# Exploring the Effects of Loneliness, Internet Addiction on Adults' Well-being During COVID-19 Quarantine

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**Abstract.** As the COVID-19 pandemic continues to hit in repeated spread waves, the population worldwide continues to be under stressful lockdowns and quarantine and getting more dependent on Information and Communication Technology (ICT). Evidence is needed to identify the mental health impact of quarantine on loneliness and Problematic Internet Use (PIU) and to find the major risk factors. This study explores the association of loneliness, internet addiction and related factors such as the number of hours spent online, and the quality of the relationship of people spending the quarantine with on well-being using the Internet addiction scale, UCL loneliness short scale, and WHO-5 measure. The data from a sample of 613 adults from the Middle East were analyzed through SPSS using correlation and regression. The results showed an association between loneliness, internet addiction and low well-being; the number of hours spent online was negatively correlated with well-being. and the quality of the relationship with people spending the quarantine was positively associated with well-being. The results confirm the negative consequences of internet addiction, loneliness and spending long hours online on well-being during quarantine. and the importance of the quality of the relationship with whom one is spending quarantine with in supporting well-being.

**Keywords:** Internet Addiction, PIU, COVID-19, Loneliness, Mental Health, Quarantine, well-being.

## 1    Introduction

The "Acute Respiratory Syndrome Coronavirus 2" (COVID-19) remains a major threat to the public health and medical service providers, and lockdown measures and quarantine are still being enforced by governments worldwide. Evidence of the psychological harm of lockdown, social isolation, and quarantine on the well-being of people are emerging, allowing policymakers to identify the vulnerable.

Given the buffering role of Information and Communication Technology (ICT) on the effect of social isolation on mental health, and as an immediate mitigation measure, mental health advisors recommended (increasing) the use of the ICT to reduce anxiety and feelings of social isolation [1, 2]. However, this can lead to excessive internet use which in turn can lead to social/occupational dysfunctionalities. Other

mental health concerns include the feeling of loneliness and internet addiction, which can include social media addiction, gaming addiction, problematic pornography use, and Problematic Internet Use (PIU).

This paper extends previous work in [3]. The first purpose of the current study was to determine the risk factors for mental disorders during the lockdown periods of COVID-19. The second aim was to identify the levels of mental health, loneliness, and PIU during the same period. The study provided insight for ICT policymakers to set proper policies to mitigate and/or prevent ICT-related mental health disorders.

The current study investigated risk factors for mental health, loneliness, PIU, and their association, utilizing the WHO-5 well-being scale (WHO-5), the Revised UCLA Loneliness Scale (ULS-6), and PIU scores based on the Internet Addiction Test (IAT). The study investigated the association of loneliness, internet addiction and WHO-5 scores under the regulated quarantine during the peak periods of COVID-19. Data were collected from adults from the Middle East region. In addition, analyses were used to study other contributing factors such as the number of hours spent online and the quality of the relationship with those whom they were spending lockdown with.

The paper is organized as follows. The literature review in Section 2 lists recent work on the prevalence and predictors of mental health disorders related to COVID-19 lockdowns and quarantine. The section also includes the available work explicitly focusing on loneliness and/or PIU disorders during the pandemic. The methodology and results are described in Section 3. The paper is closed with discussions and conclusions in Section 4.

## 2 Literature Review

### 2.1 Mental Health Under COVID-19 Quarantine

Early calls to study and mitigate the effect of the COVID-19 pandemic on mental health were made [1]. Alongside this, a body of research has emerged that has evaluated the well-being of people during COVID-19 and analyzed risk factors. The research [4,5] has provided evidence from previous pandemics on the psychological impact of quarantine and suggested a set of urgent intervention measures to reduce it. Many studies have reported negative effects of COVID-19 lockdowns on the mental health of people in China [6-10], Italy [11,12], Middle East [13-15], and globally [16-18].

The earliest studies appeared from China, where the first wave of the virus happened. This research [8,9] analyzed the prevalence and predictors of post-traumatic stress symptoms and other mental health outcomes during the COVID-19 outbreak. They identified the presence of home quarantine as a significant risk factor and other factors such as female gender, health status, and poor sleep quality. Other research [14] showed the differences in the predictors of distress during the COVID-19 pandemic across Iran and China, emphasizing the importance of culture, health system, employment conditions, and other factors that vary between countries. Furthermore, Reagu et al. [15] conducted a similar analysis within Qatar's institutional quarantine and isolation centers, focusing on immigrants rather than native populations. In their study, higher distress and anxiety levels were strongly related to individuals who experienced a lack of contact with family or were poor socio-economic groups. Parcani et al. [11] found that long periods of isolation, limited physical space, and local

contagion rates were critical moderating factors between Italians mental health and social isolation. On the other hand, the study in [12] found an association between discontinued working activity and the mental health outcomes of the survey, including post-traumatic stress symptoms, depression, and anxiety. Special consideration of the mental health of children under COVID-19 quarantine has been the focus of many papers, e.g. [19-22].

## 2.2    Loneliness and PIU Under COVID-19 Quarantine

The strict lockdown measures being placed worldwide have accompanied an unpresented demand for online connection communication for all aspects of life. It has even been suggested to use ICT and the internet as a buffering tool during lockdowns and quarantine. Yet, the psychological impact of social isolation and abnormal levels of internet usage on the feelings of loneliness and internet addiction is under-represented. Several studies have recently focused on the effect of isolation and quarantine on internet misuse and the feeling of loneliness in people during the COVID-19 pandemic [3, 23-25]. AlHunaidi et al. [3] showed the association between loneliness and PIU and other factors such as the number of hours spent online and the quality of relationship with the person(s) one is spending lockdown with. Boursier et al. [23] also report that the feelings of loneliness reinforced by the isolation predicted both the social media addiction and anxiety.

While both [24] and [25] analyzed the links between isolation, loneliness and the PIU of adolescents, only the results of [24] confirmed the association. Sista et al. [25], on the other hand, found that the prevalence of internet addiction among adolescents was higher than that of adults during COVID-19. However, they discovered that quarantine did not elevate the risk of internet addiction due to other psychological factors such as internalization, externalization, and that it had prosocial effects.

As the pandemic continues to hit in repeated waves, the population worldwide will continue to be under stressful lockdowns and quarantine and will be more dependent on ICT. Evidence is needed to identify the mental health impact of quarantine and the compulsive use of the internet, and to find the significant risk factors. This paper provides new evidence on the prevalence of well-being and its correlation to loneliness and PIU under quarantine measures in the Middle East region.

## 3    Methodology

The study was conducted online using Qualtrics on a sample of Arab adults; most of the participants were from Kuwait and Saudi Arabia. The study investigated the cross-sectional association of loneliness, internet addiction and well-being during the restricted lockdown related to the COVID-19 pandemic.

### 3.1    Measures

#### 4.1.1 Internet Addiction Test
The questionnaire was displayed bilingually in both English and Arabic to reach the most significant number of participants. The questionnaire contained the IAT,

consisting of 20 items that examined the participant's internet use in the previous month for non-academic and non-job-related use, by evaluating addiction based on DSM-IV pathological gambling criteria [26]. The individual answered the questions using Likert scales ranging from 0= not applicable to 5= always. The results identify three categories of internet users based on their online dependency: regulated internet users, problematic internet users, and internet addicts. The scale's Arabic version was adapted from [27]. The IAT items in Arabic are given in Table A.1 in the Appendix.

### 4.1.2 UCLA Loneliness Scale

In this study, the Revised UCLA Loneliness Scale (UCLA-R) was used in its shortened form. The scale assesses loneliness as well as social isolation [28]. It is one of the most extensively used loneliness scales. The original scale included 20 statements, but the abridged variant ULS-6 had six UCLA-R items. Five questions were written negatively, and one in a positive way [29]. The items were answered on a 4-point Likert scale ranging from 1= never to 4 = often. A high score suggests a greater sense of loneliness. The ULS-6 was translated into Arabic and tested for validity on 19 persons in a pilot study. The Cronbach's alpha reliability of the translated scale was .76. The Arabic translation of ULS-6 is given in A. 2 in the Appendix.

### 4.1.3 World Health Organization Well-Being Index (WHO-5)

In 1982, the WHO European Regional Office developed a 28-item questionnaire to measure positive and negative well-being. Further analysis identified ten items of the 28-item WHO as the key indicators of positive and negative well-being in a single uni-dimensional scale. [30] This has subsequently been shortened to a five-item scale. The WHO Regional Office in Europe initially presented the WHO-5 at a WHO meeting in Stockholm in 1998 as part of the DEPCARE initiative on well-being measures in primary health care. [31]

The WHO-5 is a widely used tool in clinical and research studies for assessing subjective well-being. The questionnaire consists of 5 positively phrased items, and the participants consider their feelings in the last five weeks on a Likert scale (0= never, 5= always). 'I have felt cheerful and in good spirits, and 'I woke up feeling fresh and rested'. The scale has adequate validity as a screening tool for depression and an outcome measure in clinical studies, and it has been successfully used in a variety of research disciplines. The WHO-5 scale in Arabic is given in A. 2 in the Appendix.

Demographic data were collected on age, gender, nationality, marital status, number of children, number of hours spent online and self-rating the quality of the relationship with the person(s) they were spending the lockdown with. The WHO-5 scale in Arabic is listed in A. 3 in the Appendix.

### 3.2    Participants

The study involved 618 volunteers from Kuwait (N = 459), Saudi Arabia (N = 99), and other Arab nations (N = 60). 68.9% of the participants were female, and 53 % were between the ages of 19 and 35. 55.2 % of the participants were single in terms of marital status, 39.6 % were married, and 4.9 % were divorced.

### 3.3 Analysis Strategy

All statistical analyses were conducted through SPSS 25. Data met the assumption of normality. Pearson univariate correlations were conducted to assess the strength of the associations of UCLA-R loneliness score (dependent variable), internet addiction IAT score (dependent variable), the number of hours spent online (dependent variable), quality of the relationship with whom the participants spending the lockdown with (dependent variable), and the sum score of WHO (dependent variable) using Cohen standards [32]. Following the correlation, regression was conducted to assess the influence of the variables on the sum of the WHO score.

### 3.4 Results

### 3.4.1 prevalence

**Prevalence of Well-Being.** Well-Being scores were classified based on the WHO scale. Scores below 13 were classified as poor well-being and is an indication for testing for depression.

• 10.1% of the participants in the poor well-being or depressed category.

• 89.9% of the participants were in good or average well-being.

**Prevalence of Loneliness.** Loneliness scores were divided using the median ($median = 13$. Scores above 13 were classified with low loneliness scores, scores below 13 were classified with high loneliness scores. 51% ($n = 318$) of the participants scored low in loneliness.

**Prevalence of Internet Addiction.** Internet Addiction scores were classified based on the IAD test classifications [33], scores $0 - 49$ indicates controlled internet use, scores $50 - 79$ indicates problematic internet use and scores $80 - 100$ indicates internet addiction.

• 89.1% of the participants controlled their internet use.

• 9.9% of the participants were problematic internet users.

• 1% of the participants are internet addicts.

### 3.4.2 Correlation

Initial analyses examined the correlations between the individual variables. These are shown in Table 1.

**Table 1:** Correlations Between the Key Variables.

|  | WHO Total | IAT | Loneliness | Hours Online |
|---|---|---|---|---|
| **WHO Total** | 1.000 | | | |
| **IAT** | -.362** | 1.000 | | |
| **Loneliness** | -.404** | .417** | 1.000 | |
| **Hours Online** | -.266** | .489** | .249** | 1.000 |
| **Quality of Relationship** | *.346** | -.266** | -.280** | -.166** |

The WHO well-being measure was significantly correlated with the IAT score, loneliness and hours on the internet. IAT scores, loneliness and hours on the internet were all positively correlated. Having a good relationship with those in isolation was positively correlated with the WHO score and negatively correlated with IAT, loneliness and hours on the internet.

### 3.4.3 Regression

The subsequent analysis involved a regression to determine what remained significant when the other variables were included in the model. The results of this regression are shown in Table 2. The analysis showed that all variables remained significant even when they were included in the same analysis. In summary, high IAT scores, high loneliness and a high number of hours spent on the internet were associated with lower WHO well-being scores. In contrast, a good relationship with those sharing isolation was associated with a higher WHO well-being score.

## 4 Discussion and Conclusion

The correlation and regression results showed a significant association and prediction of loneliness and internet addiction. Loneliness was found to be associated with a low well-being score. The number of hours spent online was significantly associated with the loneliness score, confirming [34] hypothesis that internet use may be high due to feelings of loneliness and inadequate social support. However, the findings oppose those of Girdhar et al. [35], who found that greater internet use predicts less loneliness under lockdown due to online social platforms. Loneliness was negatively associated with the quality of the relationship with the people spending quarantine with, the results suggesting that the quality of face-to-face relationships predicts psychological well-being and low loneliness.

Internet addiction was significantly correlated with the quality of the relationship with whom the person is spending lockdown. This finding supports

**Table 2:** Regression Examined Predictors of the WHO well-being Score.

|  | B | SE | Beta | t | Sig. |
|---|---|---|---|---|---|
| **(Constant)** | 33.524 | 2.055 | | 16.310 | .000 |
| **IAT** | -.050* | .013 | -.152 | -3.836 | .000 |
| **Loneliness** | -.370 | .052 | -.257 | -7.157 | .000 |
| **Hours Online** | -.228 | .091 | -.092 | -2.505 | .012 |
| **Quality of Relationship** | .055 | .009 | .218 | 6.458 | .000 |

previous studies that internet addicts and problematic internet users have low social skills and social support. However, the preference of problematic internet users to virtual relationships could be related to lack of social skills, self-esteem, and isolation [36,37]. Internet addiction was negatively associated with well-being, confirming the findings from previous studies on the negative associations and consequences of internet addiction. The results indicate that the quality of the relationship with whom a person spent lockdown predicts internet addiction, supporting the findings of [26] that internet addicts prefer using the internet rather than spending time with their family members or spouses.

Overall, the results reveal that during quarantine, the main well-being support comes from the quality of the relationship with the people one is spending quarantine. The internet plays a primary buffering role in connecting people, especially under restricted circumstances during the lockdown. However, the overuse of the internet predicts negative well-being. Further studies needed, preferably with a longitudinal design, to investigate the casualty of internet addiction and loneliness on well-being during the quarantine.

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# Appendix

**A. 1:** The IAT items in Arabic.

| 5 = دائما | 4 = غالبا | 3 = كثيرا | 2 = بين حين وأخر | 1 = نادرا | 0 = لا ينطبق | العبارة |
|---|---|---|---|---|---|---|
| | | | | | | ببساطة اجب عن العبارات التالية عن طريق اختيار الاجابة المقاربة لك. فقط اجب عن الوقت الذي تمضيه على الانترنت لأسباب غير اكاديمية او تتعلق بالعمل. |
| | | | | | | 1- غالبا ما تقضي وقت في الانترنت أكثر مما نويت؟ |
| | | | | | | 2- كثيرا ما تهمل الاعمال المنزلية لتقضي وقت أكثر على الانترنت |
| | | | | | | 3- تفضل الاستمتاع بالإنترنت على علاقتك مع شريك حياتك؟ |
| | | | | | | 4- غالبا ما تنشئ علاقات جديدة مع أعضاء من مستخدمي الانترنت؟ |
| | | | | | | 5- كثيرا ما يشتكي الاخرون من كمية الوقت الذي تقضية على الانترنت؟ |
| | | | | | | 6- يتأثر معدلك الدراسي ودرجاتك بسبب الساعات التي تقضيها على الانترنت؟ |
| | | | | | | 7- كثيرا ما تتصفح رسائلك (الايميل، رسائل نصية، الرسائل الفورية) قبل البدء بعمل شيء اخر؟ |
| | | | | | | 8- أحيانا يتأثر ادائك أو انتاجك سلبيا بسبب الانترنت؟ |
| | | | | | | 9- غالبا ما تصبح متحفظا او دفاعي في حال سألك شخص ماذا تفعل على الانترنت؟ |
| | | | | | | 10- كثيرا ما تحاول تجاهل الافكار المزعجة والهروب لما يريحك على الانترنت؟ |
| | | | | | | 11- تجد نفسك تنتظر الفرصة للعودة للإنترنت مرة اخرى؟ |
| | | | | | | 12- غالبا ما تفكر أن الحياة بدون الانترنت ستكون مملة وبدون بهجة؟ |
| | | | | | | 13- أحيانا ترد بعنف أو تصرخ أو تبدو منزعجا عندما يقاطعك أحد خلال استخدامك للإنترنت؟ |
| | | | | | | 14- غالبا ما تصحو طوال الليل بسبب استخدام الانترنت؟ |
| | | | | | | 15-غالبا ما تتخيل الرجوع للإنترنت عندما تكون بعيدا عنه ؟ |
| | | | | | | 16- غالبا ما تجد نفسك تردد عبارة "بعد عدة دقائق سأوقف اتصالي بالإنترنت" |
| | | | | | | 17- كثيرا ما تحاول تقليل الوقت الذي تقضيه على الانترنت وتفشل. |
| | | | | | | 18- كثيرا ما تحاول اخفاء حقيقة الوقت الذي تمضية على الانترنت. |
| | | | | | | 19- غالبا ما تفضل امضاء الوقت على الانترنت بدل الخروج والاستمتاع مع الاخرين. |
| | | | | | | 20- غالبا ما تشعر انك مكتئب، ومتوتر، ومزاجي وانت غير متصل على الانترنت، وتختفي هذه المشاعر فور العودة الى الانترنت. |

**A. 2:** ULS-6 short loneliness scale in Arabic.

| غالباً | أحياناً | نادراً | أبداً | |
|---|---|---|---|---|
| | | | | 1. إلى أي مدى تشعر بأنك تفتقد الصحبة؟ |
| | | | | 2. إلى أي مدى تشعر بأنك وحيد ؟ |
| | | | | 3. إلى أي مدى تشعر بأنك عضو في صحبة أو جماعة ؟ |
| | | | | 4. إلى أي مدى تشعر بأنك في عزلة عن الآخرين؟ |
| | | | | 5. إلى أي مدى تشعر بأن الناس من حولك ولكنهم ليسوا معك؟ |
| | | | | 6. إلى أي مدى تشعر بأنك غير سعيد لأنك منعزل عن الاخرين؟ |

**A. 3:** The WHO-5 scale in Arabic.

في الأسبوعين الماضيين

| (6) قليل من الوقت- بتاتاً | (5) قليل من الوقت نادراً | (4) أقل بقليل من نصف الوقت | (3) أكثر بقليل من نصف الوقت | (2) أكثر الاحيان | (1) دائماً | |
|---|---|---|---|---|---|---|
| | | | | | | 1- كنت سعيداً وبمزاج جيد |
| | | | | | | 2- كنت أشعر بالهدوء أو الاسترخاء |
| | | | | | | 3- كنت أشعر بالحيوية والنشاط |
| | | | | | | 4- كنت أستيقظ نشطاً ومرتاحاً |
| | | | | | | 5- كانت أيامي مليئة بأمور محببة إلى قلبي |