positive standardized coefficient indicates that being married is associated with higher life satisfaction. This effect is statistically significant at $p < 0.05$. In our sample of participants, married working women reflected higher level of satisfaction during COVID-19 pandemic compared to non-married women.

The coefficient for "Family system" is 0.156. It reflects that a one-unit increase in the predictor variable, "Family system", is associated with an increase of 15.6 % increase in the "life satisfaction," holding all other variables constant. The positive standardized coefficient suggests that a joint family system plays a positive role in higher life satisfaction. This effect is statistically significant at $p < 0.05$. It confirms that joint Family system is positively associated with mental health and life satisfaction. The participants living in joint families showed higher levels of life satisfaction as they did not feel isolated during the pandemic.

The coefficient for "Monthly income" is 0.575. It shows that a one-unit increase in "monthly income" is associated with an increase of 0.57.5% increase in "life satisfaction," holding all other variables constant. However, the positive t-value (8.660) indicates that this relationship is statistically significant at $p < 0.05$. Therefore, higher monthly income is associated with higher life satisfaction, particularly in the time of COVID-19 pandemic, higher income and better financial resources played a positive role in life satisfaction, when the world economies were at risk and societies were in disarray.

The coefficient of working environment is 0.115, indicating a one-unit increase in the "working environment" is associated with an increase in the "life satisfaction," by 11.5%, holding all other variables constant. The positive

standardized coefficient indicates that a better working environment is associated with higher life satisfaction. This effect is statistically significant at $p < 0.05$.

The coefficient of "Education" is 0.100, indicating that a one-unit increase in education level is associated with a 10% increase in "life Satisfaction Level," holding all other variables constant. However, this association is not statistically significant at the 0.05 significance level. The t-value of 0.667 is below threshold required for statistical significance. Despite the positive association, there isn't enough evidence to conclude that education level has a significant impact on "family life Satisfaction Level" in this analysis. The significance level is 0.065, which is above the conventional threshold of 0.05, further supporting the lack of statistical significance.

Table 12

Multiple Regression analysis results

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	87.125	5.561		15.668	.000
	Mental health	.248	.060	.267	4.139	.031
	Marital status	6.542	1.033	.424	6.331	.000
	Family system	.156	.059	.141	2.623	.009
	Monthly income	.575	.020	.360	8.660	.000

	Working environment	.115	.058	.456	7.093	.001
	Education	0.100	0.150	0.100	0.667	.065

a. Dependent Variable: life satisfaction

The econometric model of this study was as follows:

$$LS = \beta_0 + \beta_1 \cdot MH + \beta_2 MS + \beta_3 \cdot FS + \beta_4 Inc + \beta_5 \cdot WE + \beta_6 \cdot Edu + \epsilon$$

When we put estimated values of variables in the model, we found:

$$LS = 87.125 + 0.248MH + 6.542MS + 0.156FS + 0.575Inc + 0.115WE + \epsilon$$

All independent variables, such as mental health, marital status, family system, monthly income, working environment, and education have positive relationship with dependent variable, life satisfaction. Thus, the null hypotheses, which state that there is no positive association between independent and dependent variables, are rejected and alternate hypotheses that state there are positive relationship between independent and dependent variables are accepted because the empirical results did not support to null hypotheses. Marital status and monthly income have more pronounced impact on life satisfaction of working women than other variables. The relationship between explanatory and explained variable is exhibited in [Figure 3](#).

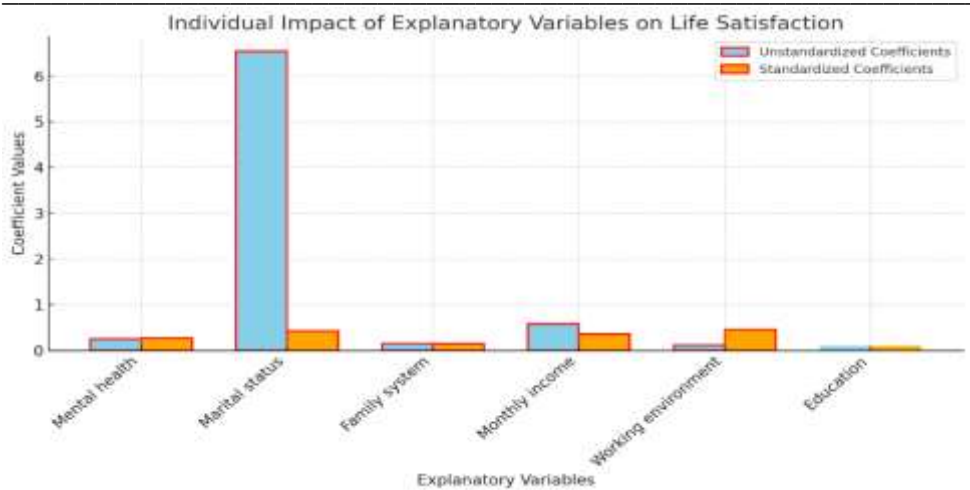


Fig3: Individual impact of explanatory variables on life satisfaction

4.3.3 Coefficient of determination

Table 13 provides model summary containing information about the robustness of the model. The value of R (or correlation coefficient) indicates strength and direction of linear relationship between the predictors (education, family system, work environment, monthly income, mental health, and marital status) and the outcome variable, Life satisfaction). In this case, $R=0.762$, suggesting a relatively strong positive linear relationship between variables. R-squared value is 0.581 suggesting that 58.1% variation is explained by the combined effect of all independent variables. The Adjusted R-squared value is 0.575, indicating that the model is goodness of fit as it predicts 57.5% variation in the dependent variable, life satisfaction.

Table 13-

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.762 ^a	.581	.575	.63186

a. Predictors: (Constant), education, family system, working environment, monthly income, mental health, marital status.

5. Discussion

5.1 Main findings

This study examined the association between mental health and family life of working women during COVID-19 pandemic. A quantitative study was designed and data was collected through a questionnaire survey from 250 working women employed in different public or private organizations of Punjab, Pakistan through convenience sampling technique. The standardized tools (DASS-21) and Beach Centre Family Quality of Life Scale (FQOL Scale) were deployed to assess the mental health and family life satisfaction of working women, respectively. Further, the detailed socio-demographic profiles of respondents were also compiled. The data collection process was completed in two months from May to June 2023. The descriptive and inferential statistics were analyzed through using SPSS software to draw the results.

The findings of this study reveal significant insights into the socio-economic factors affecting the mental health and life satisfaction of working women during the COVID-19 pandemic. Contrary to initial assumptions, education level does not significantly impact the life satisfaction of working women. Thus, null hypothesis (**H₀**) which states that there is no significant impact of education on life satisfaction of working women is accepted and alternate hypothesis (**H₁**). However, income level emerges as a crucial factor, with higher income levels positively associated with better mental health and greater life satisfaction. Therefore, the null hypothesis (**H₀**) which states that

income level has no significant impact on life satisfaction is rejected and alternate hypothesis (**H₁**) is accepted because empirical results show that income level has significant positive association with life satisfaction of working women. The null hypothesis (**H₀**) which states that marital status has no significant impact on the life satisfaction of working women is rejected and alternate hypothesis (**H₁**) is accepted because the findings of the study confirm that marital status has significant positive link with the life satisfaction. The null hypothesis (**H₀**) which states that family system has no significant positive relationship with life satisfaction of working women is rejected and alternate hypothesis (**H₁**) is accepted because the empirical results prove that joint family system has significant positive relationship with life satisfaction of working women. The null hypothesis (**H₀**) which states that working environment has no significant impact on life satisfaction of working women is rejected and alternate hypothesis (**H₁**) is accepted because the findings of the study confirm that comfortable working environment significantly contributes to life satisfaction of working women during COVID-19 pandemic-like situation. The null hypothesis (**H₀**), which states that there is no significant relationship between mental health and life satisfaction of working women is rejected and alternate hypothesis (**H₁**) is accepted because the findings indicate that there is a positive and significant association between mental health and life satisfaction.

5.2 Comparison with prior researches

If we compare the findings of current research with previous academic literature, we find similarities and differences in the impact of the COVID-19, but current study focuses on the gendered dimensions of the Pandemic, which previous studies ignored. Prior studies such as [Aaron \(2023\)](#) and [Wei et al. \(2021\)](#) broadly focused on the global economic downturn in the context of the

U.S., EU, and China, indicating that industries such as hospitality, travel, and retail were mostly affected, while technology and e-commerce flourished. Whereas the current research examines the specific socio-economic effects on working women in Pakistan, shedding light on how the pandemic influenced family life and mental health. Previous studies discuss industry-level effects, the current study concentrated on the personal and household level with special reference to working women. The studies conducted by [Torres et al. \(2021\)](#), [Kotlar et al. \(2021\)](#), and [Alon et al. \(2020\)](#) have determined the impact on women entrepreneurs and working mothers during pandemic, resulting in the loss of jobs, faced economic hardships and tried to re-enter labor market due to childcare obligations. In contrast, this study examined the role of family life in mental health among working women in Pakistan, highlighting how factors, such as marital status, income, and family system play significant roles in life satisfaction and mental health. The unique factor, which untouched by prior literature, is that the current research has identified that both income and joint family system significantly contribute into mental health and life satisfaction. Similarly, [WHO \(2020\)](#) and [Jacques et al. \(2020\)](#) examined the psychological impacts of the pandemic in broader context and did not investigate into the mental health and family life of working women. The current study has made a novel contribution by establishing a close positive link between mental health and family life satisfaction of working women in Pakistan. The current research uses standardized tools like DASS-21 and the Family Quality of Life (FQOL) Scale to identify empirical relationship between mental health and family life. No previous study used these scales.

This empirical analysis provides a new insight into how mental health and working environments of working women interact with family dynamics during a global crisis. Another novel aspect of current study is that unlike prior researches, which establish significant impact of education on working women during crisis, the findings of current study suggest insignificant impact of education level on life satisfaction of working women during the pandemic. This also challenges the common propositions about the positive and significant link between education and well-being, providing a nuance landscape in the context of a global crisis.

5.2 Explanatory power and predictive relevance of the model

R-squared is a measure of the model's predictive power, indicating that over half the variation in life satisfaction is due to education, family system, working environment, monthly income, mental health and marital status. This is a substantial proportion, implying that these variables collectively have a strong explanatory power to influence life satisfaction.

The predictive relevance exhibits the model's capability to predict outcomes in new, unseen data. While explanatory power (as indicated by R^2) is an important measure, predictive relevance is more about how well the model generalizes beyond the sample data used to create it. The adjusted $R^2 = 0.575$ is slightly lower than R^2 , reflecting the proportion of variance explained by the model after adjusting for the number of predictors. This adjustment is important because it accounts for the possibility of overfitting—where a model may perform well on the training data but poorly on new data due to being too complex. The small difference between R^2 (0.581) and Adjusted R^2 (0.575) suggests that the model is relatively robust, with only a minimal drop in explanatory power when accounting for the number of predictors. This suggests that the model has good predictive relevance, as it is not overly reliant

on specific data points in the sample. The standard errors ($SEE = 0.63186$) are moderately low, which depicts the model's adequacy in predicting life satisfaction bases the predictors. This also indicates that the model has ability to make accurate prediction. Therefore, the model appears to be both robust in explaining the relationship between the predictors and life satisfaction, and reliable in making predictions about life satisfaction in new data.

5.3 Theoretical Contribution

The findings of this study support [Maxwell's \(1996\)](#) theory of social cohesion, which states that social cohesion and integration build shared values and communities of interpretation, reducing disparities in wealth and income, and generally enabling people to have a sense that they are engaged in a common goal, facing similar issues, and develop sense that they are members of the same community. The results of this study also strengthen the view of [Kim, et al. \(2008\)](#), who argue that social capital and physical health has close association, emphasizing that close social knots enhance physical health of human being. The findings of this study also consistent with [Tetsuo's. \(2016\)](#) theory of social cohesion which suggests how social integration can be created in the independent world. He emphasized that social interaction is necessary to create social cohesion in the society.

Additionally, this study significantly contributes to develop the understanding of how socioeconomic factors affect life satisfaction and mental health of working women during a global crisis. By focusing on a specific group of population-working women in Punjab province of Pakistan, the research offers a nuanced perspective on the specific issues faced by this group. The study also challenges the orthodox belief that education levels

significantly enhance life satisfaction, instead it reveals that factors such as working environment, income level, marital status and family systems play a more positive role in alleviating stress produced by pandemic. This study also contradicts modern concept of single life or nuclear family system because single persons or individuals living in a nuclear family suffered more mental health issues and low life satisfaction during Pandemic. Therefore, there is need to promote joint family system in order to enhance social cohesion.

5.4 Policy implications

The findings of this study have significant implications for policy formulation for addressing the issues of working women during abnormal situations like the COVID-19 pandemic. The study pinpoints the significant role of income support as a core factor affecting both mental health and life satisfaction. Therefore, policymakers should focus on increasing income support programs to alleviate economic stress during economic recession. The study also emphasizes the importance of flexible working environment that can accommodate the dual obligations of family life and work assignments, which are considered essential for continuing life smoothly during financial crisis. There is need to promote supportive policies to strengthen joint family systems, such as mutual caregiving support and community close interaction and such policies can facilitate working women to manage their domestic and professional responsibilities effectively. This study also emphasizes that access to mental health services particularly for low income working women must be expanding to address the psychological challenges exacerbated by gender-based violence and heavy domestic work burden. The supportive policies can address these issues of working women.

5.5 Limitations and suggestions for further research

Although this study has made valuable contribution, yet it has certain limitation, which must be acknowledged. First, the use of convenience sampling technique, may limit the generalizability of the findings practically, because the sample may not completely represent the broader population of working women in Punjab province of Pakistan and other regions. Second, the geographical scope of the study is limited to a specific area, which may not capture the diverse experiences of women having different cultural, economic and social backgrounds. Third, as the study use cross-sectional design that capture data a single point in time, does not record the long-term impacts of the COVID-19 pandemic on life satisfaction and mental health of working women. Fourth, the dependence on self-reported data for examining life satisfaction and mental health introduces the potential for bias because the participants of the study may not accurately report their experiences in true perspectives.

In the light of these limitations the following suggestions are made for future research:

The new researchers should conduct longitudinal studies that capture changes in life satisfaction and mental health over time, providing a full understanding of the long-term impacts of crisis like the COVID-19 pandemic. The future researchers can include a more diverse population of working women from different regions and backgrounds, which enhance the applicability of the findings. The increase in sample size will also remove the possibility of bias and make the results more practicable. Moreover, comparative studies across different countries and cultural contexts can further enhance understanding

about various social support systems and policies and impact the level of life satisfaction and mental health of women during economic downturn. There is also need to investigate the effectiveness of specific policy interventions, such as flexible working arrangements and income support programs to improve life satisfaction and mental health of working women in economic and social crisis would provide valuable insights for practitioners and policymakers.

Data statement

The data that supports the findings of this study will be made available on strong requests.

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