ARTIGO ORIGINAL/ORIGINAL ARTICLE

Feelings of Loneliness due to COVID-19 Pandemic's Home Confinement/Quarantine and its Relationship with Anxiety Traits and Empathy

Sentimentos de Solidão devidos à Quarentena por COVID-19 e a sua Relação com Traços Ansiosos e Empatia

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Abstract

Introduction: We aimed to understand how loneliness and empathy relate to home confinement/quarantine and to explore the relation between loneliness, anxiety traits and empathy.

Methods: This is an observational cross-sectional cohort study including 364 participants. We delivered an online questionnaire composed by UCLA Loneliness scale (assessing loneliness), STAI-Y (assessing trait anxiety), and IRI (assessing empathy). For the statistical analysis we performed descriptive and inferential statistics. When not-otherwise specified, two-tailed $p<0.05$ was considered significant.

Results: The mean for IRI was 60.46 (SD: 10.88), for UCLA Loneliness scale was 32.70 (SD: 8.11) and for STAI-Y was 42.01 (SD: 12.29). We found no statistically significant correlation between empathy and loneliness ($p>0.05$). Nonetheless, loneliness and anxiety traits were positively correlated ($p<0.05$), and psychiatric comorbidity was associated with higher levels of loneliness and anxiety traits ($p<0.05$).

Conclusion: Our results suggest social cohesion, solidarity and continuous online contact may have played a significant role on preservation of empathy and feelings of loneliness. The fact that loneliness may be felt in a positive way (such tightening household relationships) can explain the non-correlation between the last and empathy. Ultimately, the positive correlation between anxiety traits and loneliness underlines the vulnerability of previously anxious subjects, enhancing the importance of promoting mental health during the pandemic.

Resumo

Introdução: Pretendemos compreender como a solidão e a empatia se relacionam com o período de quarentena/confinamento e explorar a relação entre solidão, empatia e traços ansiosos.

Métodos: Trata-se de um estudo observacional e transversal, incluindo 364 participantes. Foram distribuídos questionários de auto-preenchimento em formato *online*, compostos pelas escalas UCLA *Loneliness scale* (avaliar a solidão), STAI-Y (avaliar traços ansiosos) e IRI (avaliar empatia). Recorremos a métodos estatísticos descritivos e inferenciais para a análise estatística dos dados obtidos. Foi considerado estatisticamente significativo um $p<0,05$.

Resultados: A média na escala IRI foi de 60,46 (±10,88), na UCLA *Loneliness scale* obtivemos uma media de 32,70 (± 8,11) e na STAI-Y uma média de 42,01 (± 12,29). Não foi encontrada uma correlação estatisticamente significativa entre empatia e solidão ($p>0,05$). É de notar que a solidão correlaciona-se positivamente com os traços ansiosos ($p<0,05$) e que comorbilidades psiquiátricas estavam associadas a maiores níveis de solidão e de traços ansiosos ($p<0,05$).

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Conclusão: Cremos que a coesão social, a solidariedade e o contacto *online* tenham tido um papel fundamental na preservação da empatia e na sensação de solidão. O facto de que a solidão possa ser experienciada de forma positiva (como por exemplo, no fortalecimento das relação dentro do agregado familiar) pode ser a razão pela qual esta não esteja estatisticamente correlacionada com a empatia. Por último, a correlação positiva entre traços ansiosos e solidão realça a vulnerabilidade de sujeitos tendencialmente ansiosos, tornando premente a promoção de saúde e bem-estar mental durante a quarentena/confinamento.

Keywords: Anxiety; COVID-19; Empathy; Loneliness; Mental Health; Pandemics; SARS-CoV-2; Social Isolation

Palavras-chave: Ansiedade; COVID-19; Empatia; Isolamento Social; Pandemia; SARS-CoV-2; Saúde Mental; Solidão

INTRODUCTION

The present pandemic situation with the SARS-CoV-2 outbreak has determined a radical change in freedom of movements and many people have been prevented from leaving their home. By either home confinement or quarantine (HC/Q) they were indoors, with limited or restricted movements. Involuntary home confinement and social distancing have pleiotropic effects in mental health that derive from loss of freedom, separation from loved ones, uncertainty over disease status, boredom, and fear.[1] The confinement of these situations seems to have determined feelings of loneliness and the emergency of several mental symptoms (mainly increase of perceived stress levels, anxiety, depression, substance abuse, and sleep disturbances).[2-5] Loneliness may be described as "the aversive state experienced when a discrepancy exists between the interpersonal relationships one wishes to have, and those that one perceives they currently have".[6] Previous literature have associated social isolation as leading to feelings of threat and "increase in symptoms of anxiety, hostility, fragmented sleep, fatigue… along with a decrease in impulse control, an increase in negativity and depressive symptomatology".[7] Current literature reports a major negative impact of COVID-19 on feelings of loneliness as well a correlation between the latter and depression and anxiety.[8-10] As far as we know, there are no publications regarding the vulnerability to develop psychiatric conditions during HC/Q in subjects with previous psychiatric diagnosis and/or higher anxiety traits.

Furthermore, feelings of loneliness and the inherited anxiety associated with this crisis may determine changes in interpersonal competences of which empathy is a key element as it might further determine maladaptive social behaviors. Loneliness can impact empathy determining less positive feelings regarding social interactions (less intimacy, comfort, and understanding)[11] and more overall negative interpersonal feelings (greater degree of caution, conflict, and distrust).[12-14] To date, we found no published literature on the relationship between anxiety traits and feelings of loneliness during the COVID-19 pandemic or between loneliness and empathy during HC/Q. Hence, we aimed to: 1) assess loneliness, empathy and anxiety traits on a sample of the Portuguese population under HC/Q; 2) understand how anxiety traits relate to feelings of loneliness; 3) understand if feelings of loneliness due to COVID-19 HC/Q are associated with empathy, and 4) understand how online social contact and previous psychiatric diseases relate to feelings of loneliness during COVID-19 HC/Q.

METHODS

The study received approval by the Lisbon Academic Centre Ethics Committee and have therefore been performed in accordance with the ethical standards laid down in the 2013 Declaration of Helsinki and its later amendments.

All questionnaires were anonymous and preceded by online informed consent (tick-box) which presented participants the purposes of the study – no questionnaire was collected without consent. All the privacy rights of the subjects were respected (we asked for no information that could allow the identification of the subject).

a. Setting and sample

Our sample included 364 participants living in Portugal under National Health Policies determined by the SARS-CoV-2 pandemic (NHPSC), which includes social confinement and quarantine. Subjects had a mean age of 33.38 (SD: 11.92) and 265 (72.8%) were females and 99 (27.2%) males. The majority of the participants had university education (N=319; 87.6%), 34 (9.3%) completed high school and 11 (3%) had basic education. The majority of participants were single (N= 245; 67.3%), 101 (27.8%) were married/cohabiting, 16 (4.4%) were divorced and 2 (0.5%) were widows. Inclusion criteria were: (1) $\geq$ 18-year-old, (2) currently living in Portugal, and 3) fluency in Portuguese. No exclusion criteria were considered. All participants were recruited during 15 consecutive days: from 12th May 2020 to 27th May 2020, corresponding to state of emergency and mandatory home confinement.

b. Sociodemographics

Our study considered as sociodemographic variables: age (<18; 18-45;45-70;70>), gender, education (<9th grade; high school; university education), job career (health worker; essential worker; own business closed during quarantine period, and other), marital status, duration of social confinement (15 days-1month; 1month-2 months; $\geq$ 2 months), household, social contact (rarely, sometimes, almost always) presence of medical and/or psychiatric comorbidities. Comorbidities were asked directly to the subjects ("Do you have any medical/psychiatric disorder? Yes/No. If yes, specify.").

c. Procedure

This was an observational cross-sectional cohort study that included 364 participants recruited through social network platforms (Facebook®; Instagram®), where the link to the questionnaire was made available. The latter was created in

Google Forms® and it was composed of sociodemographic questions, UCLA Loneliness scale, STAI-Y form 2, and IRI.

1. UCLA Loneliness scale:

UCLA Loneliness scale measures subjective feelings of loneliness as well as feelings of social isolation. The scale was translated and validated to Portuguese by Neto.[15] It is a unidimensional instrument composed by 18 questions on a 4-point Likert scale from ""I never feel this way" to "I often feel this way". The Chronbach's α on our sample (n=364) was 0.454.

2. STAI – Y form 2:

The STAI-Y is a short self-reporting questionnaire that measures anxiety state and traits. The STAI-Y form 2 evaluates anxiety traits and is a 20-item questionnaire. Since we aimed to evaluate the impact of HC/Q on previous anxious people we choose the form-2. Answers are given in a Likert scale from 0 to 4. It was translated by Silva with good internal consistency (α=0.92) and Chronbach's α of 0.89.[16] The Chronbach's α on our sample (n=364) was 0.617.

3. Interpersonal Reactivity Index (IRI):

The present instrument is based on the assumption that empathy consists of a set of separate but related constructs. The scale is composed by 4 domains: perspective taking, empathic concern, personal distress, and fantasy. It was validated to Portuguese by Limpo[17] with reliability, sensitivity and results consistent with those of previous studies, either with the original scale or with versions in other languages (Chronbach's α of 0.74 for perspective taking, 0.77 for empathic concern, 0.81 for personal distress, and 0.83 for fantasy). It's composed by 24 items on a 5-point scale, from "Does not describe me well" to "Describes me very well", using the numbers 0 and 4, respectively and the numbers 1, 2, and 3 to intermediate scores. The Chronbach's α on our sample (n=364) was 0.527.

4. Statistical analyses

We used descriptive statistics (means and standard deviation) for continuous variables and absolute number and frequencies for categorical variables. To evaluate the distribution of our variables we used the Kolmogorov-Smirnov test. Non--parametric tests were used since the assumptions for parametric null hypothesis tests were violated (Mann Whitney for and Kruskall-wallis tests). Kendall Tau-B was used to analyze the correlation between loneliness and empathy, empathy, and anxiety traits and between loneliness and anxiety traits. When not otherwise specified, two-tailed $p<0.05$ was considered significant. All analyses were performed using SPSS IBM 24.

RESULTS

Following the NHPSC, 217 (59.6%) subjects were on HC/Q when applying the questionnaire. The majority of subjects in our study had been on HC/Q for more than two months (N:147, 40.4%), 78 (21.4%) for 1 to 2 months, 9 (2.5%) for 15 days to 1 month , 2 (0.6%) were working on periods (15 days working and 15 days of HC), and 128 (35.2%) had never went HC/Q. To note, 141 (38.8) subjects were health workers (N: 88; 24.2%) or other essential workers (N: 53; 14.6%).

The majority of subjects (N: 206; 56.6%) reported having contact with friends and family (via online) almost every day, 137 (37.6%) reported doing it every other day, and 21 (5.8%) reported rare online social contact.

Medical comorbidities were present in 49 (13.46%) participants, being asthma the most common (N: 26; 7.1%). On the other hand, 30 (8.24%) participants claimed having psychiatric comorbidity, the majority reported anxiety (N: 17; 4.7%) and depressive disorders (N:11; 3.0%). To note, 2 subjects reported having both (0.5%). The other 2 subjects reported having bipolar disease (0.25) and an eating disorder (0.25%).

The overall median for Interpersonal reactivity was 61.00 (IQ: 14.00), for UCLA Loneliness scale was 32.00 (IQ: 11.00) and for STAI-Y trait was 41.00 (IQ: 17.00).

A Kruskal-Wallis test showed that the amount of online contact with friends and family had impact on feelings of loneliness (H(2)=14.3, $p=$ 0.001). Subject who contacted frequently had lower UCLA Loneliness scores (Mdn: 31.00) than subjects who contacted occasionally (Mdn: 34.00) or rarely (Mdn: 35.00).

Using Mann-Whitney test, we found that the presence of psychiatric comorbidities (vs no comorbidities) were associated with higher levels of loneliness and anxiety traits (U(N$_{comorbiditie}$=36, N$_{non-comorbiditie}$=328)= 3400.5, Z= -4.181, $p=$ 0.000; U(N$_{comorbiditie}$=36, N$_{non-comorbiditie}$=328)= 2632.0, Z= -5.462, $p=$ 0.000, respectively).

When performed a Kendall Tau-B correlation, interpersonal reactivity showed a weak negative association to UCLA Loneliness scores (|τb|=-0.074, p=0.041, N= 364) and weak positive association to anxiety traits (|τb|=-0.130, p=0.000, N= 364). On the other hand, loneliness and anxiety traits showed a strong positive association (|τb|=-0.422, p=0.000, N= 364).

DISCUSSION

The present work aimed to assess loneliness, empathy and anxiety traits on the Portuguese population under HC/Q, to understand if loneliness affects empathy, and to clarify the impact of anxiety traits on feelings of loneliness.

Regarding feelings of loneliness, when comparing our results with other studied confined populations, we found that geriatric population living in home care facilities/attending day care centers presented higher UCLA Loneliness scores than our sample: on Aylaz' study the UCLA Loneliness mean score was 40.50 (SD: 12.1)[18] and in Esmaeilzadeh' study UCLA Loneliness mean score was 47.38 (SD: 8.64).[19] These results might be partially justified by the fact that home care confinement is usually permanent and subjects feel apart from the everyday life. On the other hand, when comparing our results with others using non-clinical Portuguese samples we found out that the two populations had very similar UCLA Loneliness scale scores (mean: 32.2; SD: 7.0).[20] We hypothesize that our sample did not have higher levels of loneliness due to the continuous t-communication with friends and family. Online communication may have eased the feelings of loneliness by providing alternative means of contact. In fact, the minority of the subjects on our sample that reported rare contact with friends/family (5.8%) had a statistically significant higher mean score of UCLA Loneliness scale. Telecommunication

(online, digital telephones, etc.) and the highly available internet connectivity, are in fact a new option to social contact. Kexin Yu found in a longitudinal study with adults over 50 years old that "internet use was related to decreased loneliness among older adults over eight years". He reported "internet users maintained more social contact with family and friends than nonusers, and such increased social contact was associated with lower levels of perceived loneliness longitudinally".[21] Although previous literature suggests that the stress during the SC/Q could determine a reduced IRI index, our results suggest that empathy might be an independent variable. Also, we might have underestimated the increase in social cohesion and solidarity that ensued from SARS-CoV-2 pandemic, which might have raised IRI. Lisa McCormick's work highlights the rising of solidarity during COVID-19, mentioning the children's paintings of rainbows on windows, the "newspapers…invoking notions of national community and emphasize the bonds of solidarity", and the rapid increase of health workers volunteers.[22]

Although previous literature supports that loneliness may have a negative impact on empathy, our study showed a weak negative association between IRI and UCLA Loneliness score. In fact, subjects who contacted rarely with friends and family reported higher levels of loneliness and higher levels of empathy, corroborating that the two variables may be in fact independent. Although this results could be partially explained by our low loneliness scores, we hypothesize that loneliness may have been experienced in a positively way, as for example to engage in self-thinking, new hobbies, and others.[23] In fact, times of social distancing may even tighten the relationships inside the household. A study on astronauts showed that interpersonal relationships were a way to cope with loneliness, tightening these laces.[24,25]

At last, UCLA Loneliness scale showed a positive and strong association with STAI- Y form trait. As we foreseen higher anxiety traits are associated with stronger feelings of loneliness. In our sample, people with psychiatric comorbidities had higher scores of anxiety traits and loneliness, highlighting the fact that psychiatric patients and subjects with higher anxiety traits may have been more vulnerable to loneliness during Q/HC.

a. Limitations

Our study had some limitations we would like to address. First of all, the generalization of our results might be limited given that we could only approach a small portion of the population through the use of online platforms, being that the majority of our subjects were young and had higher education. Secondly, the use of self-reported scales is associated with various limitations: 1) the answers are dependent on the honesty of participants, 2) the use of scales with subjective questions may difficult its understanding/interpretation and the introspective ability to provide an accurate answer and 3) its use may have skewed our population, since only people able to work with online platforms and open to answer these questionnaires are likely to have answered it. Finally, the constructs of empathy and loneliness were shown to be heterogeneous both at conceptual and empirical level, limiting the comparison of our results to other samples.

Table 1. Descriptive statistics

	n	%	Mean (± std)
Gender			
Feminine	265	72.8%	
Masculine	99	27.2%	
Age (y)			33.38 (±11.92)
Education			
University Education	319	87.6%	
High-School	34	9.3%	
Basic education	11	3%	
Marital status			
Single	245	67.3%	
Married/co-habiting	16	4.4%	
Divorced	16	4.4%	
Widow	2	0.5%	
Occupation/job			
Health worker	88	24.2%	
Other essential workers	53	14.6%	
Business owner	20	5.5%	
Others	203	55.8%	
HC/Q at the moment of the study	217	59.6%	
HC/Q ≥ 2 mo.	147	40.4%	
HC/Q 1-2 mo.	78	21.4%	
HC/Q 15 days-1mo.	9	2.5%	
Never went on HC/Q	128	35.2%	
Online contact with family/friends			
Almost everyday	206	56.6%	
Every other day	137	37.6%	
Rare	21	5.8%	
Psychiatric comorbidity			
Anxiety disorders	17	4.7%	
Depressive disorders	11	3%	
Bipolar disorder	1	0.25%	
Eating disorder	1	0.25%	
IRI total score			60.46 (±10.88)
UCLA Loneliness Scale total score			32.70 (±8.11)
STAI-Y trait total score			42.01 (±12.29)

CONCLUSION

In our work, subjects showed relatively high levels of empathy (measured by IRI) and low levels of loneliness (measured by UCLA Loneliness scale). We believe social cohesion, solidarity; the feeling of a time-limited event and online contact with friends and family may have contributed to our unexpected results. Loneliness and empathy were not significantly correlated. We might presume that these two variables are in fact independent, being that loneliness may be felt in a positive way. Anxiety traits are positively correlated with feelings of loneliness, underlying the vulnerability of previously anxious subjects, such as psychiatric patients. In addition to the latest studies on COVID-19, our results further outline the major impact of Q/HC on mental health.

Responsabilidades Éticas

Conflitos de Interesse: Os autores declaram a inexistência de conflitos de interesse na realização do presente trabalho.

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Confidencialidade dos Dados: Os autores declaram ter seguido os protocolos da sua instituição acerca da publicação dos dados de doentes.

Proteção de Pessoas e Animais: Os autores declaram que os procedimentos seguidos estavam de acordo com os regulamentos estabelecidos pelos responsáveis da Comissão de Investigação Clínica e Ética e de acordo com a Declaração de Helsínquia revista em 2013 e da Associação Médica Mundial.

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Ethical Disclosures

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Confidentiality of Data: The authors declare that they have followed the protocols of their work center on the publication of data from patients.

Protection of Human and Animal Subjects: The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki as revised in 2013).

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Declaração de Contribuição

PJ: Concepção e desenho do estudo; Preparação do material; Colheita e análise de dados; escrita do manuscrito.

PD, SH, VA e MG: Concepção e desenho do estudo; Preparação do material; Colheita e análise de dados.

FML e ML: Concepção e desenho do estudo; análise de dados.

Contributorship Statement

PJ: Conception and study design; Material preparation, data collection and data analysis; manuscript writting.

PD, SH, VA e MG: Conception and study design; Material preparation, data collection and data analysis.

FML e ML: Conception and study design; data analysis.

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