Mental health and social media during COVID-19 era: Final Report

ACS-3801-050

Dec. 10th, 2021

Brendin Armenti

3039787

Abstract

The COVID-19 pandemic dramatically changed every aspect of lives worldwide since approximately February 2020. This led to implementation of strict lockdowns and social distancing effecting our need for human interaction causing a substantial impact on the global population's mental health. This paper focused on the research of the impact of various countries mental health and perceptions and opinions about social media platforms being a potential hub for mental health resources. In addition, it will cover how conventional methods of mental health treatment can coincide with electronic treatment resources. It was discovered through academic literature reviews that majority of countries observed higher levels of anxiety and depression during extreme lockdown conditions versus after such lockdowns. Moreover, it can also be suggested that social media can assist mental health issues such as through predicting depression diagnoses with word clouds created based on Facebook user's word choices in their posts (Eichstaedt et al., 2018). A local survey was conducted to gauge social media user's perceptions and opinions about mental health resources being placed on social media platforms. Linear regression and correlational analysis were carried out in attempts to make hypotheses and draw conclusions about the results.

Introduction

From February 2020 to present day the world population can attest to the fact that we as a civilization have been put under a great deal of stress due to the COVID-19 pandemic that first appeared in Wuhan, China. The isolation brought upon by the restrictions placed by countries have led to another serious issues regarding mental health of the population at large. Primarily we are seeing higher levels of perceived anxiety and depression as compared to pre-pandemic life. In recent literature, experts claim that "the mental health care of people at different levels carries great importance: promotion, prevention and clinical care" (Jiloha, 2020). Promotion, prevention and clinical care have been headlines

in the news ever since the COVID-19 pandemic became prominent. Different health policies have been put into place to promote positive behaviors that will increase chances of preventing infection from the virus. Social distancing has been the benchmark action that the public has been urged to do to stifle the spread of the virus. Although social distancing has shown to be a very effective strategy to fight the pandemic, it has also highlighted the importance of social contact that is absent with this strategy. This sudden lack of interaction brought on a significant negative increase in the populations perceived mental health as mentioned by Geirdal et al. Geirdal states that "The stringent levels of social distancing policies may also be associated with poorer mental health and psychosocial health" (Geirdal et al., 2021). Social media is an effective to safely interact with others while also following social distancing guidelines. Social media platforms are invaluable information systems that allow the world to connect, share important information, feelings, thoughts all while being some of the most accessible software an individual could use. Primarily social media has been shown to have negative health effectives on its users to the extent that it can "incite anxiety (especially related to false information)" (Drouin et al., 2020). Despite the negative effects of social media use Naslund states "with over 2 billion social media users worldwide, there may be opportunities to use popular social media to improve the treatment, care and services available to people living with mental illness" (Naslund et al., 2019). Social media has the potential to be utilized as a positive mental health resource for health professionals and the general population.

Motivation/Research Purpose

It will be argued that social media platforms themselves can be used to battle mental health issues brought about by the COVID-19 pandemic through providing mental health awareness, gathering of research data, distribution of accurate information and offering industry supported mental health resources. Firstly, highlighting the strength of social media apps ability to be a platform to display information that will help its users learn more about the mental health crisis and how COVID-19 has

fueled the flame. I will discuss how the power of knowledge can be enough to effect change in behavior and change the way mental health is looked at through the lens of social media. Secondly, I will conduct a local questionnaire to obtain data regarding the population's perception on the effects of mental health, their use of social media and how it may have changed since the pandemic began. I will contrast this to other populations operating under different COVID-19 restrictions and different government approaches. Next, I will explore the seemingly inherent nature of the spread of misinformation on social media platforms and its effects of the mental health of a population during pandemic conditions. Lastly, I will pose that the nature of social media platforms themselves can be a suitable environment to offer and use mental health resources. The informality of social media lends itself to those not wanting or able to commit to more traditional avenues of mental health resources. Furthermore, an information system like social media allows healthcare workers to easily and quickly access up-to-date data from users to then improve responsive care.

Literature Review

The differing effects of the COVID-19 pandemic on populations worldwide with varying restrictions should be reviewed to first understand their similarities and differences. This should be completed before further suggestions on implementing mental health tools on social media. Researchers in Malta compared the admission numbers to mental hospitals with COVID-19 numbers during the early stages of the pandemic. It was found that as the COVID-19 case numbers plateaued, admission to mental hospital increased, as shown in Figure 1 below. It was found that this difference in admissions from 2019 to 2020 was statistically significant with a p-value of <0.001 (Bonello et al., 2021). This suggests that social isolating was in a sense preventing people to admit to hospitals as the risk to contract COVID-19 was on the rise. Furthermore, it was observed that those suffering from major depressive disorders seen a significantly decrease in admissions from 2019 to 2020. Thus, highlighting

the idea that perhaps the pandemic enabled those suffering to not admit and continue to follow restrictions concurrently. Moreover, this emphasizes the idea of positive effects of social media based mental health assistance where users potentially can receive mental health aid at home through social media platforms with the correct safety measures in place (Bonello et al., 2021).

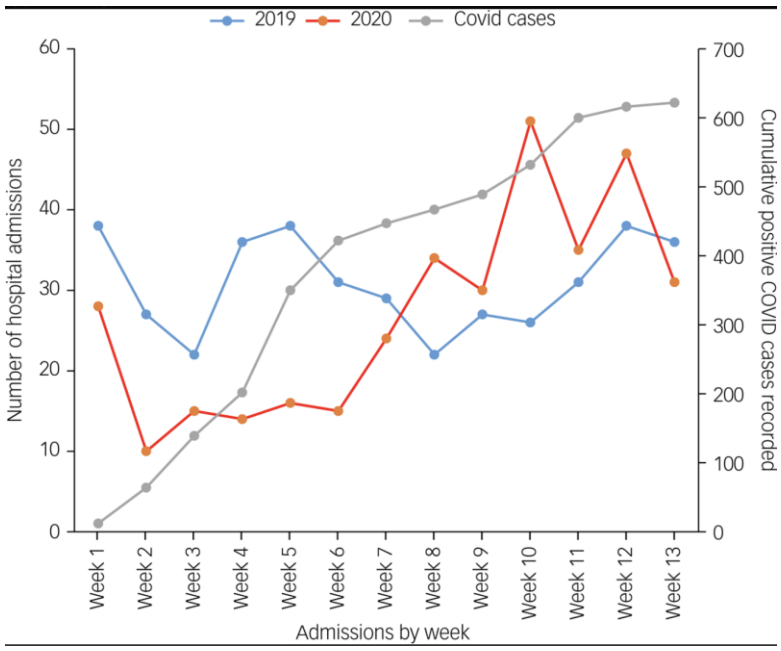


Figure 1. The total number of admissions occurring every week in both years, in comparison with positive COVID cases recorded in Malta 2020.

Another article described a research questionnaire completed in Saudi Arabia by health care workers regarding mental health issues during and after strict lockdown. The researchers discovered higher scores on anxiety (GAD-7) and depression (PHQ-9) measures during the lockdown questionnaire when compared with the questionnaire given 8 weeks after hard lockdown ended (Fageera et al., 2021). Thus, front line health care workers were significantly affected mentally during the pandemic. Specifically, those health care workers in high-risk areas, having an infected family member, and involved in active screening scored higher on the anxiety and depression measures (Fageera et al., 2021).

In Austria, researchers distributed a survey four weeks after the beginning of heavy lockdown period and were compared with pre-COVID surveys done in Germany in 2008, Austria in 2006 and 2014. It was recognized that women consistently scored higher on depression and anxiety measures, PHQ-9 and GAD-7 respectively (Pieh et al., 2020). Although both genders scored higher when compared to pre-COVID times for depression, Figure 2 below shows that 16.4% of men scored above a moderate threshold and 25.1% of women scoring above that same threshold. Similar were the results with regards to anxiety measures. 14.1% of men and 23.4% of women scored above the moderate threshold on the GAD-7 score (Pieh et al., 2020). Thus, more research must be completed to see if mental health social media resources need to be gender focused to achieve better health outcomes. In addition, the individuals that were the most affected were of ages of 35 and younger (Pieh et al., 2020), which correlates with majority of respondents of the local survey I performed. Thus, it suggests that there is an opportunity for social media platforms to take advantage of the most effected age bracket as primary users.

		Gender			
		Male	**Female**	**Total**	**Statistic**
PHQ-9 score n (%)	<10	397 (83.6)	397 (74.9)	7964(79.0)	χ^2 (1) = 11.36; p = .001
	≥10	78 (16.4)	133 (25.1)	211 (21.0)	
GAD-7 score n (%)	<10	408 (85.9)	406 (76.6)	814 (81.0)	χ^2 (1) = 14.05; p < .001
	≥10	67 (14.1)	124 (23.4)	191 (19.0)	
WHOQOL BREF (psychological domain)	M	72.75	67.21	69.83	t(1003) =4.74; p < .001; g = 0.30
	SD	18.56	18.45	18.70	

Figure 2. This figure shows number of participants and percentage of depression, anxiety and quality of life scores which were above the moderate threshold based on gender.

To further explore populations mental health experiences across the globe during the pandemic, a survey in Portugal was distributed to observe respondent's behaviors and activities. The survey was distributed in the sixth week of confinement, where the population was undergoing a large change in daily life. Most respondents were primarily affected by not interacting with loved ones and work/study colleagues (Vieira & Meirinhos, 2021). Furthermore, the respondents would cope with quarantine measures by conversing with non-household friends/relatives and 79% also used social media. Conversely, primarily using social media and avoiding watching the news "contributed to lower levels in all mental health dimensions" (Vieira & Meirinhos, 2021). This complicates the usage of social media could be used to benefit users' mental health since utilizing social media as a news source has shown to be beneficial, as found in my survey, and detrimental to users. This suggests more progress must be completed to obtain more benefits of using social media as a mental health tool than consequences.

Moreover, a Netherlands study was completed after restrictions were lessened from the strictest to observe loneliness and mental health changes. Giizen found a positive association between mental health status and social loneliness (Gijzen et al., 2020). It was hypothesized that the maintenance of deep connections despite social distancing during the pandemic could aid in prevention to loneliness and mental health symptoms like depression. Although the entire population may not be able to have access technologies such as social media, these platforms and government officials can view these technologies as an effective tool to maintain these connections. In addition, there is opportunity to consider resources for clinical help or online help groups to be added to use social media platforms as the domains for this topic.

This idea is reinforced by notion that social media does provide users a sense of belonging when a face-to-face interaction is available. This fact alone can lead to a positive effect on various outcomes

such as depression, anxiety, and loneliness. This is further showcased in the same article with the finding that “Facebook-based social support and depression found that social support drawn from Facebook was predictive of lower levels of depression, depressive mood and symptomology” (Gilmour et al., 2019). Furthermore, another study observed that when participants with higher depression levels disclosed negative feelings on Facebook, resulted in support from this platform (Park et al., 2016). Thus, taking part or sharing online can lead to people obtaining conventional help.

Furthermore, another study done in Ireland found similar results regarding mental health among the population during the COVID-19 pandemic. Psychiatric consultants were asked about their experiences in their own practices during the second month of lockdown. It was discovered that rates of referral and relapse saw increases in many of the common mental health diagnoses such as generalized anxiety, self-harm/suicide-ideation and depressive disorders as seen in Figure 3 below (Kelleher et al., 2021). Authors also presumed the increased rates were due to patients lacking the face-to-face support with patients delaying support until restrictions were lessened. Thus, returning patients later had worsening mental health status than previously (Kelleher et al., 2021).

In your experience, in the second month, compared to the first month of lockdown (27th March–24th April) have you seen any difference in the rate of new referrals or relapses of the following?

	Significantly increased	Increased	No difference	Decreased	Significantly decreased
Generalised anxiety	26% ($n = 33$)	53% ($n = 69$)	19% ($n = 24$)	1% ($n = 1$)	2% ($n = 2$)
Self harm/ suicidal ideation	13% ($n = 17$)	52% ($n = 68$)	30% ($n = 39$)	5% ($n = 6$)	<1% ($n = 1$)
Depression (new onset)	12% ($n = 16$)	45% ($n = 58$)	40% ($n = 51$)	3% ($n = 4$)	0% ($n = 0$)
Health anxiety	28% ($n = 36$)	43% ($n = 55$)	27% ($n = 34$)	2% ($n = 2$)	0% ($n = 0$)
Panic attacks/panic disorder	12% ($n = 15$)	42% ($n = 54$)	44% ($n = 56$)	2% ($n = 2$)	1% ($n = 1$)
Depression (relapse major depressive disorder)	10% ($n = 13$)	39% ($n = 49$)	48% ($n = 61$)	3% ($n = 4$)	0% ($n = 0$)
Psychotic disorders (relapse)	5% ($n = 6$)	35% ($n = 43$)	59% ($n = 73$)	2% ($n = 2$)	0% ($n = 0$)
Alcohol abuse disorders	10% ($n = 12$)	34% ($n = 43$)	51% ($n = 64$)	5% ($n = 6$)	0% ($n = 0$)
Substance abuse disorders	10% ($n = 12$)	29% ($n = 36$)	58% ($n = 72$)	3% ($n = 4$)	0% ($n = 0$)
Psychotic depression (new onset or relapse)	9% ($n = 11$)	25% ($n = 32$)	65% ($n = 82$)	1% ($n = 1$)	0% ($n = 0$)
Psychotic disorders (new onset)	6% ($n = 7$)	23% ($n = 29$)	70% ($n = 87$)	2% ($n = 2$)	0% ($n = 0$)
Depression (relapse BPAD)	3% ($n = 4$)	22% ($n = 28$)	72% ($n = 91$)	2% ($n = 3$)	0% ($n = 0$)
Mania (relapse BPAD)	5% ($n = 6$)	21% ($n = 27$)	71% ($n = 89$)	2% ($n = 3$)	0% ($n = 0$)
Mania (new onset)	2% ($n = 3$)	17% ($n = 22$)	77% ($n = 97$)	3% ($n = 4$)	0% ($n = 0$)
Eating disorders	5% ($n = 6$)	17% ($n = 22$)	76% ($n = 97$)	2% ($n = 3$)	0% ($n = 0$)
Intellectual disability and autism	12% ($n = 15$)	16% ($n = 20$)	68% ($n = 86$)	3% ($n = 4$)	1% ($n = 1$)

Figure 3. Perceived rate of referral or relapses from second month to first month.

Moreover, the mental health of students was observed in the United Kingdom study where over 50% answered either quite a lot or very much indeed when asked if their mental health had been impacted by the pandemic (Evans et al., 2021). This finding follows the trend in previous studies that the pandemic has had negative effects on mental health in general. A significant difference in depression scores was found again when comparing baseline (pre pandemic) with lockdown data. Details of this test including results with scores of 8 or higher on the measure. At the baseline, only 13.8% satisfied this criterion compared to 34.3% at lockdown, seeing a very significant increase of over 20% difference (Evans et al., 2021). Results for of this comparison are shown below in Figure 4.

Variable	N	Baseline (M±SD)	Lockdown (M±SD)	L-B (M)	F	p	η_p^2
Anxiety	251	9.35±4.28	9.42±4.47	0.072	0.076	0.782	0
Depression	259	4.33±3.26	6.31±3.74	1.972**	84.236**	<0.001	0.25

Figure 4. Depression scores from baseline (pre pandemic) compared to scores from test during lockdown. A significant difference was found with a p-value of <0.001.

To conclude the research of my first research question, it should be noted the likelihood of comorbidity occurring with regards to mental health diagnoses. It has been found that depressive symptoms were positively associated with increases in anxiety levels, thus early diagnoses and treatment options can help reduce worsening of multiple mental health issues (Evans et al., 2021). Moreover, the use of social media for these beginning stages of seeking help could be a great goal for health care agencies to strive for simply due to the nature of social media and its popularity.

To answer the third research question, one of the benefits of social media is it is widely available to populations with internet access but this not the case for a large percentage of the world's population. Conversely, recruitment for online mental health programs has seen more success in some cases versus traditional methods. A study discovered the most impactful methods for recruitment on Facebook were by boosting posts and promoting fan pages (Kayrouz et al., 2016). With the cost of recruitment for both methods being similar, it was found that the recruiting done via Facebook was 2.5 times faster as shown in Figure 5 below (Kayrouz et al., 2016). This allows for potential to positively impact a large population's mental health quickly without being costly to companies.

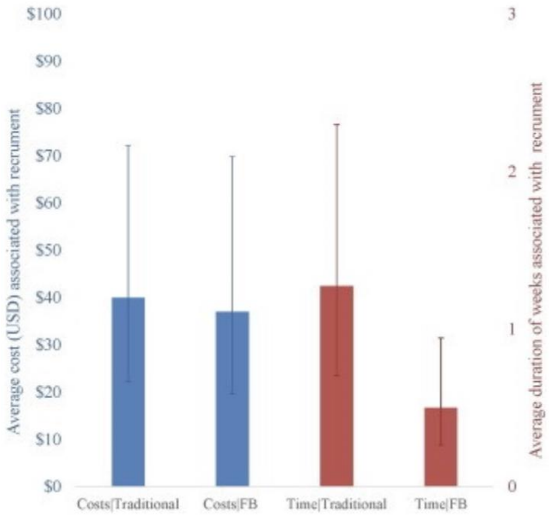


Figure 5. Diagram comparing cost and time of two different recruitment types (traditional and Facebook).

Due to the ongoing nature of the pandemic, there is substantial literature available to review on COVID-19 in addition to information concerning social media being used to spread awareness, gather research information, produce behavioral change and educate. In one article a study was completed which "validated the use of social media platforms to improve public health protection through public awareness" (Al-Dmour et al., 2020) with respect to research completed in Jordan. This research involved a questionnaire that was completed via social media which asked users about their opinions on COVID-19 and social media, regarding providing information, increasing awareness, or if it led to behavioral change as a preventive measure.

Another study observed how parents perceived their children's and their own use of social media while linking the use to anxiety levels. The authors revealed that despite the already high social media usage among those aged 13 to 44, the time increased steadily over the course of the pandemic. Although social media use was perceived as a stressor, it was mentioned that proper use of social media could be used in a way to direct users to benefit their own mental health. Drouin implies that "governments, health care systems, and human welfare agencies to also leverage social media to

advertise psychological support services to customers" (Drouin et al., 2020). Social media can be viewed as a source of information and can both increase and decrease individuals fear and anxiety. Al-Dmour notes that social media has potential to reduce the spread of pandemics hence, decreasing populations fear and anxiety levels (Al-Dmour et al., 2020). It is evident that there is sufficient interest in utilizing social media platforms for resources to battle mental health symptoms with 85% of survey participants expressing interest in mental health programs delivered through social media. In addition, areas of promoting overall health and wellbeing (72%) and for coping with mental health symptoms (90%) was also emphasized by participants (Naslund et al., 2019). There is potential for health care professionals to benefit from the prompt interactions that occur on these applications since "nearly three quarters of all mental illnesses begin in early adulthood" (Naslund et al., 2019). Another tool health care professionals can access is through tracking tool technology that is similar in social media apps. This technology would record mood levels or activity logs that would be easily accessible for professionals to further adjust treatment plans. Researchers noted that "multiple technologies have automated this process primarily through cell phone text messaging or mobile applications" (Ralston et al., 2019) which improves the communication between patient and professional. Thus, social media platforms are a relevant home for these types of tools especially during pandemic era with an isolated population.

Another benefit is that social media allows users with mental illness to remain anonymous while receiving the benefits of group participation (Naslund et al., 2016). This allows users to share with others in the comfort and security of their home and receive help in a non-conventional way as there is a stigma still behind mental illness. It allows users to "choose their own level of engagement and the extent to which they interact with others" (Naslund et al., 2016) to manage their social anxieties, putting the user in control. The article also put forward the point that because peer-to-peer interaction is user driven, it is more challenging to pass judgement about a user's situation and stigmatize it because

processes are anonymous. Figure 6 below shows the operations involved in visiting an online community of peers.

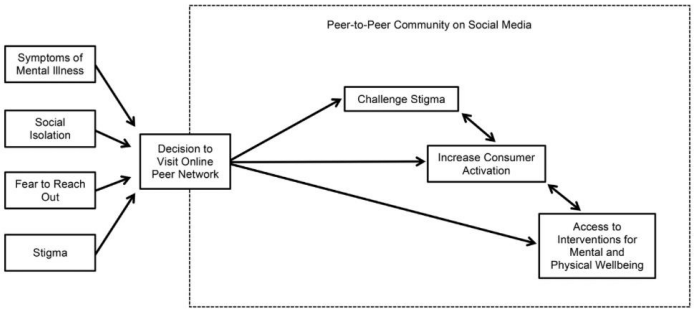


Figure 6. Conceptual model illustrating potential operatories that may be available to individuals with serious mental illness after visiting an online community of peers. (Naslund et al., 2016).

Thus, people with mental health issues were more likely to search for formal assistance after discussing or searching with peers online (Naslund et al., 2016). It was also noted that hearing other stories users are more likely to feel confident and empowered to make their own health care decisions. Furthermore, it can be noted that majority of individuals that were willing to post mental health related personal views are young adults with mental illness as compared to those without (Gowen et al., 2012).

Another benefit of utilizing social media with mental health resources is of how the data that flows through social media websites. By analyzing the words people utilized in their posts, researchers were able to predict depression in some cases (Eichstaedt et al., 2018). Targeted ads have been a predominant discussion topic of much discussion with negative connotations. A positive reaction may occur if individuals understood these ads were based on analysis linguistic data and was utilized for helping with mental illness. Some word clouds were positively associated with future depression diagnoses as shown in the Figure 7 below (Eichstaedt et al., 2018). Eichstedt noted that common use of first-person singular nouns were also good predictors for depression and hypothesized that these individuals have a preoccupation with the self.

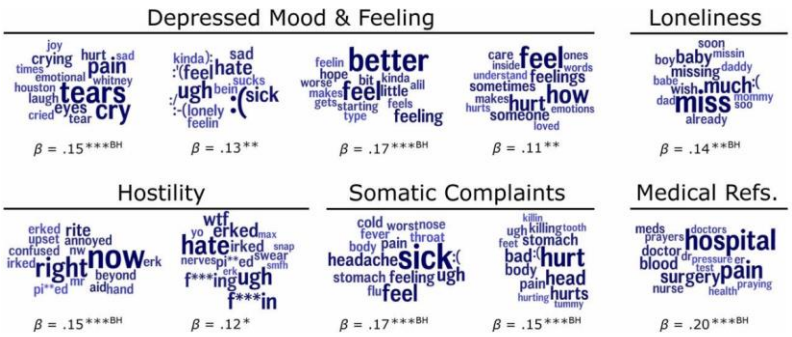


Figure 7. Ten language topics that are most positively associated with a future depression diagnosis while controlling for a number of variables including (age, gender and race).

Digital therapy has gained traction in the last decade with more and more positive feedback. One study looked at the possible effectiveness of such monitored social networks to assist youth with many types of mental health issues, for example, "Moderated Online Social Therapy (MOST) platform is another example of an innovation that offers personalized therapy combined with social connections (Torous et al., 2021). Another consideration is the possibly and execution of chatbots provided mental health support. Although the prospect has mixed opinions, chatbot's may "open up the possibility to improve detection of distress and in turn provide momentary interventions to those who feel less comfortable with face-to-face contact" (Torous et al., 2021).

There are several areas where improvements need to be made to make apps that help with depression and anxiety more effective. One is ensuring involvement of relevant healthcare professionals in the development of apps and embedding apps within local health care settings, that is, the problem of interoperability as well as security (Torous et al., 2021). More research must go into how to integrate digital apps into conventional practices for mental health. Having mental health resources on social media platforms will require many streams of communication to facilitate effective and safe data transfer. "The Substitutable Medical Applications and Reusable Technologies (SMART) on Fast Healthcare Interoperability Resources (FHIR), often called SMART on FHIR, has emerged as the likely standard that can ensure privacy as well as interoperability" (Torous et al., 2021). A type of two factor

authentication linking social media platforms to certified mental health care professionals at least but be the base line to keep users' data secure.

Moreover, with regards to bipolar disorder "several recent studies have shown that smartphone-based active and passive data reflect digital markers of symptoms" making the use of mobile based social media a beneficial option (Torous et al., 2021). Thus, the data generated from smartphone use could prove to be important for patients with mood disorders. Consistent use is often a problem for health service-related applications online, but if they are integrated into a popular social media platform, this should bypass that issue.

A vital aspect of a social media-based platform for mental health is that it must be designed encompassing the wishes of as many stakeholders wishes as possible. This should not prove much difficultly considering the platforms are able to freely share data, thus learning about your user base's needs. This allows the design of mental health systems can be formulated in a user-centered way. Figure 8 below contains common digital health technologies in mental health.

Technology	Main uses	Future potential	Key issues	Priority actions
Digitally-delivered - psychological therapies	Self-management of symptoms of depression and anxiety	Precision interventions; preventive treatments	Lack of engagement; saturated consumer marketplace; claims outpacing clinical evidence	Establishing evidence base for use in people with diagnosed mental disorders
Smartphone data (active + passive)	Tracking mood and lifestyle in people with major - depression, bipolar - disorder and psychosis	Machine learning towards individualized risk prediction and delivery of targeted "just in time" interventions	Lack of validation across studies; establishing trust around data usage	Data standards for interoperability and validation; industry-academic partnerships around access
Social media	Population level monitoring of mood and anxiety	Real time monitoring of mental health state; - accessible peer support	Sampling bias; access to data from social media companies; privacy	Industry-academic partnerships and privacy standards

Figure 8. Summary points related to common digital health technologies in mental health (Torous et al., 2021).

A commonly encountered downfall of conventional mental health practices is the underwhelming quality of feedback. Online social media resources could break this barrier for feedback, while simultaneously "providing a medium which is readily amenable to data collection and analysis allowing rapid interpretation of feedback" (Shepherd et al., 2015). For these reasons mental health resources placed on social media has the potential to bridge the communication gap that conventional methods have seen for many years.

Research Questions

1. How does mental health of population differ country to country with regards to covid-19 prevention approaches? How do these varying approaches effect the populations mental health?
2. What are the perceptions and experiences of social media users on the idea of or utilizing social media platforms to fight mental health?
3. How can resources found on social media platforms be used in addition to conventional mental health practices?

Research Methodology/Design

I searched for articles regarding my first research question from 2019-present using a combination of keyboards listed in Figure 9 below. (Each rectangle represents one part of the search criteria. The lines separating rectangles represent AND). Literature regarding my third research question were also found using keywords below but the time frame was extended from 2010-present.

Google scholar, Web of Science database and the University of Winnipeg Library database were the primary search engines used.

"social media" OR "social media platform"
anxiety OR depression OR stress OR "mental health "OR "mental illness"

pandemic OR covid-19 AND mental illness OR mental health
peer support OR resources
restrictions OR measures AND “covid-19" OR “pandemic
“perceived outcome”
“perceived behavior”
Misinformation

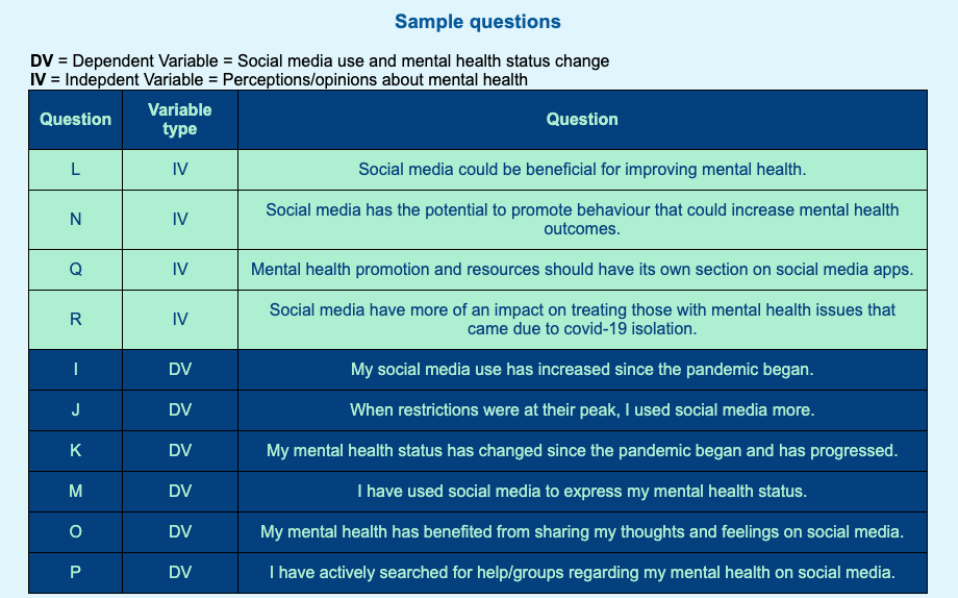
Figure 9. Search terms used during the duration of this project.

Data Collection Methods

A questionnaire was distributed on my personal social media accounts in an effort to target relevant users for the nature of the topic being studied, social media users. Due to the fact that the survey was completed anonymously, no debriefing was required after the fact.

The goal of the questionnaire was to try to learn about the user's social media use before and during COVID-19 in addition to discovering more about perceptions of mental health and its connection on social media. The questionnaire consisted of 20 questions (excluding the informed consent question) with an estimated completion time of approximately 5 minutes. The questionnaire was conducted using Google Forms and configured so no email addresses were collected with the submissions thus, making the questionnaire anonymous.

All questions were formed in Likert format (Strongly agree – Strongly disagree) and then later recoded to a numeric form for analysis. A sample of the questions that were divided by variable type and utilized in the linear regression test are displayed below in Figure 10.



Sample questions

DV = Dependent Variable = Social media use and mental health status change
IV = Indepdent Variable = Perceptions/opinions about mental health

Question	Variable type	Question
L	IV	Social media could be beneficial for improving mental health.
N	IV	Social media has the potential to promote behaviour that could increase mental health outcomes.
Q	IV	Mental health promotion and resources should have its own section on social media apps.
R	IV	Social media have more of an impact on treating those with mental health issues that came due to covid-19 isolation.
I	DV	My social media use has increased since the pandemic began.
J	DV	When restrictions were at their peak, I used social media more.
K	DV	My mental health status has changed since the pandemic began and has progressed.
M	DV	I have used social media to express my mental health status.
O	DV	My mental health has benefited from sharing my thoughts and feelings on social media.
P	DV	I have actively searched for help/groups regarding my mental health on social media.

Figure 10. A screenshot from the HTML webpage that was produced to display sample questions from the questionnaire.

Data Analysis

Using PSPP, I first had to find out if the data was normally distributed in order to determine if linear regression or ordinal regression would be appropriate. I combined the related questions to the independent variable and dependent variables and computed mean values for each. A preliminary linear regression with residuals was generated followed by a descriptive test analyzing this test was completed which helped me identify my data as being normally distributed. Thus, a linear regression test was completed. Based on the screenshot from the webpage I created to show the results of the test as displayed in Figure 11 below, I was able to conclude that social media use and mental health status change could not be predicted by knowing one's perceptions and opinions of mental health because there was no significant regression (β=0.19, $R2$=-0.01, p=0.375).

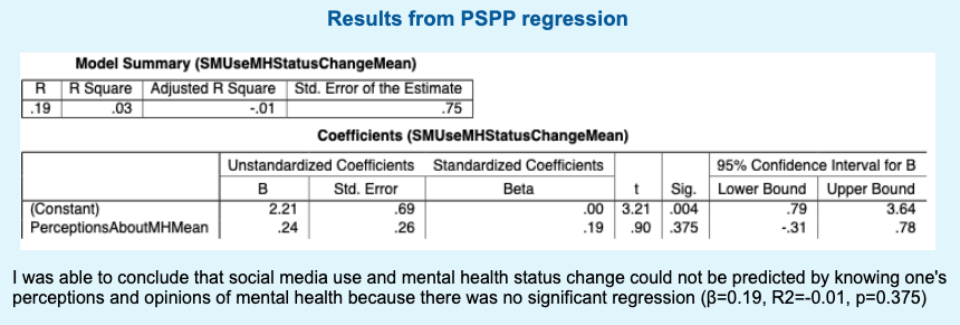


Figure 11. Displaying screenshot from webpage displaying results from linear regression analysis.

The correlations that were completed on the data resulted in both interesting revelations and logical results. For example, Figure 12 below shows a moderate correlation (Pearson's r=.687, p=.000) between questions 'I' (My social media use has increased since the pandemic began) and 'J' (When restrictions were stricter, I used social media more). This was expected as it makes sense that users had used more communicated based tools such as social media due to the COVID-19 isolation restrictions in addition to that type of behavior already in place. It was plausible that social media use would see a further increase as more restrictions were implemented because isolation became more common.

Correlations

		VAR009	VAR010
VAR009	Pearson Correlation	1.000	.687
	Sig. (2-tailed)		.000
	N	25	25
VAR010	Pearson Correlation	.687	1.000
	Sig. (2-tailed)	.000	
	N	25	25

Figure 12. Results of Pearsons correlation test between questions I(VAR009) and J(VAR010). This resulted in a moderate correlation.

Furthermore, Figure 13 displays a moderate correlation between questions K(My mental health has changed since the pandemic began and has progressed) and N(social media has the potential to promote behavior that could increase mental health outcomes) with a Pearsons correlation of .495 and

a p-value of .012. This significance suggests that if users themselves notice changes in their own mental health, it gives them hope that social media has the potential to be of help to those with mental health issues. The idea that one must experience something first before having a strong opinion on it seems to apply here.

Correlations

		VAR011	VAR014
VAR011	Pearson Correlation	1.000	.495[a]
	Sig. (2-tailed)		.012
	N	25	25
VAR014	Pearson Correlation	.495[a]	1.000
	Sig. (2-tailed)	.012	
	N	25	25

a. Significant at .05 level

Figure 13. Results from Pearsons correlation test between questions K(VAR011) and N(VAR014). A moderate correlation was found.

In the case of the results, 66% of participants answered that they have not actively searched for help/groups regarding their mental health status. Moreover, this result correlated with "I have used social media to express my mental health status" as the majority of the participants 64% disagreed with the statement. I found a moderate correlation, as shown in Figure 14 below, of .660 with a p-value of .000 which directly links to the similar results from both questions by the respondents. User's most likely would not be searching for help/groups for mental health on social media if they were not prepared to or have not shared their mental health status in that way in the past.

		VAR013	VAR016
	N	25	25
VAR016	Pearson Correlation	.660[a]	1.000
	Sig. (2-tailed)	.000	
	N	25	25

a. Significant at .05 level

Figure 14. Results from Pearsons correlation test between questions M(VAR013) and P(VAR016). A moderate correlation was found.

Ethical Considerations, Risks and Benefits

An undertaking of this type of significance comes with ethical considerations, risks and benefits. Ethically, the idea of having sensitive data housed on social media platforms is something that many users might shy away from. The sensitive data including the user's conversations and personal information including one's medical data must be accessible, accurate and secure to ensure the best possible outcomes for users. The certainty of secure data will be without doubt a significant barrier as to why we have not seen a large-scale implementation of this idea already.

Furthermore, interpolation is significant because social media platforms themselves are not currently configured to interact with third party resources that would be involved in supplying mental health assistance. This is of vital importance because there are potentially countless mental health resources that would need to be connected to one central social media platform, and they all require secure, efficient and accurate transfer of their information.

Another consideration of my proposal is the comfort in which users can shift their mental model of what occurs on social media. Some users may consider mental health resources on social media while others may overlook this idea. This topic should have been included more in a set of questions in my survey to learn about this.

Strengths and Limitation of Study

A strength of my study is that the information was laid out in a straightforward way that leads awareness to an important problem that has been inflated by the onset of the pandemic. Another strength of the study was the analytical insights I obtained and expressed in the way that may provoke ideas from others on how to improve mental health outcomes.

One limitation of my study was that I only gathered data during my survey from my own social media accounts, which are more likely people like me, with western values. This perhaps biases the responses by not preventing myself making generalizations to other non-western social media platforms including Weibo in China. Furthermore, the local distribution of the survey does not consider the wide variety of cultural differences with varying viewpoints and opinions. Due to time and resource limitations, the survey sample size was small which would have made my results more creditable. Furthermore, it came to my attention as I progressed through the stages of the project, that the focus of my topic was too broad. This prevented suggestions of distinct ideas for implementation, thus should be concentrated in future studies.

References

Al-Dmour, H., Masa'deh, R., Salman, A., Abuhashesh, M., & Al-Dmour, R. (2020). Influence of Social Media Platforms on Public Health Protection Against the COVID-19 Pandemic via the Mediating Effects of Public Health Awareness and Behavioral Changes: Integrated Model. *Journal of Medical Internet Research*, *22*(8), e19996. https://doi.org/10.2196/19996

Bonello, F., Zammit, D., Grech, A., Camilleri, V., & Cremona, R. (2021). Effect of COVID-19 pandemic on mental health hospital admissions: Comparative population-based study. *BJPsych Open*, *7*(5). https://doi.org/10.1192/bjo.2021.975

Drouin, M., McDaniel, B. T., Pater, J., & Toscos, T. (2020). How Parents and Their Children Used Social Media and Technology at the Beginning of the COVID-19 Pandemic and Associations with Anxiety. *Cyberpsychology, Behavior, and Social Networking*, *23*(11), 727–736. https://doi.org/10.1089/cyber.2020.0284

Eichstaedt, J. C., Smith, R. J., Merchant, R. M., Ungar, L. H., Crutchley, P., Preoţiuc-Pietro, D., Asch, D. A., & Schwartz, H. A. (2018). Facebook language predicts depression in medical records. *Proceedings of the National Academy of Sciences*, *115*(44), 11203–11208. https://doi.org/10.1073/pnas.1802331115

Evans, S., Alkan, E., Bhangoo, J. K., Tenenbaum, H., & Ng-Knight, T. (2021). Effects of the COVID-19 lockdown on mental health, wellbeing, sleep, and alcohol use in a UK student sample. *Psychiatry Research*, *298*, 113819. https://doi.org/10.1016/j.psychres.2021.113819

Fageera, W., Babtain, F., Alzahrani, A. S., & Khrad, H. M. (2021). Lock-Down Effect on the Mental Health Status of Healthcare Workers During COVID-19 Pandemic. *Frontiers in Psychiatry*, *12*, 1407. https://doi.org/10.3389/fpsyt.2021.683603

Geirdal, A. Ø., Ruffolo, M., Leung, J., Thygesen, H., Price, D., Bonsaksen, T., & Schoultz, M. (2021). Mental health, quality of life, wellbeing, loneliness and use of social media in a time of social distancing during the COVID-19 outbreak. A cross-country comparative study. *Journal of Mental Health*, *30*(2), 148–155. https://doi.org/10.1080/09638237.2021.1875413

Gijzen, M., Shields-Zeeman, L., Kleinjan, M., Kroon, H., Van der Roest, H., Bolier, L., Smit, F., & De Beurs, D. (2020). The Bittersweet Effects of COVID-19 on Mental Health: Results of an Online Survey among a Sample of the Dutch Population Five Weeks after Relaxation of Lockdown Restrictions. *International Journal of Environmental Research and Public Health*, *17*(23), 9073. http://dx.doi.org/10.3390/ijerph17239073

Gilmour, J., Machin, T., Brownlow, C., & Jeffries, C. (2019). Facebook-Based Social Support and Health: A Systematic Review. *Psychology of Popular Media Culture*, *9*. https://doi.org/10.1037/ppm0000246

Gowen, K., Deschaine, M., Gruttadara, D., & Markey, D. (2012). Young adults with mental health conditions and social networking websites: Seeking tools to build community. *Psychiatric Rehabilitation Journal*, *35*(3), 245–250. https://doi.org/10.2975/35.3.2012.245.250

Jiloha, R. (2020). COVID-19 and Mental Health. *Epidemiology International*, *05*(01), 7–9. https://doi.org/10.24321/2455.7048.202002

Kayrouz, R., Dear, B. F., Karin, E., & Titov, N. (2016). Facebook as an effective recruitment strategy for mental health research of hard to reach populations. *Internet Interventions*, *4*, 1–10. https://doi.org/10.1016/j.invent.2016.01.001

Kelleher, E., Geary, E. H., Tawfik, M., Ní Mhuircheartaigh, E., Gavin, B., Wall, M., Lyne, J. P., Doherty, A. M., & McNicholas, F. (2021). Consultant psychiatrists' experience of the impact of the COVID-19

pandemic on mental health services. *Irish Journal of Psychological Medicine*, 1–13. https://doi.org/10.1017/ipm.2021.41

Naslund, J. A., Aschbrenner, K. A., Marsch, L. A., & Bartels, S. J. (2016). The future of mental health care: Peer-to-peer support and social media. *Epidemiology and Psychiatric Sciences*, *25*(2), 113–122. https://doi.org/10.1017/S2045796015001067

Naslund, J. A., Aschbrenner, K. A., McHugo, G. J., Unützer, J., Marsch, L. A., & Bartels, S. J. (2019). Exploring opportunities to support mental health care using social media: A survey of social media users with mental illness. *Early Intervention in Psychiatry*, *13*(3), 405–413. https://doi.org/10.1111/eip.12496

Park, J., Lee, D. S., Shablack, H., Verduyn, P., Deldin, P., Ybarra, O., Jonides, J., & Kross, E. (2016). When perceptions defy reality: The relationships between depression and actual and perceived Facebook social support. *Journal of Affective Disorders*, *200*, 37–44. https://doi.org/10.1016/j.jad.2016.01.048

Pieh, C., Budimir, S., & Probst, T. (2020). The effect of age, gender, income, work, and physical activity on mental health during coronavirus disease (COVID-19) lockdown in Austria. *Journal of Psychosomatic Research*, *136*, 110186. https://doi.org/10.1016/j.jpsychores.2020.110186

Ralston, A. L., Andrews III, A. R., & Hope, D. A. (2019). Fulfilling the promise of mental health technology to reduce public health disparities: Review and research agenda. *Clinical Psychology: Science and Practice*, *26*(1), e12277. https://doi.org/10.1111/cpsp.12277

Shepherd, A., Sanders, C., Doyle, M., & Shaw, J. (2015). Using social media for support and feedback by mental health service users: Thematic analysis of a twitter conversation. *BMC Psychiatry*, *15*(1), 29. https://doi.org/10.1186/s12888-015-0408-y

Torous, J., Bucci, S., Bell, I. H., Kessing, L. V., Faurholt-Jepsen, M., Whelan, P., Carvalho, A. F., Keshavan, M., Linardon, J., & Firth, J. (2021). The growing field of digital psychiatry: Current evidence and the future of apps, social media, chatbots, and virtual reality. *World Psychiatry*, *20*(3), 318–335. https://doi.org/10.1002/wps.20883

Vieira, D. A., & Meirinhos, V. (2021). COVID-19 Lockdown in Portugal: Challenges, Strategies and Effects on Mental Health. *Trends in Psychology*, *29*(2), 354–374. https://doi.org/10.1007/s43076-021-00066-2