



COVID-19 and Subjective Well-Being in Urban Pakistan in the Beginning of the Pandemic: A Socio-Economic Analysis

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Abstract

This study contributes to the existing literature on happiness studies by analyzing the effects of COVID-19 pandemic on subjective well-being (SWB) in a developing country, focusing specifically on satisfaction with socio-economic status. Drawing on survey data for urban Pakistan from before and after the outbreak of COVID-19, we find that during the early days of the pandemic and the related social distancing and potential lockdowns, SWB declined, particularly among unemployed, married couples, males and older people. Unexpectedly, we also observed that households having a higher income suffered more from the pandemic in terms of satisfaction with their socio-economic status compared to their poorer counterparts. We explain this finding by increased fear for falling into poverty due to lockdowns and inflation.

Keyword Subjective well-being. COVID-19 pandemic. Socioeconomic and demographic factors. Urban Pakistan

Introduction

The COVID-19 pandemic poses a challenge to societies worldwide (Shek, 2021). It is hard to predict at this stage (November 2020) what potential long-term damages the COVID-19 crisis may inflict on the world economy since most countries are still struggling with keeping the pandemic under control. The virus affects both advanced

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economies and emerging markets, but policymakers worry that disparities between “the rich” and “the poor” may widen in the aftermath of the pandemic as COVID-19 may have a disproportionate impact on poorer households (Stiglitz, 2020). Recent studies on the effects of COVID-19 find that particularly young people may suffer more from the pandemic, while there is no significant difference between males and females in happiness during the COVID-19 pandemic (WHR, 2020). However, most case studies on COVID-19 and well-being focus on developed countries, while only a handful (but growing) number of studies have addressed the SWB situation in developing countries (e.g., Purba et al., 2021). In this regard, the aim of the study is to analyze socio-economic and demographic determinants of subjective well-being (SWB) in the early days of the COVID-19 pandemic in urban Pakistan. This study contributes to the existing literature on happiness studies by analyzing the effects of COVID-19 on SWB in general and examines which groups are most negatively affected by the pandemic.

Major developing countries have been hit hard since the start of the pandemic. As of mid-November 2020, there were more than 9 million cases in total and 652 cases per 100,000 people in India (second highest count worldwide) and in Brazil more than 6 million cases in total and 2,822 cases per 100,000 people (third highest count worldwide). Pakistan, the world’s fifth-most populous country, has been affected to a lesser extent compared to its neighbors India and Iran with a total count of more than 350,000 cases or 167 cases per 100,000 people.¹

However, comparisons of headline figures on COVID-19 across countries are likely to be distorted for several reasons. First, the extent to which testing procedures are in place may vary across regions and even within countries. Second, demographic trends vary across countries. Pakistan’s population, for example, has a relatively low proportion of old people compared to advanced economies. The median age in Pakistan is 22 years, which is seven years lower than in India (CIA, 2020). This makes Pakistan’s population as a whole potentially less vulnerable. Third, when it comes to fighting a pandemic, it may be less about the number of cases but rather its underlying trajectory. Comparing India and Pakistan, the rise in new cases has flattened out in Pakistan since early August, whereas India has been on an upward trend until October. As both countries continue fighting the further spread of the pandemic, the different dynamics underlying the outbreak evolution of COVID-19 may also explain perceived differences in public policy responses. Pakistan largely resorts to a local containment strategy, which includes quarantines in heavily affected areas and social distancing, whereas India introduced a population-wide lockdown at the end of March 2020 and continues imposing localized lockdowns in containment zones.²

As a developing economy, Pakistan is characterized by a stark rural–urban divide. The rural population accounts for two thirds of the total population, but it is the relatively less open part of society, relying mostly on self-sustainable internal networks in villages. This contrasts to the major cities of

¹ All figures on COVID-19 cases are based on CSSE (2020).

² See IMF (2020) for further background on containment measures and economic support packages.

Pakistan such as Lahore or Karachi. These more densely populated areas have developed their own economic structures with more openness and greater reliance on large-scale social interaction. This is also reflected in the relatively higher number of COVID-19 cases in urban areas of Pakistan, which are the focus of our study. In the light of the related lockdown, it seems likely that the COVID-19 pandemic marks a shock with far-reaching consequences for societies, affecting subjective well-being (SWB). In this paper, we use “satisfaction with socio-economic status” as measure of SWB, which can be considered a domain satisfaction.

Building on Shams and Kadow (2018) who focus on satisfaction with socio-economic status in urban Pakistan before (2016) the pandemic, we seek to unravel to what extent the outbreak of COVID-19 has affected SWB in general in urban Pakistan, and who has been disproportionately affected by the outbreak of COVID-19. In particular, we link changes in SWB to socio-economic and demographic factors like age, gender and income during the COVID-19 crisis in the study area. In our study, we find that whilst the pandemic has adversely affected SWB in the urban areas of Pakistan, that some groups have been disproportionately affected by the pandemic. Particularly, we find more negative developments in SWB for men and older people. In addition, our findings suggest that households having a higher income suffered more from the pandemic in terms of satisfaction with their socio-economic status compared to their poorer counterparts. This may be explained by increasing fear for falling into poverty due to inflation and the related lockdowns amid the pandemic. Our results contrast general findings by the WHR (2020), which found that particularly young and poorer people suffered more in the early days of the pandemic, highlighting potential different drivers of SWB across countries.

This study contributes to the existing literature on COVID-19 and subjective well-being by analyzing the effects of COVID-19 on SWB using longitudinal data for one of the largest developing countries³ in the world and examining who has been particularly affected by the pandemic. To the best of our knowledge, it is one of the first studies addressing the effects of COVID-19 in developing nations in the early days of the pandemic, explicitly addressing change in SWB and heterogeneity.⁴

The remainder of this paper is structured as follows. Section 2 reviews the literature on SWB in general and with particular reference to COVID-19 pandemic. Section 3 introduces the data, variables and the econometric model. Descriptive statistics and estimation results are discussed in Sect. 4. Section 5 concludes and seeks to provide future research direction.

³ For earlier studies on SWB in Pakistan, see e.g. Shams (2014), Shams & Kadow (2018) and Latif et al. (2021)

⁴ Other studies providing evidence for SWB change are e.g. Morrison et al. (2022), Veenhoven et al. (2021), Bittmann (2022), and Shavit et al. (2021)

Related Literature

Carlquist et al. (2016) observed that the term “happiness” has a similar meaning as the terms “satisfaction” and “good life”, but one should not expect exactly the same determinants of happiness across the different cultures and societies. In line with the literature (Bruni & Porta, 2007; Veenhoven, 2000; White et al., 2012), happiness is considered as a function of various socio-economic factors. For instance, Bruni and Porta (2007) described happiness as satisfaction with socio-economic conditions.

Stylized results that have emerged in the happiness literature on advanced economies are that: SWB tends to be higher among females, married couples, young and old (U-shaped pattern over the lifespan with life satisfaction typically at its lowest point in the 40 to 60 age range), highly educated, those with high income, those who are actively involved in religion, healthy and those without children (Blanchflower, 2008; Bruni & Porta, 2007; Cheng et al., 2017). In contrast, SWB tends to be lower for households with children, separated or newly divorced, unemployed, poor, less educated, sexually inactive, minorities and immigrants, commuters and those who are in poor health. On the other hand, typically for developing countries, women report lower well-being, while higher income, education, health and socio-economic position can improve it (Pontarollo et al., 2020; Shams & Kadow, 2018).

The COVID-19 pandemic challenges societies across the globe as both health and economic conditions are affected. The COVID-19 pandemic may have a disproportionate impact on households with a weaker socio-economic position (Stiglitz, 2020). Given the importance of health and the general economic position of households for perceived life satisfaction, we should expect SWB to be lower during times of a pandemic. There is a burgeoning literature that looks at the impact of COVID-19 on SWB (Lu et al. 2021; Béland et al., 2020; Fetzer et al., 2020) or specific domains such as increased loneliness as a result of physical distance during lockdown regimes (e.g., Armbruster & Klotzbücher, 2020; Knipe et al., 2020; Tubadji et al., 2020). However, few studies try to look at these drivers jointly and specifically focus on a developed country as a case study. For instance, Indonesian married people, especially women, those with low level of education, currently out of work, and below-average financial condition are the ones who reported worse quality of life during the pandemic and the related lockdown. These results can help direct the Indonesian government efforts in dealing with psychosocial problems during the COVID-19 pandemic, especially for married couples (Purba et al., 2021). Recent studies on the effects of COVID-19 find that particularly young people may have suffered more from the pandemic than older people, while there is no significant difference between males and females in happiness during the COVID-19 pandemic (WHR, 2020). According to Stiglitz (2020), the virus affects both advanced economies and emerging markets, but policymakers worry that disparities between “the rich” and “the poor” may widen in the aftermath of the pandemic as COVID-19 may have a disproportionate impact on households with a weaker socio-economic position.

Pakistan, officially the Islamic Republic of Pakistan, is a country in South Asia. It is the world’s fifth-most populous country with a population exceeding 212.2

million. The annual population growth rate is 2.07%. The urban population accounts for 37.2% of its total population. The rate of urbanization is 2.53% (annual rate of change 2015–20). It has the world's second-largest Muslim population. It is the 33rd-largest country by area, spanning 881,913 square kilometers (340,509 square miles). Pakistan has a 1,046-km (650-mile) coastline along the Arabian Sea and Gulf of Oman in the south and is bordered by India to the east, Afghanistan to the west, Iran to the southwest, and China to the northeast. It is separated narrowly from Tajikistan by Afghanistan's Wakhan Corridor in the northwest, and also shares a maritime border with Oman (CIA, 2020). Shams and Kadow (2018) suggest that well-being is positively associated with being male, having employment, health and educational attainment. Similarly, living in a relatively affluent area contributes positively as well. In contrast to empirical evidence on industrialized countries, the authors found that happiness increases with the increase in number of children. Moreover, the results suggest a U-shaped age-happiness pattern.

Materials and Methods

Data

The pooled dataset used in the analysis is based on two datasets for urban Pakistan on the household surveys conducted before the COVID-19 period (2016; Shams & Kadow, 2018) and during the beginning of the COVID-19 pandemic (2020), i.e. between March and May 2020. In both waves, data was collected using a similar methodology, sample size and sampling techniques (random and stratified sampling) and both data collections cover all four provinces of Pakistan: Punjab, Sind, Baluchistan and Khyber Pukhtunkhuwa (KP). The sample consists of households in eight major cities (i.e. approximately two thirds of the total number of major cities) across these provinces (stratified sampling) thereby ensuring representativeness for urban Pakistan. For all provinces, the provincial capital city and largest places have been included in the sample.⁵ The households have been selected randomly within these predetermined strata. The data was collected by means of questionnaire, where typically the head of the household was explicitly invited to participate.⁶ A sample size of 1500 households per period i.e. Survey 2016, $n_1 = 1500$ and Survey 2020, $n_2 = 1500$ was attained leading to a total/pooled sample size of $n = 3000$ households ($n = n_1 + n_2$). Based on population figures of the provinces and sampled cities (according to Pakistan Bureau of Statistics, 2017), a total of 1500 households (50%) from Punjab (i.e. 750 from Lahore, 300 from Faisalabad, 224 from Rawalpindi, 150 from Multan and 76 from Islamabad); 1200 households (40%) from Sind (Karachi); 180 households (6%) from KP (Peshawar) and 120 households

⁵ In particular, the selected cities in Punjab are Lahore, Faisalabad, Rawalpindi, Multan and Islamabad (the capital territory); Karachi in Sind; Peshawar in KP and Quetta in Baluchistan.

⁶ The head of the household is described here as the individual who has major role in financial decision making of the household.

(4%) from Baluchistan (Quetta) were selected.⁷ Sample weights (normalized) have been applied to the sample households corresponding to the cities they belong, as shown in Table 5 in Appendix. The subsequent regression analyses are based on that weighting scheme. Furthermore, the weighting scheme is based on the last available census of 2017 in Pakistan.

Econometric Model

In a first step towards providing initial insights into the current situation during the ongoing pandemic, we extend the analysis by resorting to a well-established econometric model. In line with the literature (Bruni & Porta, 2007; Veenhoven, 2000; White et al., 2012), happiness is considered as a function of various socio-economic factors. The model we use to assess SWB for urban Pakistan takes the following form:

$$\begin{aligned}
 SWB_i = & \beta_0 + \beta_1 (sex_i)_{dummy} + \beta_2 (age_i) + \beta_3 (age_i)^2 + \beta_4 (education_i) \\
 & + \beta_5 (unemployed_i)_{dummy} + \beta_6 \ln(monthly\ income_i) + \beta_7 (childless_i)_{dummy} \\
 & + \beta_8 (married\ couple_i)_{dummy} + \beta_9 (health\ status_i)_{dummy} \\
 & + \beta_{10} (married\ couple_i \cdot children_i)_{dummy} + \beta_{11} (time\ period_i)_{dummy} \\
 & + \beta_{12} (region_i)_{dummy} + \beta_{13} (sex_i \cdot time\ period_i)_{dummy} \\
 & + \beta_{14} (age_i \cdot time\ period_i)_{dummy} + \beta_{15} (income_i \cdot time\ period_i)_{dummy} \\
 & + \beta_{16} (married\ couple_i \cdot time\ period_i)_{dummy} + \beta_{17} (healthstatus_i \cdot time\ period_i)_{dummy} \\
 & + \beta_{18} (unemployed_i \cdot time\ period_i)_{dummy} + \beta_{19} (childless_i \cdot time\ period_i)_{dummy} \\
 & + \beta_{20} (education_i \cdot time\ period_i)_{dummy} + \varepsilon_i \quad i = 1, 2, 3 \dots \dots \dots 3000\ households
 \end{aligned} \tag{1}$$

Variables

Following the literature on happiness studies, we measure SWB through an ordinal scale, meaning that a higher index shows a higher level of self-reported satisfaction. In line with our previous research (Shams & Kadow, 2018) and to ensure comparability across studies –, we ask the following question to the head of the household: “What is your level of satisfaction from your existing socio-economic status?” Answers were recorded on a Likert scale from 1 to 4, where 1 means “Not at all satisfied”; 2 “Less than satisfied”; 3 “Rather satisfied” and 4 “Fully satisfied”.

Given the nature of our well-being metric, which is based on an ordinal scale, we estimate the given model by means of ordered probit regression. The positive coefficient of ordered probit regression analysis states that with one unit increase in the explanatory variable, it is more likely to be in the higher outcome or SWB categories (i.e. 3 or 4). On the other hand, the negative coefficient of ordered probit regression analysis means that with one unit increase in the explanatory

⁷ According to CIA (2020) Pakistan’s urban population amounts to about 87 million people, which is almost one third of its total population.

variable, it is more likely to be in the lower outcome or SWB categories (i.e. 1 or 2). The data available to us permit distinguishing among different potential determinants of SWB as shown in the above models. More specifically, the different regressors are: sex, age in years, years of education, employment status, household's monthly absolute nominal income (expressed in natural logs), number of children, marital status, overall family's health status, time period and the regional background of household i . Presumably, the respondents can potentially work from home (if employed) complying the social distancing measures ordered by the government over the current period. There are several binary socio-demographic variables included in the models: sex, unemployment, marital status, time period and children. Those take the value of 1 if the respondent is male, unemployed, living as a married couple, belongs to post corona time period (i.e. 2020) or childless and 0 otherwise. The respondent's health status was evaluated by asking the following question: "How would you assess your current overall health status?" The responses were recorded as "healthy" and "unhealthy" and were measured by a health index of 1 and 0, respectively. The region variable corresponds to three separate dummies for households that live in Punjab, Sind and KPK, respectively. The reference group comprises of households in Baluchistan. Age effects are allowed to be non-linear. The interaction effect between being a married couple and having children in a household is allowed to be a binary variable as well, which takes the value of 1 if the respondent is having children and is living as a married couple or 0 otherwise. Many studies in the happiness literature include children as one of the explanatory variables of life satisfaction, albeit with mixed evidence. On the one hand, (Blanchflower, 2008; Tella et al., 2003) find that household's happiness levels falls with increasing number of children. This in contrast to Stutzer and Frey (2006) who find a positive or no effect (Clark, 2006; Clark et al., 2008), respectively. Frey and Stutzer (2000) conclude on the basis of Swiss household survey data that having children hardly affects self-reported happiness of married couples, but that it has a large negative impact on the life satisfaction of single parents. This evidence, however, predominantly refers to advanced economies. Having children in developing countries may have a different meaning altogether. Following Shams (2014, 2016); Shams and Kadow (2018), we investigate this further using Model (1) and incorporate dummies on the corresponding number of children in a household and the marital status of the household. More specifically, the coefficient β_{10} captures the interaction effect of the marital status and the number of children in a household on SWB.⁸ The interaction effect between sex and time period is also allowed to be a binary variable, which takes the value of 1 if the respondent is male and belongs to post Corona period (2020) or 0 otherwise. Likewise, the interaction effect between age and time period is allowed to be a binary variable, which takes the value of 1 if the respondent's age is greater than twenty

⁸ Note that children are defined as individuals living in a household with their parents and who are less than 16 years of age.

Table 1 Descriptive statistics of subjective well-being metric

	Satisfaction with Socio-Economic Status (SES) (1–4)		
	Pooled	2016	2020
Mean	1.98	2.23	1.73
Standard deviation	1.23	1.17	1.29
Frequency of value:			
1	39%	40%	38%
2	24%	16%	32%
3	19%	25%	13%
4	18%	19%	17%

Source: Pooled Survey, 2016 & 2020

two years and belongs to post Corona period (2020) or 0 otherwise.⁹ The interaction effect between income and time period is also measured as a binary variable, which takes the value of 1 if the respondent's income is greater than two hundred and forty three US dollars (i.e. above average income) and belongs to post Corona period (2020) or 0 otherwise. Moreover, the interactions of marital status, health status, employment status, number of children and education level with the time period are given by five dichotomous variables, respectively. For instance, those take value equal to 1 if the individual is living as married couple, being self-reported healthy, being unemployed, being childless and having above average education (i.e. above twelve years of education) and belongs to post corona time period (i.e. 2020), and 0 otherwise, respectively. All the variables have been explained in Table 6 in Appendix.

Results and Discussion

Descriptive Statistics

Table 1 presents summary statistics for our wellbeing metric. Most of the responses lie on the left side of the satisfaction distribution with approximately two thirds of the respondents reporting “*Not at all satisfied*” and “*Less than satisfied*”. Evidence from pre-corona times suggests in advanced countries such as Great Britain a rather opposite distribution to what is commonly observed in many developing economies (Shams & Kadow, 2018). For instance, Angeles (2009) reported that more than three-fourth of the British households scores above-average on happiness. In urban Pakistan, SWB declined: the average satisfaction index/SWB for the early days of the COVID-19 period (2020) was rated as 1.73 which is 12.5% lower than 2.23 that was observed for pre-Covid period (2016) as given in Table 1. Moreover,

⁹ The median age in Pakistan is 22 years, which is seven years lower than in India (CIA 2020).

Table 2 Descriptive statistics of socio-economic variables

	Mean or in Percentages (%)		
	Pooled	2016	2020
Male	51%	48%	54%
Female	49%	52%	46%
Married couple	48%	51%	45%
Age	35 years	36 years	34 years
Education	12 years	12 years	12 years
Childless	43%	49%	37%
Unemployed	44%	41%	47%
Monthly income (Pakistani rupees)	37,516	43,038	31,994
Monthly income (US dollars)	243	279	207

Table 3 Empirical Results (Order probit without time effect and with time effect)

	Without time effect		With time effect	
	Coef	Robust Std.Err	Coef	Robust Std.Err
Male	1.6897*	0.8334	1.6089*	0.8005
Age	0.2358***	0.0653	0.2358***	0.0653
Age ²	-0.0053***	0.0006	-0.0053***	0.0006
Years of education	0.1247***	0.0363	0.1247***	0.0363
Unemployed	-1.2064*	0.4972	-1.2064*	0.4972
Log monthly income	2.5201*	1.0520	2.5201*	1.0520
Childless	-1.0063*	0.4208	-1.0063*	0.4208
Married couple	1.2490*	0.5300	1.2490*	0.5300
(Married couple. Children) _{dummy}	0.9551*	0.4063	0.9551*	0.4063
Health status	0.3762***	0.0412	0.3762***	0.0412
COVID-19 time period	-	-	-1.3445*	0.6038
Region: Punjab	0.5401	0.6109	0.5401	0.6109
Region: Sind	0.3836	0.6222	0.3836	0.6222
Region: KPK	0.0905	0.6310	0.0905	0.6310
Region: Baluchistan	Reference		Reference	
/cut 1	12.1720	5.2752	12.1820	5.2852
/cut 2	16.8970	5.4991	16.9070	5.5091
/cut 3	20.4194	6.7467	20.4294	6.7567
Log likelihood	-6.1362		-6.1454	
Observations	3000		3000	
LR $\chi^2(k-1)$	LR $\chi^2(12) = 85.99$		LR $\chi^2(13) = 86.99$	
Prob > χ^2	0.0000		0.0000	
Pseudo R ²	0.8545		0.8655	

Note. †, *, ** and *** indicate 10%, 5%, 1% and 0.1% levels of statistical significance, respectively

Table 4 Ordered probit regressions with time-interaction effects

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Male	1.5999*	1.6179*	1.5809*	1.5809*	1.5809*	1.5809*	1.5809*	1.5809*	1.3897*
	0.7914	0.8115	0.7509	0.7509	0.7509	0.7509	0.7509	0.7509	0.6534
Age	0.2358***	0.2209***	0.2358***	0.2358***	0.2358***	0.2358***	0.2358***	0.2358***	0.2258***
	0.0653	0.0639	0.0653	0.0653	0.0653	0.0653	0.0653	0.0653	0.0645
Age ²	-0.0053***	-0.0049***	-0.0053***	-0.0053***	-0.0053***	-0.0053***	-0.0053***	-0.0053***	-0.0052***
	0.0006	0.0005	0.0006	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005
Years of education	0.1247***	0.1247***	0.1247***	0.1247***	0.1247***	0.1247***	0.1247***	0.1247***	0.1247***
	0.0363	0.0363	0.0363	0.0363	0.0363	0.0363	0.0363	0.0363	0.0363
Unemployed	-1.2064*	-1.2064*	-1.2064*	-1.2064*	-1.2064*	-1.2014*	-1.2014*	-1.2014*	-1.2064*
	0.4972	0.4972	0.4972	0.4972	0.4972	0.4977	0.4977	0.4977	0.4972
Log of monthly income	2.5201*	2.5201*	2.5101*	2.5101*	2.5101*	2.5101*	2.5101*	2.5101*	2.5001*
	1.0520	1.0520	1.0510	1.0510	1.0510	1.0510	1.0510	1.0510	1.0430
Childless	-1.0063*	-1.0063*	-1.0063*	-1.0063*	-1.0063*	-1.0063*	-1.0060*	-1.0060*	-1.0063*
	0.4208	0.4208	0.4208	0.4208	0.4208	0.4208	0.4204	0.4204	0.4208
Married couple	1.2490*	1.2490*	1.2490*	1.2489*	1.2489*	1.2489*	1.2489*	1.2489*	1.2490*
	0.5300	0.5300	0.5300	0.5301	0.5301	0.5301	0.5301	0.5301	0.5300
Married couple, children	0.9551*	0.9551*	0.9551*	0.9551*	0.9551*	0.9551*	0.9551*	0.9551*	0.9551*
	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063	0.4063
Health status	0.3762***	0.3762***	0.3762***	0.3762***	0.3742***	0.3742***	0.3742***	0.3742***	0.3762***
	0.0412	0.0412	0.0412	0.0412	0.0416	0.0416	0.0416	0.0416	0.0412
COVID-19 time period	-1.3006*	-1.2954*	-1.3354*	-1.3354*	-1.3354*	-1.3354*	-1.3354*	-1.3354*	-1.3055*
	0.6001	0.6014	0.6133	0.6133	0.6133	0.6133	0.6133	0.6133	0.5939
Region: Punjab	0.5401	0.5401	0.5401	0.5401	0.5401	0.5401	0.5401	0.5401	0.5401
	0.6109	0.6109	0.6109	0.6109	0.6109	0.6109	0.6109	0.6109	0.6109
Region: Sind	0.3836	0.3836	0.3836	0.3836	0.3836	0.3836	0.3836	0.3836	0.3836
	0.6222	0.6222	0.6222	0.6222	0.6222	0.6222	0.6222	0.6222	0.6222

Table 4 (continued)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Region: KPK	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310	0.0905 0.6310
Region: Baluchistan	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Variable	Models								
(Male. COVID-19) _{dummy}	-0.0507*** 0.0012								-0.0508*** 0.0022
(Age. COVID-19) _{dummy}		0.0499*** 0.0020							-0.0732* 0.0326
(Income. COVID-19) _{dummy}			-1.0011* 0.4210						-1.0012* 0.4301
(Married couple. COVID-19) _{dummy}				-1.3336† 0.7674					-1.3346† 0.7673
(Health status. COVID-19) _{dummy}					0.3790* 0.1846				0.3794* 0.1845
(Unemployed. COVID-19) _{dummy}						-2.0989** 0.7888			-2.0991** 0.7887
(Childless. COVID-19) _{dummy}							1.3448* 0.5715i		1.3458* 0.5713
(Education. COVID-19) _{dummy}								0.1530† 0.0800	0.1536* 0.0798
/cut 1	12.1920 5.2952	12.1921 5.2953	12.1922 5.2954	12.1923 5.2955	12.1924 5.2956	12.1925 5.2957	12.1926 5.2958	12.1927 5.2959	21.2020 5.3052
/cut 2	16.9170 5.519	16.9171 5.5192	16.9172 5.5193	16.9173 5.5194	16.9174 5.5195	16.9175 5.5196	16.9176 5.5197	16.9177 5.5198	16.9270 5.529
	Joint test								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

Table 4 (continued)

Variable	Models									Joint test
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
/cut 3	20.4394 6.7667	20.4395 6.7668	20.4396 6.7669	20.4397 6.7670	20.4398 6.7671	20.4399 6.7672	20.4400 6.7673	20.4402 6.7674	20.4494 6.7767	
Number of observations	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000
LR $\chi^2(k-1)$	LR $\chi^2(14)$ =87.92	LR $\chi^2(14)$ =87.94	LR $\chi^2(14)$ =87.96	LR $\chi^2(14)$ =87.98	LR $\chi^2(14)$ =87.98	LR $\chi^2(14)$ =87.99	LR $\chi^2(14)$ =88.00	LR $\chi^2(14)$ =88.05	LR $\chi^2(21)$ =91.08	
Prob > χ^2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	
Pseudo R^2	0.8689	0.8701	0.8911	0.8913	0.8915	0.8917	0.8919	0.8921	0.8969	
Log likelihood	-6.2001	-6.2215	-6.2222	-6.2224	-6.2226	-6.2228	-6.2230	-6.2234	-6.6362	

Note: Regression coefficients are in bold and standard errors appear below them. †, *, **, and *** indicate 10%, 5%, 1% and 0.1% levels of statistical significance, respectively

the distribution of SWB is approximately the same for before the pandemic (2016) and after the pandemic (2020), with more than fifty percent of the observations lie on the left hand side of the satisfaction distributions of 2016 and 2020. Furthermore, the average satisfaction index or the average SWB for our pooled database (i.e. database for pre-COVID-19 period 2016 plus COVID-19 period 2020) is 1.98 (Table 1) which is 23.5% lower than the average SWB equal 2.92 (possible ranges 1–4) observed for the period 2010–2019 by Veenhoven (2020).

Further descriptive information with regard to the composition of our sample is provided in Table 2. It can be seen, for example, that males and females are roughly equally represented in the sample. About half of the respondents live as married couple, about 40% are childless, average age corresponds to 35 years and the average monthly nominal income equals to 243 US dollars for our pooled databases of 2016 and 2020 which is slightly lower than the average monthly nominal income of Pakistan equal to two hundred and fifty US dollars (i.e. 38,603.5 PKR) for the pooled databases of 2016 and 2019 (CEIC, 2020). In addition, the unemployment ratio is 44% percent and the education level is twelve years on average. Generally speaking, our results indicate that the early COVID-19 period (2020) lowers the household's SWB as shown in Table 3.

SWB in Pakistan

The baseline results of our ordered probit regression analysis are shown in Table 4 (baseline results, Model 1, joint test).¹⁰ As expected, SWB increases by level of education, income and health, while self-reported satisfaction levels are lower among those who are unemployed. These findings corroborate with Sen (1997) who hinted at the empowerment which education offers, thereby allowing individuals to develop their own capabilities to look after themselves. This is of particular relevance in developing countries. Guardiola and Garcia-Munoz (2011) found in a similar vein for rural Guatemala that education, access to public services and various livelihood parameters such as the quality of housing and the size of land holdings have a positive influence on self-reported basic needs satisfaction. Other studies support these findings for different countries in the developing world: Kingdon and Knight (2006) for South Africa; Knight et al. (2009) for rural China; Rojas (2004, 2008) for Mexico; Pradhan and Ravallion (2000) for Jamaica and Nepal. Most of the literature tends to find that married couples are happier than those who are living on their own (Easterlin, 2006; Knight et al., 2009). Our results support this. However, during the times of the pandemic, married couples suffered a lot. The happiness literature also suggests that age effects are typically non-linear: that is, happiness first falls over time before recovering sharply towards retirement (Blanchflower, 2008; Shams & Kadow, 2018). Our findings do not support that literature for our pooled data set for pre-corona period, i.e. Survey 2016 (Shams & Kadow, 2018), and COVID-19 period, i.e. Survey 2020, in urban Pakistan. In contrast, we establish an inverted

¹⁰ The linktest is statistically insignificant which suggests there is no omitted-variable bias present in the baseline model (1). Specification test results are given in Table A-3.

U-shaped SWB and age pattern, with a tipping point of 22 years of age, which is also the median age of Pakistan (CIA, 2020), after that a decreasing pattern of SWB with increasing age in general is observed for the current study resulting from our pooled data analysis. Naturally, age-specific turning or tipping points are likely to vary across countries and over time.

There are also several results that are in contrast to the evidence typically established for industrialized countries. For instance, having children seems to contribute positively to SWB. This may be seen as support for the notion of having children in the developing world also as a mechanism to insure against economic risks and as support net for basic needs of the household in particularly in cases of less public support for retirement and old age. On the other hand, there is evidence to suggest that the presence of children in the household may have added to stress and thus less life satisfaction over lockdown periods (Huebener et al., 2021). However, we do not necessarily claim that our results contradict those studies. Rather, we try to make the point that although the pandemic is a global shock, it also has idiosyncratic features. Family structures and social values differ across countries. This is ultimately also reflected in the perceived effects of the COVID-19 crisis on SWB. For instance, our results indicate that during the pandemic being childless contributes positively to SWB.

More generally, our results confirm several findings commonly established in the happiness literature: SWB is higher among married couples, educated, employed, healthy and relatively richer households. In contrast to what holds as stylized fact in developed countries, our result suggests SWB to be lower among males and the childless households compared to the households with children. These findings may be connected: being a married couple and having children may reduce the intensity of feeling lonely which in turn increases the SWB of a household, as indicated by the interaction effect of having children and being married (β_{10}) in Table 4 (baseline results, Model 1, joint test). This may be in line with Hombrados-Mendieta et al. (2013) who find that partner support, family support and social support significantly reduce the three types of loneliness (i.e. romantic loneliness, family loneliness and social loneliness, respectively) and increase SWB. Moreover, we failed to establish statistically significant regional effects on households' SWB for our pooled data set as shown in Table 4 (baseline results, Model 1, joint test).

COVID-19 Effect

We now turn to the main findings of the study. Table 4 (baseline results, Model 1, joint test) showed that SWB was considerably lower in the early days of the pandemic when compared to SWB in 2016. The interaction effect of being male and COVID-19 time period (2020) is negative, indicating that the SWB of males was disproportionately affected. This is in contrast to Purba et al. (2021) who observed females to suffer more from the pandemic. Similarly, the interaction effect of being older than 22 years of age and COVID-19 time period (2020) is negative which indicates that the older people suffered relatively more during the COVID-19 period,

as shown by (β_{14}) . This is in contrast to WHR (2020) which reports particularly younger people to suffer more during the early days of the pandemic. Surprisingly, the interaction effect of the COVID-19 period (2020) with income i.e. the coefficient (β_{15}) indicates that households having above than average income (i.e. 243 US dollars) in the COVID-19 time period reported a larger decrease in SWB compared to those having a lower than average income in pre-corona time period (2016). This is in contrast to Stiglitz (2020), who observes that the (already) low-income families are disproportionately affected during the early days of the pandemic. Similarly, as expected, unemployed people report a higher decrease in SWB during the pandemic and the related lockdown (β_{16}) and (β_{18}) .

At the same time, the educated (i.e. who are having above average education level of 12 years) and childless households appeared to be more resilient during the early days of the COVID-19 pandemic, while being childless people experienced stronger negative effects. Indeed, in response to the COVID-19 pandemic in 2020, social distancing measures have been put in place. Those are necessary to contain the spread of the virus, but on the flipside and seen from a social point of view, they may create a feeling of social loneliness. This may negatively impact on households levels of SWB and noticeably increases the chance of fall into low levels on the well-being scale.¹¹ This feeling may be intensified in general based on the other structures surrounding the family such as unemployment or less social support and thereby facing increased economic uncertainty (Hombrados-Mendieta et al., 2013). Yet, surprisingly married couples experienced stronger adverse effects than non-married couples and this finding further explanation in future research.

Concluding Remarks and Future Research Direction

Using original pooled survey data set for the pre-COVID-19 period (2016) and COVID-19 period (2020) in urban Pakistan, this paper sheds some light on how SWB developed during the pandemic and which groups have been affected most. On a more general note, our results indicate that the pandemic during the year 2020 (coupled with a potential fear of further economic and health suffering) has a considerable, adverse effect on self-reported satisfaction levels in urban Pakistan. These findings are in line with other studies that have expressed worries about the psychological well-being of Pakistan residents during the pandemic (e.g., Khan et al., 2021).

Our paper is closely related to the literature that tries to decompose happiness into various variables such as sex, age, income, education, marital status, children, health and employment status and regional effects. To the extent that SWB is declining during the pandemic period 2020, the question

¹¹ Previous studies (see for example, Tu and Zhang (2015) and the references therein) have shown a negative relationship between loneliness and one's subjective well-being.

arises what other factors can cause aggravating potentially negative effects on perceived satisfaction levels of the households in the study area. Our analysis emphasizes the importance of the socio-economic factors of the sample households that may potentially intensify the negative effects on SWB during the pandemic. For instance, we observe that being male and being older than twenty-two years of age may aggravate the potential negative impact of the pandemic on SWB of the households. Our results are in line with Thompson (2020, February), who report that according to data from China, men and older folks' wellbeing suffered adversely and at a greater rate during the pandemic compared to women and young people. In contrast, according to WHR (2020) life satisfaction is lowest among the youngest age group, more than half a point lower than for the oldest age group during the COVID-19 pandemic; however, no significant differences in happiness between males and females were reported during the pandemic. On the other hand, Khan et al. (2021) suggest that being a female increases the risk of poor well-being due to COVID-19 among Pakistani general population. In addition, our findings suggest that households having a relatively better economic status suffered more from the pandemic in terms of satisfaction with their socio-economic status or SWB compared to their counterparts. One possible explanation could be that the economic status of the households having average or below average income remained low throughout (i.e. before or after the pandemic), so the pandemic didn't hit their well-being as hard as those who were enjoying better economic status before the pandemic. This is in contrast to Stiglitz (2020) who suggests a disproportionate negative impact of the pandemic on households of weaker socio-economic backgrounds. Moreover, our results suggest that married couples and particularly the unemployed people suffered the most during the pandemic in terms of their SWB. Similarly, Purba et al. (2021) observe that married couples and those out of work suffered a lot due to COVID-19 pandemic in Indonesia. It would be nice to compare our results with previous studies on SWB and COVID-19 in urban Pakistan, an issue we couldn't tackle because of data reasons. As it is a newly emerging topic, so no research is available so far in relation to SWB and COVID-19 in urban Pakistan. Such that it might be considered as one of the limitations of our study. Moreover, our study is limited to only the urban areas of Pakistan. Another limitation is that we are only looking at the beginning of the pandemic and it would be interesting to see to what extent people are able to adapt to the new circumstances.

Future research should focus on why SWB in some countries declined to a lesser extent during the pandemic than SWB in other countries. Particularly, it should describe and evaluate how the governments and people from different socio-economic groups all over the world have dealt with the pandemic. Second, future studies should analyze SWB in relation to the COVID-19 pandemic with respect to other socio-economic variables and personal characteristics. Who has been affected and why? In this fashion, we can improve our resilience and be better ready for future pandemics.

Appendix

Table 5 The weighting scheme. The last column reports the corresponding weights for the sample households

Census 2017		Pooled survey, 2016 & 2020		
City	Total population	Sample population	pweights [(TP) _j / (SP) _j]	pweights-normalized [(pw) _j / Σ(pw) _j]
(j)	(TP) _j	(SP) _j	(pw) _j	(pw) [*] _j
Lahore	1,126,285	750	14,835	0.16
Faisalabad	3,204,726	300	10,682	0.12
Rawalpindi	2,098,231	224	9,367	0.10
Multan	1,871,843	150	12,479	0.14
Islamabad	1,009,832	76	13,287	0.14
Karachi	14,916,456	1200	12,430	0.13
Peshawar	1,970,042	180	10,945	0.12
Quetta	1,001,205	120	8,343	0.09
Σ	–	–	–	1

Table 6 Overview of all variables

HAPPINESS OR SUBJECTIVE WELL-BEING	Domain Satisfaction i.e. Satisfaction with socio-economic status of the individual. Ordinal variable that takes values from 1 to 4. For instance 1 stands for <i>Not at all satisfied</i> ; 2 stands for <i>Less than satisfied</i> ; 3 stands for <i>Rather satisfied</i> ; and 4 stands for fully satisfied
SEX	Dichotomous variable that takes value equal to 1 if the individual is a male, and 0 otherwise
AGE	Age of the individuals in years
AGE ²	Square of Age
EDUCATION	Education of the individuals in years
UNEMPLOYED	Dichotomous variable that takes value equal to 1 if the individual is unemployed and 0 otherwise
LN (MONTHLY INCOME)	Monthly absolute nominal income of the individual expressed in natural log
CHILDLESS	Dichotomous variable that takes value equal to 1 if the individual is childless and 0 otherwise
MARRIED COUPLE	Dichotomous variable that takes value equal to 1 if the individual is living as married couple, and 0 otherwise
HEALTH STATUS	Dichotomous variable that takes value equal to 1 if the individual self-reported to be healthy and 0 otherwise

Table 6 (continued)

MARRIED COUPLE. CHILDREN	The interaction effect between being a married couple and having children in a household is allowed to be a dichotomous variable that takes value equal to 1 if the individual is having children and is living as a married couple, and 0 otherwise
COVID-19 TIME PERIOD	Dichotomous variable that takes value equal to 1 if the individual belongs to post corona time period (i.e. 2020), and 0 otherwise
REGION: Punjab, Sind, KPK	Dichotomous variables that take value equal to 1 if the individual lives in Punjab, Sind, or KPK, respectively, and 0 otherwise
SEX. COVID-19 TIME PERIOD	The interaction effect between sex and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual is male and belongs to post corona time period (i.e. 2020), and 0 otherwise
AGE. COVID-19 TIME PERIOD	The interaction effect between age and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual's age is above median age and belongs to post corona time period (i.e. 2020), and 0 otherwise. We establish an inverted U-shaped SWB and age pattern, with a tipping point of 22 years of age, which is also the median age of Pakistan (CIA, 2020)
INCOME. COVID-19 TIME PERIOD	The interaction effect between income and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual's income is above average income and belongs to post corona time period (i.e. 2020), and 0 otherwise. The average income is equal to 243 US dollars (Pooled Survey: 2016, 2020)
MARRIED COUPLE. COVID-19 TIME PERIOD	The interaction effect between married couple and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual is living as married couple and belongs to post corona time period (i.e. 2020), and 0 otherwise
HEALTH STATUS. COVID-19 TIME PERIOD	The interaction effect between health status and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual self-reported to be healthy and belongs to post corona time period (i.e. 2020), and 0 otherwise
UNEMPLOYED. COVID-19 TIME PERIOD	The interaction effect between unemployed and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual is unemployed and belongs to post corona time period (i.e. 2020), and 0 otherwise
CHILDLESS. COVID-19 TIME PERIOD	The interaction effect between childless and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual is childless and belongs to post corona time period (i.e. 2020), and 0 otherwise
EDUCATION. COVID-19 TIME PERIOD	The interaction effect between education and time period is allowed to be a dichotomous variable that takes value equal to 1 if the individual's education is above average education and belongs to post corona time period (i.e. 2020), and 0 otherwise. The average education is equal to 12 years of education (Pooled Survey: 2016, 2020)

Table 7 Specification error test: Baseline model (1)

Specification error test		
Number of obs	=	3000
LR $\chi^2(2)$	=	89.03
Prob > χ^2	=	0.0000
Pseudo R^2	=	0.8866
Log likelihood	=	-6.5433
Dependent variable: SWB		
Independent Variable	coef	Robust Std. Err
-hat	1.3554* [0.040]	0.6606
-hatsq	-0.0856 [0.667]	0.1990
/cut1	12.6173	3.7639
/cut2	17.4176	4.7433
/cut3	20.4978	5.0119

Note. †, *, ** and *** indicate 10%, 5%, 1% and 0.1% levels of statistical significance, respectively; p values are given in square brackets

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Declarations

Ethical Standard Statement The data have been collected by means of surveys with the approval of the Shaheed Benazir Bhutto Women University Peshawar Pakistan, the College Ethics Committee/University Ethics Committee.

Informed Consent The research is purely conducted on academic basis with informed consent of the University Ethics Committee and the respondents.

Conflict of Interest We declare that there is no conflict of interest. All remaining errors are our own.

References

- Angeles, L. (2009). *Do children make us happier?* University of Glasgow.
- Armbruster, S., & Klotzbücher, V. (2020). Lost in lockdown? COVID-19, social distancing, and mental health in Germany. *Covid Economics*, 22, 117–153.
- Béland, L.-P., Brodeur, A., Haddad, J., & Mikola, D. (2020). COVID-19, family stress and domestic violence: remote work, isolation and bargaining power. *IZA Discussion Paper No. 13332*.
- Bittmann, F. (2022). How trust makes a difference: The impact of the first wave of the COVID-19 pandemic on life satisfaction in Germany. *Applied Research in Quality of Life*, 17, 1389–1702.
- Blanchflower, D. (2008). International evidence on well-being. *NBER Working Paper No. w14318*. <https://www.nber.org/papers/w16668>. Accessed 02 Feb 2022
- Blanchflower, D., & Oswald, A. (2011). International Happiness. *NBER Working Paper No. w16668*. <https://www.nber.org/papers/w16668>. Accessed 02 Feb 2022
- Bruni, L., & Porta, P. L. (2007). *Handbook on the Economics of Happiness*. Edward Elgar Publishers.

- Carlquist, E., Ulleberg, P., Fave, A. D., Nafstad, H. E., & Blakar, R. M. (2016). Everyday understandings of happiness, good life, and satisfaction: Three different facets of well-being. *Applied Research in Quality of Life*, *12*, 481–505.
- CEIC. (2020). *Global economic data, indicators, charts & forecasts*. Retrieved from <https://www.ceicdata.com>. Accessed 02-02-2022
- Cheng, T., Powdthavee, N., & Oswald, A. (2017). Longitudinal evidence for a midlife nadir in human well-being: Results from four data sets. *The Economic Journal*, *127*(599), 126–142. <https://doi.org/10.1111/eoj.12256>
- CIA. (2020). *The World Factbook*. Retrieved from <https://www.cia.gov>. Accessed 02 02 Feb 2022
- Clark, A. E. (2006). Born to be mild? Cohort effects do not explain why well-being is U-shaped in age. *PSE Working Papers n-2006-35*.
- Clark, A. E., Frijters, P., & Schields, M. A. (2008). Relative income, happiness and utility: An explanation for the Easterlin paradox and other puzzles. *Journal of Economic Literature*, *46*(1), 95–144.
- CSSE. (2020). *COVID-19 Repository*. Center for Systems and Engineering (CSSE) at the Johns Hopkins University.
- Di Tella, R. D., MacCulloch, R. J., & Oswald, A. J. (2003). The macroeconomics of happiness. *Review of Economics and Statistics*, *85*, 809–827.
- Diener, E. (2009). Subjective Well-Being. In E. Diener (Ed.), *The Science of Well-Being* (pp. 11–58). Springer.
- Diener, E., Suh, E., Lucas, R., & Smith, H. (1999). Subjective well-being: Three decades of progress. *Psychological Bulletin*, *125*(2), 276–302.
- Easterlin, R. A. (2006). Life cycle happiness and its sources: Intersections of psychology, economics, and demography. *Journal of Economic Psychology*, *27*(4), 463–482.
- Fetzer, T. R., Witte, M., Hensel, L., Jachimowicz, J., Haushofer, J., Ivchenko, A., ... Yoeli, E. (2020). Global behaviors and perceptions at the onset of the COVID-19 pandemic. *NBER Working Paper No. 27082*.
- Frey, B. S., & Stutzer, A. (2000). Happiness, economy and institutions. *The Economic Journal*, *110*, 918–938.
- Frey, B., & Stutzer, A. (2002a). *Happiness & Economics*. Princeton University Press.
- Frey, B., & Stutzer, A. (2002b). What can economists learn from happiness research? *Journal of Economic Literature*, *40*(2), 402–435.
- Guardiola, J., & Garcia-Munoz, T. (2011). Fulfilment of basic needs from a subjective point of view in rural Guatemala. *International Journal of Social Welfare*, *20*(4), 393–403.
- Helliwell, J. F. (2002). How's life? Combining individual and national variables to explain subjective well-being. *Economic Modelling*, *20*, 331–360.
- Hombrados-Mendieta, I., García-Martín, M. A., & Gómez-Jacinto, L. (2013). The relationship between social support, loneliness, and subjective well-being in a Spanish sample from a multidimensional perspective. *Social Indicators Research*, *114*(3), 1013–1034.
- Huebener, M., Waights, S., Spiess, C. K., Siegel, N. A., & Wagner, G. G. (2021). Parental well-being in times of Covid-19 in Germany. *Review of Economics of the Household*, *19*(1), 91–122.
- IMF (2020). *Policy Responses to COVID-19*. Retrieved from <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>. Accessed 02 Feb 2022
- Kingdon, G. G., & Knight, J. (2006). Subjective well-being poverty vs. Income poverty and capabilities poverty? *Journal of Development Studies*, *42*(7), 1199–1224.
- Khan, A. A., Lodhi, F. S., Rabbani, U., Ahmed, Z., Abrar, S., Arshad, S., Irum, S., & Khan, M. I. (2021). Impact of coronavirus disease (COVID-19) pandemic on psychological well-being of the Pakistani general population. *Frontiers in Psychiatry*, *11*, 564364.
- Knight, J., Song, L., & Gunatilaka, R. (2009). Subjective well-being and its determinants in rural China. *China Economic Review*, *20*(4), 635–649.
- Knipe, D., Evans, H., Marchant, A., Gunnell, D., & John, A. (2020). Mapping population mental health concerns related to COVID-19 and the consequences of physical distancing: a Google trends analysis. *Welcome Open Research*, *5*, 82–92.
- Latif, K. F., Machuca, M. M., Marimon, F., & Sahibzada, U. F. (2021). Servant leadership, career, and life satisfaction in higher education: A cross-country study of Spain, China, and Pakistan. *Applied Research in Quality of Life*, *16*(3), 1221–1247.
- Lu, H., Nie, P., & Qian, L. (2021). Do quarantine experiences and attitudes towards COVID-19 affect the distribution of psychological outcomes in China? A quantile regression analysis. *Applied Research in Quality of Life*, *16*, 1925–1942.

- Morrison, P. S., Rossouw, S., & Greyling, T. (2022). The impact of exogenous shocks on national wellbeing. New Zealanders' reaction to COVID-19. *Applied Research in Quality of Life*, 17, 1787–1812.
- Pakistan Bureau of Statistics. (2017). *6th Population and Housing Census-2017*. Government of Pakistan, Ministry of Statistics: Statistics Division.
- Pontarollo, N., Orellana, M., & Segovia, J. (2020). The determinants of subjective well-being in a developing country: The Ecuadorian case. *Journal of Happiness Studies*, 21, 3007–3035.
- Pradhan, M., & Ravallion, M. (2000). Measuring poverty using qualitative perceptions of consumption adequacy. *Review of Economics and Statistics*, 82(3), 462–471.
- Purba, F. D., Kumalasari, A. D., Novianti, L. E., Kendhawati, L., Noer, A. H., & Ninin, R. H. (2021). Marriage and quality of life during COVID-19 pandemic. *PLoS ONE*, 16(9), e0256643. <https://doi.org/10.1371/journal.pone.0256643>
- Rojas, M. (2004). Well-being and the complexity of poverty: A subjective well-being approach. *WIDER Working Paper Series RP 2004–29*, United Nations University.
- Rojas, M. (2008). Experienced poverty and income poverty in Mexico: A subjective well-being approach. *World Development*, 36(6), 1078–1093.
- Sen, A. (1997). Editorial: Human capital and human capability. *World Development*, 25(12), 1959–1961.
- Shams, K. (2014). Determinants of subjective wellbeing and poverty in rural Pakistan: A micro-level study. *Social Indicators Research*, 119, 1755–1773.
- Shams, K. (2016). Developments in the measurement of subjective well-being and poverty: An economic perspective. *Journal of Happiness Studies*, 17(6), 2213–2236.
- Shams, K., & Kadow, A. (2018). Happiness across the life span: Evidence from urban Pakistan. *FWU Journal of Social Sciences*, 12(1), 17–30.
- Shavit, T., Sherman, A., & Aisenberg, D. (2021). The effects of the COVID-19 crisis on the subjective well-being of the Israeli population—monitored phase by phase. *Current Psychology*, 40(12), 6300–6307.
- Shek, D. T. L. (2021). COVID-19 and quality of life: Twelve reflections. *Applied Research in Quality of Life*, 16(1), 1–11.
- Stiglitz, J. (2020). *Conquering the great divide*. Finance & Development. IMF.
- Stutzer, A., & Frey, B. S. (2006). Does marriage make people happy or do happy people get married? *The Journal of Socio-Economics*, 35, 326–347.
- Thompson, D. (2020). Coronavirus strikes men, older people the hardest. *HealthDay News*. Retrieved from <https://www.medicinenet.com/script/main/art.asp?articlekey=228505>. Accessed 02 Feb 2022
- Tu, Y., & Zhang, S. (2015). Loneliness and subjective well-Being among Chinese undergraduates: The mediating role of self-efficacy. *Social Indicators Research*, 124, 963–980.
- Tubadji, A., Boy, F., & Webber, D. (2020). Narrative economics, public policy and mental health. *Center for Economic Policy Research*, 20, 109–131.
- Veenhoven, R. (2000). The four qualities of life. *Journal of Happiness Studies*, 1, 1–39.
- Veenhoven, R. (2020). Happiness in Pakistan (PK). *World Database of Happiness*, Erasmus University Rotterdam, The Netherlands. Viewed on 2022-02-02 at worlddatabaseofhappiness.eur.nl
- Veenhoven, R., Burger, M., & Pleeging, E. (2021). Effect of the COVID-19 pandemic on happiness in the Netherlands. *Mens en Maatschappij*, 93(3), 307–330.
- White, S., Gaines, S., & Jha, S. (2012). Beyond subjective well-being: A critical review of the Stiglitz report approach to subjective perspectives on quality of life. *Journal of International Development*, 24(6), 763–776.
- WHR (2020). Global insights on life satisfaction: COVID-19 behaviour tracker. *World Happiness Report*. Imperial College London.

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