

IMPACT OF COVID-19 LOCKDOWN ON BALUCHISTAN AND PUNJAB: A PSYCHOLINGUISTIC ANALYSIS

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ABSTRACT:

Several countries around the globe implemented tight quarantine policies, such as lockdowns in whole cities in order to avoid the fast spreading and transmission of COVID-19 (Corona Virus Disease 2019). At the start of the pandemic, lockdowns were also imposed in Pakistani Cities. The purpose of this study is to look at and study the psychological effect of COVID-19 lockdown on individuals in Pakistan. The goals of the study are achieved by (1) Sampling Facebook users (geo location = Baluchistan, Pakistan) and sampling Facebook users (geo location = Punjab, Pakistan), (2) retrieving published posts of two weeks prior and after lockdown of all users who are in these regions (e.g., the date of lockdown in Pakistan; March 23, 2020); (3) obtaining the psycholinguistic aspects of these posts by using the 'Language Inquiry and Word Count (LIWC) dictionary'; and (4) performing Wilcoxon tests in order to study the changes and variations in the psycholinguistic features of the social media posts prior and after the lockdown in these regions i.e. Baluchistan and Punjab in Pakistan. After the lockdown in these regions, the results revealed that people concentrated greater on "home" and had greater levels of cognitive process. Meanwhile, following the lockdown, the stress level in Punjab, Pakistan reduced and focus on leisure grew. Following the lockdown, there was a greater focus on group, religion, and emotions in Baluchistan, Pakistan. The findings give policy and decision-makers up-to-date information regarding public reactions and their effects concerning psychological conditions in the COVID-19 environment, and they have ramifications for data and evidence based mental health intercessions in both provinces.

Keywords: Effects of COVID-19 lockdown; Public health emergencies; Psycholinguistic analysis; Psychological states

1. Introduction

The COVID-19 pandemic (Corona Virus Disease 2019) is a worldwide health crisis having highly negative impacts on people's physical and mental well-being (Holmes et al., 2020 & Xiang et al., 2020). As an intervention, many governments have implemented stern quarantine policies and measures, such as city lockdowns, closing of schools, restrictions regarding public events, bans on large gathering, and isolation protocols. According to a research published in China, the imposition of lockdown was effectively helpful in delaying the transmission of COVID-19 (Tian, et al., 2020). Stern quarantine, on the other hand, may have detrimental mental health consequences (Zhao et al., 2020 & Barari et al., 2020). The psychological consequences of the lockdown must be investigated since they may have an impact on the implementation of efforts regarding pandemic control. Public's general reactions to SARS (Severe Acute Respiratory Syndrome) during the year 2003 and also the infection caused by the Ebola virus during the year 2014, according to studies, have hampered the controlling of infection to certain level (Shultz et al., 2016 & Person, Sy, Holton, Govert, Liang, 2004). Furthermore, the quarantine policies intensify the psychological burden on individuals (Brooks et al., 2020). The goal of this research is to see in what manner the lockdown impacts people's psychological conditions.

COVID-19's "first case" was confirmed in Wuhan (Huang et al., 2020), the place from where the coronavirus' outburst happened in China. In order to combat COVID-19's spread, a complete lockdown was imposed in Wuhan on January 23, 2020. Wuhan was the very first city in China to be placed under lockdown during the pandemic which had an effect on around a population of 11 million ("COVID-19 Pandemic Lockdown in Hubei", n. d). In the

same way, in Europe, Italy was the first country to spot the pandemic (Rossi et al., 2020) and took the quick actions (e.g., banning flights) (Xue, Chen, Chen, Zheng, Zhu, 2020). COVID-19 had the greatest impact in Lombardy, Italy (Chintalapudi, Battineni, Amenta, 2020). The government of Italy declared a quarantine area covering much of the northern region of Italy, which also included Lombardy, on March 8, 2020. Lombardy's population was more than ten million people, making it comparable to Wuhan. This imposed quarantine was regarded to be the utmost extreme reaction outside of China, in any other location (Agosti, Rellini, 2007). Pakistan, due to being very close as a partner and ally also sharing borders with both China and Iran, was always had a higher possibility of viral spread due to a high frequency of travelling and trading. The virus's import was aided by the greater influx of travellers via air, land, and sea. On February 26, 2020, Pakistan identified the first two verified cases among religious pilgrims. These cases were connected to the traveling history in Iran (Javaid, Javaid, 2020), as well as later traveling history from other nations, especially Saudi Arabia (KSA), UK, and also Italy (Rossi et al., 2020). In light of all of this, Pakistan is being chosen as research region to observe and analyze the effects of the lockdown for this particular study. Recent researches in Italy, India, and China (Rossi et al., 2020; Singhal, Vijayaraghavan, 2020 & Wang et al., 2020) used a self-report survey methodology for the purpose of studying psychological reactions and responses for the duration of lockdown. These studies, on the other hand, depend on surveys and interviews that are conducted retrospectively and over a period of time. These methods have limits when it comes to obtaining psychological states prior to the lockdown. That is, when respondents are asked for recalling a former duration or time in a recollective study, recall bias is unavoidable.

A vital role is played by the social media in order to record the responses, views, as well as mental well-being characteristics of the users of social networks or media (Verduyn, Ybarra, Résibois, Jonides, Kross, 2017). Language usage and also psychosocial emotions in data retrieved from social networking apps have previously been found to be mental well-being or mental health indicators (ibid). Facebook is Pakistan's most popular social networking app in terms of usage.

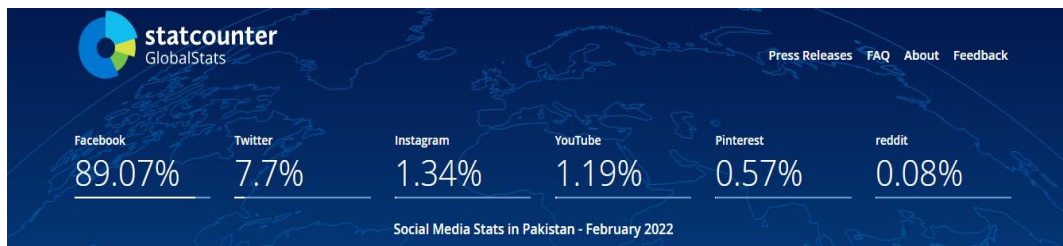


Fig 1: Social Media Stats in Pakistan

For researchers, Facebook provides a large amount of behavioral data of online users. It provides us with elements of content linked to this research and serves as an online platform for communication and expression. Therefore, the study gathered data from Facebook users in Pakistan (Baluchistan and Punjab).

The Language Inquiry and Word Count (LIWC) have been generally utilized in previous studies, and it has been proven as an effective instrument to do the the psychometric analysis (Tausczik, Pennebaker, 2010). There are several versions of LIWC dictionary which includes various languages like English (Pennebaker, Chung, Ireland, Gonzales, Booth, 2007), French (Piolat, Booth, Chung, Davids, Pennebaker, 2011), Italian (Agosti, Rellini, 2007), and Dutch (Zijlstra et al., 2004). Many word categories of linguistic characteristics concerning mental processes, social human actions or behaviors etc. are included in the LIWC lexicon (Tausczik, Pennebaker, 2010). Personal pronouns, for instance, are a word category that indicates attentional allocation (ibid). This study uses LIWC in order to assess citizens' mental and psychological state prior and after Pakistan's lockdown in both Baluchistan and Punjab.

The study's goal is to determine the psychological impacts of the lockdown on Pakistani citizens by using psycholinguistic analysis in Baluchistan and Punjab.

2. Materials and Methods

The posts of active users of Facebook were retrieved as a dataset for this research. In terms of obtaining consent from the target Facebook users, a research protocol was validated. For the purpose of extracting linguistics traits, the LIWC dictionary (PLIWC-Punjab and BLIWC-Baluchistan) was used (Gao, Hao, Li, Gao, Zhu, 2013). In terms of discussing Baluchistan and Punjab users of Facebook, there are a lot of words that are common in LIWC. The study solely looked at word categories that are common between BLIWC and PLIWC in order to make the findings of Punjab and Baluchistan comparable. The following is the method for selecting common categories:

1. The names of the Baluchi LIWC word groups were translated into English by a local Baluchi speaker having fluency in English.
2. Translation of BLIWC word categories' Baluchi names into English is done.
3. The names that are same or common were chosen between the two versions of translation in this research. In the case of names with similar meanings, like "tentative" from BLIWC and "possibility" from PLIWC, the definitions of words from this word category were verified in PLIWC and BLIWC to see if the 2 names represent similar word category.

Dictionary Processing

BLIWC and PLIWC both have some distinctive word categories. By comparison, BLIWC alone has 26 unique word categories, including *quantity unit*, *interjection*, and *tense mark words*. When people of Punjab follow variety of subjects, they conjugate verbs. Furthermore, sentence's subject can be deduced from the verb conjugation. Because subject of a sentence is sometimes dropped, conjugations i.e. *I verb*, *We verb*, *You verb*, *You plural verb*, *He/She verb*, *They verb*, could be compared with more accuracy with the pronouns such as *I*, *We*, *You*, *You plural*, *He*, *She*, *Them*. As a result, conjugations are treated the same way as the pronouns are treated in our research. Furthermore, we discovered that PLIWC has 28 unique word categories. The research kept both BLIWC and PLIWC common word categories, got 51 categories that are common word for further analysis.

2.1. Baluchi Facebook Users' Data

Baluchi samples have been taken from 1160 thousand active Facebook users' data pool (Li, Li, Hao, Guan, Zhu, 2014)

The criteria which have been used for the selection of these active Facebook users from the data pool for this study is as follows:

1. Users who published, on average every day, at least one original from two weeks prior and after the imposition of lockdown (March 23 to May 9, 2020),
2. Single users only, not including any organizations;
3. Using the geo-location in the user profiles to locate at "Baluchistan"

850 Facebook users' data was acquired for this study, and their posts were downloaded from two weeks prior and after the lockdown. The study classified the posts into two categories for every single Facebook user. All published posts before March 23, 2020, for instance, are names as "before lockdown" category. Posts published after the lockdown date till 9 May 2020 are classified as part of the "after lockdown" category. The Text Mind system has been used to retrieve linguistic features (Gao, 2013) from all the sampled users in both categories. The LIWC dictionary, which has 51 common word groups, was then utilized to excerpt psycholinguistic characteristics and determined the word frequency for each of the dictionary's word categories. Word frequencies of 2 categories from 850 Facebook users were included in final dataset.

2.2. Punjabi Facebook Users' Data

The data for this study is compiled from the messages of Punjabi Facebook users, as well as the posts from users whose location was Punjab, Pakistan. 3,650,380 posts are gathered. The following is the selection criteria:

1. A minimum of one original post being published (not a *Shared post*) between March 23 and May 9, 2020 (two weeks prior and after the imposed lockdown).

2. Posts from geo location-Punjab only.

A total of 14,269 posts were collected from 188 different Facebook users for the study. The posts were once again divided into two categories: before lockdown and after lockdown. Furthermore, if just emoji, numbers, web links, "@" and "#" were published in any of the "before lockdown" or "after lockdown" posts, the data of those users was not included. In the end, total Facebook users taken were 120. The study then utilized the same dictionary that was used in the Baluchi Facebook users' data for extracting linguistic attributes of each user from "before" and "after" posts, and determined words frequency for every word category.

Wilcoxon tests were used in order to determine if there are any differences in linguistic features prior and after the lockdown. SPSS (Statistical Product and Service Solutions) 26.0 (International Business Machines Corporation, Armonk, NY, USA), released in 2019, IBM SPSS Statistics for Macintosh, Version 26.0, has been utilized for the purpose of doing data analysis that has been published by IBM (International Business Machines Corporation, Armonk, NY, USA).

3. Results

a. Baluchi Facebook Users

In this research, 51 LIWC categories' word frequencies have been compared prior and after the lockdown in Baluchistan. 39 word categories' frequencies were statistically substantially dissimilar prior and after the Baluchistan lockdown, according to the results. Function (e.g., *I*, *we*), relative (e.g., *motion*, *time*), personal concern (e.g., *home*, *money*, *religion*), affective process (e.g., *negative emotion*, *affect*), social (e.g., *humans*, *social*), and cognitive mechanism words (e.g., *certain*, *inhibition*) respectively were among the 16 significant categories out of 39 having effect size's absolute values higher than 0.2. Table 1 shows that the *first-person plural pronoun* has a higher effect size ($p < 0.001$, effect size $d = 0.674$), indicating that users were using higher number of *first-person plural pronoun* words following lockdown. Furthermore, Baluchistan operators of Facebook were mentioning *religion*, *social*, *negative emotion*, *home*, *affect* following the lockdown more frequently. While, following the lockdown, the frequency of some word groups, like *motion*, *I*, *money*, and *time* were found to be decreased significantly.

Table1. Word categories having substantial differences among "before" and "after" in Facebook ($n = 850$).

SCLIWC	Category Name	Before Lockdown		After Lockdown		Effect Size	
		M1	SD1	M2	SD2	p	d
We	First-person plural Pronoun	0.00116752	0.001512455	0.002442816	0.002243907	0.000 ***	0.674
Motion	Motion	0.025831994	0.019530379	0.018399454	0.009675841	0.000 ***	0.455
Religion	Religion	0.002540956	0.002514763	0.003610935	0.002649443	0.000 ***	0.401
I	First-person singular pronoun	0.012875111	0.007807225	0.010321953	0.006449756	0.000 ***	0.391
Social	Social	0.029713574	0.012688112	0.034711722	0.012327484	0.000 ***	0.375
Youpl	Second-person plural pronoun	0.000306648	0.000688167	0.000724517	0.001041388	0.000 ***	0.364
Negemo	Negative emotion	0.007779827	0.005568892	0.009515898	0.004745883	0.009	0.334
Time	Time	0.027584026	0.011749097	0.02408661	0.009783141	0.000 ***	0.325

Certain	Certain	0.006946484	0.004624027	0.00833264	0.003605291	0.000 ***	0.308
Home	Home	0.002152596	0.002465285	0.002935781	0.002730609	0.000 ***	0.306
Humans	Humans	0.008192476	0.005123264	0.010069752	0.004594877	0.000 ***	0.306
Money	Money	0.007305661	0.007514546	0.005138734	0.004664296	0.000 ***	0.278
Preps	Preposition	0.015862793	0.008304327	0.017603575	0.006868765	0.000 ***	0.247
Discrep	Discrepancy	0.011271717	0.005658052	0.012859929	0.005581719	0.000 ***	0.235
Inhibition	Inhibition	0.002031626	0.002027422	0.002571519	0.001937226	0.000 ***	0.234
Affect	Affect	0.03540768	0.012714117	0.039041458	0.013830077	0.000 ***	0.230

*** $p < 0.001$. BLIWC—the Baluchistan LIWC dictionary; M1—Mean of “before lockdown” category; SD1—Standard Deviation of “before lockdown” category; M2—Mean of “after lockdown” category; SD2—Standard Deviation of “after lockdown” category.

A comparison of the 51B PIWC groups’ word frequencies was done prior and after the lockdown. 10-word categories’ frequencies had a significant change, according to the results. There are five word categories with absolute impact size values more than 0.2 among them, comprising words depicting personal concerns (e.g., *leisure*, *home*), words showing affective process (e.g., *anxiety*), and words showing cognitive mechanism (e.g., *discrepancy*, *possibility*). As demonstrated in Table 2, frequency of the words *discrepancy*, *home*, *leisure*, and *possibility* has increased while, after the lockdown, frequency of *anxiety* appeared to have decreased significantly.

Table2. Words having substantial variations among “before lockdown” and “after lockdown” in Punjab ($n = 120$).

Category (in Punjab) Translated version	M1	SD1	M2	SD2	p	d
Discrepancy	0.009287369	0.012033078	0.013716728	0.017095823	0.001	0.271
Anxiety	0.002470567	0.005926371	0.000921978	0.002132726	0.002	0.245
Home	0.002778005	0.005026976	0.005169261	0.008826728	0.001	0.233
Possibility (tentative)	0.008970828	0.010353838	0.012373076	0.017164373	0.009	0.210
Leisure	0.004710796	0.006753619	0.007065489	0.009775871	0.017	0.207

LIWC—Language Inquiry and Word Count; M1—Mean of “before lockdown” category; SD1—Standard Deviation of “before lockdown” category; M2—Mean of “after lockdown” category; SD2—Standard Deviation of “after lockdown” category.

1.1. Comparison between Baluchistan and Punjab

In this research, the word categories are shown in Table 3 with the frequencies that have changed substantially after the lockdown in both provinces i.e. Baluchistan and Punjab, including ‘*home* and *discrepancy*’. After the lockdown, the usage frequency of ‘*home* and *discrepancy*’ appeared to be increased in both Pakistani provinces.

Table3. Words having substantial variations in both Baluchistan and Punjab

Baluchistan

Punjab

BLIWC-Translated Version	<i>p</i>	Effect Size <i>d</i>	PLIWC-Translated Version	<i>p</i>	Effect Size <i>d</i>
Discrepancy	0.000 ***	0.235	Discrepancy	0.001	0.271
Home	0.000 ***	0.306	Home	0.001	0.233

*** $p < 0.001$.

4. Discussion

To extract psycholinguistic characteristics from the posts of social media users, the current study utilizes LIWC for Baluchistan and Punjab. Examining these characteristics allows us to see how psychological status has changed prior and after the lockdown in both Pakistani provinces.

1.2. Similarities between Baluchistan and Punjab

Following the lockdown, the frequency of some word groups, such as ‘*discrepancy* and *home*’ increased in Baluchistan and Punjab. These linguistic characteristics show that following the lockdown in COVID-19, psychological status of social media users got affected in both Pakistani provinces. Following the lockdowns in Baluchistan and Punjab, the increase in the usage of *home* words is linked to the immobility. According to researchers, mobility and social interactions in Baluchistan plummeted by roughly 80% during lockdown, relating to a baseline which was set on March 1, 2020 (Pepe, 2020). Furthermore, during the lockdown, a 23 percent increase in home location activities in Punjab was reported by Google compared to the baseline (“COVID-19 Community Mobility Reports”, 2020). It can be indicated from these reports that individuals clearly look to be spending more duration of time in homes as compared to spending time outdoors while a lockdown has been imposed, that is clearly shown with a greater usage of *home* words.

Following the lockdown in Baluchistan and Punjab, the usage of *discrepancy* words has increased. Furthermore, during the Baluchistan lockdown, there has been a surge in the usage of *inhibition* and *certain* terms. According to an earlier study, the usage of terms like *discrepancy*, *inhibition*, and *certain* words reflect a shift in the level of the cognitive processing (Miller, 2017). In addition, the cognitive processing shows that people try to create meaning of their own surroundings (ibid). Following the lockdown, residents of Baluchistan and Punjab try to figure out what happened to them. Therefore, through the COVID-19 pandemic, they could modify their attitudes and habits to adapt to changing circumstances.

1.3. Differences between Baluchistan and Punjab

An observation is made that, in the LIWC word categories’ usage, some variances are there between the both provinces i.e. Baluchistan and Punjab.

In Punjab, substantial variations in three word categories are found in this research: that include *tentative*, *anxiety*, and *leisure* words. After the lockdown in Punjab, the *tentative* words’ usage got increased. According to a prior study, People might bring *tentative* language in use (e.g., *possibly*, *maybe*, *perhaps*, *guess*) while feeling hesitant or doubtful regarding their matter (Tausczik, Pennebaker, 2010). During the lockdown, individuals are more likely to employ *tentative* language, according to the findings. Residents’ feelings of loss of recreation, freedoms, and sports are exacerbated by the loss of direct social connections in the duration of the lockdown (Holmes et al., 2020). People are prone to feel uncertain regarding the forthcoming circumstances if they feel that they’ve lost control of their healthy lives. Residents of Punjab shared these kinds of sentiments on the social networking platforms, according to their posts. Though, the study finds no similar change in Baluchistan, implying that people in Baluchistan don’t express their insecurity in their Facebook posts.

Following the lockdown, Punjab’s Facebook users used higher number of *leisure* words in their respective posts, according to the results. Following the lockdown in Punjab, the higher usage of *leisure* words indicates a greater emphasis on *leisure* activities. As per the e-newspaper reporting of Dawn and Daily Express, it was recommended to the citizens by Prime Minister Imran Khan to watch the drama Ertugural to mentally engage themselves during the lockdown. So, the Facebook posts of Punjab users show that watching this drama helped them to boost up their spirits and morale (Sameer, Khan, Nissar, Bandy, 2020) which could be demonstrated in the usage of word *leisure* in their respective posts. In Baluchistan, on the other hand, the study finds no such trend in the usage of *leisure* words.

Because of the pandemic's quick spread, some people may spend more time on Facebook discussing the newest pandemic news and less time on talking *leisure*. Furthermore, given that the Eid-ul-Fitre holidays fell during Pakistan's lockdown time, some citizens might discuss more regarding *leisure* and *recreation* following the lockdown. With these two factors in mind, the research may conclude that there has been no changes in the leisure words' usage in Baluchistan. In Punjab, the *anxiety* words' usage decreased. Self-reported stress is revealed by *anxiety* (Ahmed, Tahir, Siddiqi, Dujaili, 2021).

The findings of the study show that following Punjab lockdown, people have felt lesser stress. Baluchistan, on the other hand, has no change in stress levels. Researchers discovered that South Asian people have a higher level of unrealistic optimism (ul Haq, Shahbaz, Boz, 2020), which could be attributed to the differences in stress levels between the provinces of Punjab and Baluchistan following the lockdown. The findings, however, contradict the existing research (ul Haq, Shahbaz, Boz, 2020; Ahmed et al., 2020). Ul Haq et al., consider that the strict measures of the lockdown in Punjab serve as an unprecedented stressful event (ibid). Besides, Ahmed et al., find that 29% of respondents report different levels of anxiety related to lockdown at home in Baluchistan (Ahmed et al., 2020). These variances might be attributable to the study's distinct research methodology, design, measurements, and timeframe.

Some word categories changed substantially following the lockdown, only in Baluchistan. *First-person plural pronouns, second-person plural pronouns, religion, social, negative emotions, humans, certainty, affect, inhibition, and prepositional words*' usage have increased. Following the Baluchistan's lockdown, in comparison, the usage of *motion, first-person singular pronouns, time, and money* words have decreased.

Following Baluchistan's lockdown, *first-person plural pronouns*' usage and *second-person plural pronouns* rise, whereas the *first-person singular pronouns*' usage falls. Previous research has found that the *first-person singular pronouns* indicate attentional behavior towards one's self, while further pronouns mostly imply regarding the attention towards other persons (Chung, Pennebaker, 2007). Furthermore, "we" can, at times, imply towards a sense of group identification (Simmons, Gordon, Chambless, 2005). According to the results, following the lockdown, people's emphasis shifts from themselves to others and their communities. Also, the higher usage of "we" suggests that following a lockdown, people become more focused towards collectiveness, turn into much more unified, and have greater collective identification, which is also aligned to certain other studies' findings (Holmes et al., 2020). Many scholars have studied Pakistan's 'collectivistic culture' (Li, Delvecchio, Di Riso, Salcuni, Mazzeschi, 2015) for a long time.

Though, there is a contradiction shown in the findings as increased usage of other pronouns and lesser usage of *first-person singular pronouns* indicate a culture in Baluchistan that is collectivistic, while the absence of such a result in Punjab could be linked to an individualist culture; which is an intriguing finding of this study. The findings demonstrate that the pandemic scenario has shifted Punjabis' perspectives, leading them to prefer 'individualist culture' over collectivist culture. According to researchers, people who share collectivist ideals stress greater social coping as a tool to cope better with collective catastrophic occurrences, (ibid) which is similar to the findings of the study.

According to Holmes and colleagues, more use of emotion terms indicates greater immersion in the bad experience (Holmes et al., 2007). The researchers discovered that a higher level of immersion (Tausczik, Pennebaker, 2010) is demonstrated by the usage of emotion words more frequently (*negative emotion* and *affective process words*). As a result, people in Baluchistan may become more emotional and deeply immersed in negative and unpleasant emotions as a result of the lockdown. In Punjab, meanwhile, no similar observation has been made.

In addition, after Baluchistan's lockdown, the study indicates a drop in the usage of *motion* words. The results are consistent with the previous mobility study of Baluchistan [Butt, Ahmad, Misbah, Mallhi, Khan, 2021]., suggesting that stringent mobility control leads to the reduction of movement in Baluchistan. From 15 March 2020 to 26 April 2020, there is an 85 percent drop in the activity in Punjab at transport stations as per the Google's location mobility data, a 57 percent decrease in the activity at the places of work, an 86 percent decrease in the activity at the parks, and a 94 percent decrease in the activity at stores and places of entertainment. Though, the findings show that there is not a substantial change of mobility in the usage of *motion* words in Punjab.

Following the lockdown, Baluchistan's usage of *social* words increased, indicating a focus on social problems and social support (Tausczik, Pennebaker, 2010). People who receive social support feel a lot better regarding their circumstances and believe they have accessibility to the resources to help them (Wang et al., 2020; Yasin, Dzulkifli, 2010). As a result, finding social support during the lockdown is deemed adaptive. In Punjab, however, we don't see such a shift.

As it is shown in Table 1, following the lockdown in Baluchistan, the use of *religion* and *human* words increased, whereas the usage of words *money* and *time* decreased. Death, sex, and money are among the content word groups that directly reflect where people's attention is focused (Tausczik, Pennebaker, 2010). Furthermore, the findings imply that during the lockdown, people pay more attention to humanity and religion and less attention to money and time. Religion, according to a prior study, can elicit more positive and reassuring feelings, and people incline to turn to it in times of crisis, like stress or death (Carone, Barone, 2001). The increased usage of religious terms indicates people's adapting behavior in the duration of the lockdown. Furthermore, the decrease in the usage of *money* phrases or words could be linked to less transaction that is subject to tight restrictions. The study, on the other hand, finds no variations in these word groups or categories among the social media posts of the users in Punjab. This finding implies that following the lockdown, citizens in Punjab do not modify their levels of attention regarding religion, people, time, or money.

Moreover, the studies observe a rise in the usage of *prepositions*. According to prior study, *prepositions* indicate more complicated expression and specific data regarding a topic (Hartley, Pennebaker, Fox, 2003). Prepositions were used more frequently in Baluchistan after the lockdown, indicating larger and much more in-depth debates on Facebook. In Punjab, meanwhile, no such trend has been observed.

The results of the study have significance for policymakers, public health officials, and specialists. Firstly, in light of the measures taken in Punjab as well as Baluchistan to adjust to the changed circumstances following the lockdown, people responsible for decision making must guarantee that the supply chain continues to work normally to ensure people's confidence in their ability to regulate their lives. Furthermore, due to the shifts in citizens' attention following the lockdown, public health authorities and other health practitioners could also adapt their service method and focus. Citizens in Baluchistan, for instance, exhibited increased stress and other negative emotions, therefore public health officials and other health practitioners must bring in use the treatments like the online service for consultation and indoor activities in order to soothe them and help reduce tension and stress. Individuals with already having mental or physical health issues, in particular, require special assistance and support. Citizens in Punjab, on the other hand, didn't appear to show the same levels of stress. The popularization of pandemic preventative information and the protective awareness reinforcing may be increasingly important to be focused by the public health community and other health practitioners.

A few constraints are there regarding this study, Firstly; the study's samples were collected from selected users who were active on the respective social media platform. The results are limited in general to be applied to the entire population. Secondly, both Baluchis and Punjabis speak different languages. Due to the apostrophe, some unavoidable problems might arise when Punjabi text is processed. Thirdly, the IP addresses of users are also not accessible and location data of the users is self-reported. Some studies have used this method for user location identification where the location is Self-reported by the respective users (Li, Wang, Xue, Zhao, Zhu, 2020). Given these disparities, future researches should devise strategies to account for these variances in order to minimize biases while using Facebook data.

2. Conclusion

In this research, psycholinguistic traits changes are studied prior and after the lockdown in both Punjab and Baluchistan. The researchers compared the variances in frequency of LIWC word categories prior and after the lockdown. It is then discovered that the number of word groups for whom frequencies had a substantial change was higher in Baluchistan as compared to Punjab. According to this study, the usage of function, personal concerns, relative, social, affective process, and cognitive mechanism words changed substantially amongst the social media posts of Baluchi users. In Punjab, the study discovered substantial change in the frequency of personal concerns, affective process, and cognitive mechanism words respectively. Following the lockdown, citizens of both provinces i.e. Baluchistan and Punjab had greater attention towards home and display higher degrees of cognitive process. The levels of stress and anxiety in Punjab had decreased and the usage of *leisure* increased. Following the lockdown, residents of Baluchistan displayed greater number of emotional expressions, increased emotions of insecurity and uncertainty, and a greater focus on community and groups. The findings help policy and decision makers, public health officials, and other health practitioners to understand the possibly different impacts of lockdowns on people in two provinces of Pakistan, as well as the culturally based psychological reactions and responses.

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