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## Effect of COVID-19 pandemic on older adults' emotion regulation and quality of life after lockdown in Italy

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### Abstract

After SARS and MERS, COVID-19 was the third pandemic caused by the coronavirus that generated panic worldwide. Therefore, the negative impact of COVID-19 on mental health among the general population has been identified as a research priority. Despite this, some studies suggest that the elderly population is underrepresented. The present research aimed to compare the emotional regulation and the quality of life of a group of 150 elderly assessed during the pandemic isolation for COVID-19 with the normative data of a group of pre-COVID-19 elderly. Another aim is to study the relationship between emotional regulation, perceived acute stress, quality of life, and risk perception with the variables age, years of education, gender, and cohabitation status of elders assessed during the pandemic isolation for COVID-19. The results showed that: the elders assessed during the Covid period had a lower capacity for emotional regulation; compared to younger people, older people were less capable of emotional regulation, had a higher perceived risk of COVID-19 infection, and were less satisfied with their independence; higher levels of education reflected a greater capacity for emotional regulation; women showed a lower capacity for emotional regulation and higher stress and perceived risk; the elders who lived alone seemed to be more vulnerable than who lived with other people. The findings underscore the need to assess the psychological effects of the pandemic in the elderly population, particularly for the most vulnerable individuals.

**Keywords:** COVID-19; emotional regulation; quality of life; stress; risk perception; elderly; aging;

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## Introduction

Infection caused by the new coronavirus (SARS-CoV-2) was first detected in December 2019 in Wuhan in China's Hubei province. The World Health Organization (WHO) declared the outbreak a public health emergency of international concern in January 2020. After SARS and MERS, COVID-19 was the third pandemic caused by the coronavirus that generated panic worldwide (Jiloha, 2020). The global public health impact of the COVID-19 pandemic is unprecedented. Pandemics are not just a medical phenomenon as they destabilize individuals and societies in many ways.

This modern pandemic has seen the rediscovery of quarantine and social isolation strategies as the only effective techniques for containing the spread of the epidemic and reducing the prevalence and incidence of infection to the lowest possible rate. However, a strategy based on continuous or intermittent quarantine approaches (Fergusson et al., 2020) severely impacts some of people's basic needs, such as decision-making autonomy, spatial mobility, a sense of physical security, and freedom of contact with relatives. It can have severe repercussions for their psycho-emotional well-being. While a great deal of data has been collected so far, and various epidemiological and infectious scenarios have been assumed based on epidemic simulation models (Fergusson et al., 2020; Verity et al., 2020; WHO, 2020; Halloran et al., 2008; Mossong et al., 2008), we still know little about the relationship between epidemic phases, health policy adoption (suppression vs. mitigation) and psychological impact on populations.

Several studies have found during extraordinary epidemic events, an increase in depressive and anxious symptoms in the population (Kwok et al., 2020; Ran et al., 2020), feelings of fear, stress, and worry (Ahorsu et al., 2020; Bao et al., 2020), stigma and xenophobia towards people suspected of being infected with the disease (Mamun & Griffiths, 2020), psychological distress (Rahman et al., 2020), maladaptive coping responses to stress, and an increased risk of self- and hetero-aggressive behaviors up to committing suicide (IPSOS-MORI, 2020).

Therefore, the negative impact of COVID-19 on mental health among the general population has been identified as a research priority. Despite this, Robb et al. (2020) maintained that the elderly population still is underrepresented. Few studies to date have investigated the impact of social isolation and physical removal due to COVID-19 restrictions on the mental health of older people. In addition to infection, social isolation and quarantine put them in a high-risk category for various mental health problems. The pandemic may accelerate cognitive impairment, exacerbation of existing or relapsing fears/phobias, anxiety disorders, obsessive-compulsive disorders, mood disorders. Uncovering the psychological variables that may act as protective or risk factors for mental health and quality of life during the COVID-19 pandemic is particularly important because it allows identifying possible interventions to reduce the impact on people's psychophysical health.

In recent years, there has been a growing recognition in the literature that over-regulation of emotions may be related to a range of serious physical illnesses, including cardiovascular disease, cancer, and arthritis. Cognitive evaluation of an event's

meaning shapes the nature of the emotion experienced and is often unconscious and rapid. Examples of problems that may occur at this stage are failure to register, misinterpretation, or active Avoidance of an input event. Previous research on emotional processing and panic by Baker et al. (2004) suggests that it may be essential to separate the role of controlling the experience of emotions and controlling the expression of emotions. Trying to control, suppress or block the experience of an unpleasant emotion is perhaps considered more fundamental and harmful than controlling the overt expression of emotions (Gross, 1998).

Beyond the practical importance of understanding the emotional reactions that people are experiencing in these extraordinary times, examining age differences in responses to stressors at the population level may also shed light on theoretical issues related to age differences in emotional experience and emotion regulation. There is considerable evidence that emotional well-being improves with age. However, it is unclear whether this relatively positive emotional profile reflects better regulation of experienced emotions or active Avoidance of environments that elicit negative emotions (Carstensen et al., 2020).

The primary objective of the present research is to compare the emotional processing and the quality of life of a group of elderly assessed during the pandemic isolation for COVID-19 with the normative data of a group of pre-COVID-19 elderly. We expected the research sample to report significantly lower emotional regulation and quality of life than the normative sample because of the enduring distress associated with the ongoing health emergency.

Another aim is to study the relationship between emotional regulation, perceived acute stress, quality of life, and risk perception with the variables age, years of education, gender, and status (cohabiting or not) of elderly assessed during the COVID-19 isolation period. Particularly, it is possible to assume that as age increases, the perceived risk increases for physical health issues during a health emergency. Moreover, while advancing age may become a risk factor for mental and physical health, years of education are often considered a protective factor against stressful events. For these reasons, we expected participants' education to correlate positively with quality of life and emotional regulation skills and negatively with perceived acute stress. Regarding gender, following the results of some recent studies (Malhi et al., 2018; Robb et al., 2020), we hypothesized that women present more difficulties in emotionally coping with a stressful event such as a pandemic. Regarding the status variable cohabitation, we assumed that older people living alone during the pandemic isolation for COVID-19 might show a higher level of perceived risk and less emotional regulation than older people living with other people.

## Method

### *Participants*

The present research was conducted on a group of 150 elderly assessed during the pandemic isolation for COVID-19 aged 65-92 years (mean age = 73.25,  $ds = 4.74$ ) and with an

educational level varying between 5-21 years (mean school education = 14.17,  $ds = 3.91$ ). Table 1 shows the distribution of the individuals by gender and by two age groups (65-74 and 75-92 years). Ninety percent of the sample were retired, while 10% were still working. Five percent were single, 44% married, 20% divorced or separated, and 31% widowed. Fifty percent of the participants ( $n=75$ ) lived alone; the remaining participants lived with at least one person. When interviewed, the participants did not report to have contracted the Coronavirus, nor they reported to be living with anyone currently been infected. The participants' distribution across different parts of the country was as follows: 21% were from Northern Italy, 63% from Central Italy, and 16% from Southern Italy.

Tab. 1. Distribution of participants by age group and gender

Age	Gender		Total
	Women	Men	
65-74 yrs	73	30	103
75-92 yrs	31	16	47
Total	104	46	150

### Instruments

The instruments used were:

*Semi-structured interview:* includes the respondent's data (age, education level, family composition, and occupation); questions related to thematic areas, such as emotions, performing activities, assistance from local services, referred changes, and risk perception with questions about affective risk, (how much the respondent is afraid of the virus and how risky the infection would be for his/her health), probability of contracting the virus, direct knowledge (of affected persons) and indirect knowledge (through media).

*Emotional Processing Scale (EPS):* the Italian adaptation of the Emotional Processing Scale (Santonastaso & Lauriola, 2020; Lauriola et al. 2021) is a self-report questionnaire consisting of 2 open-ended questions and 25 items with a 9-point Likert scale. The EPS consists of 5 subscales, each with five items: *suppression*, referring to attempts to control or suppress feelings; *unprocessed emotions*, intrusive and persistent emotional experiences that indicate significant unprocessed emotional material; *control*, relating to experiences and behaviour, suggesting a failure to control emotional expression; *Avoidance*, either experiential or internal of the stimuli that trigger an emotional response; *emotional experience*, related to the concept of alexithymia, in which patients have difficulty labelling emotions, linking them to events, or feeling detached from their emotional experiences. The total EPS score represents the overall assessment of all items. Higher scores on subscales and total scores indicate more problems in emotional processing of stressful events. Italian normative data for the EPS were collected in pre-Covid period of time and include 127 adults (60 men and 67 women) between 59 and 85 years of age.

*Older People Quality of Life-35 (OPQOL-35* Bowling, 2009). The OPQOL-35 is a multidimensional QoL measure with a constructivist approach firmly embedded in the older person's perspective. It consists of 35 items with a 5-point Likert scale from "strongly disagree" to "strongly agree". The dimensions investigated were: *life in general; social relations; independence; home and neighbourhood; psychological and emotional well-being; financial situation; activities and leisure time*. Scale scores range from 35 (QoL so bad it could not be worse) to 175 (QoL so good it could not be better).

*National Stressful Events Survey Acute Stress Disorder Short Scale (NSESSS) Severity of Acute Stress Symptoms – Adult* (APA, 2013). The scale was developed to assess acute stress disorder (or clinically relevant acute stress disorder symptoms) after a highly stressful event or experience using 7 items on a 5-point Likert scale. Higher scores correspond to greater severity of the acute stress disorder. The average total score was reliable, easy to use, and clinically useful in DSM-5 field trials.

Cronbach's Alpha reliability index was calculated for each of the measures used with the sample used in this research. The Cronbach's Alpha for the EPS is .93, for NSESSS is .76, for OPQOL-35 is .84, for the measures of risk perception within the semi-structured interview it is .62.

### Design of research and data analysis

Data collection for this study took place between May 12 and July 8, 2020 by telephone immediately after the lockdown, at the beginning of phase 2 (relaxation of containment measures) and phase 3 (coexistence with the virus).

We used *t*-tests and standardized mean differences (i.e., effect sizes) to compare the current sample with reference data collected before the pandemic for the EPS and OPQOL-35 scales. While a *p*-value can inform us whether a difference is statistically significant, it is not useful to reveal the size of a difference. So, both the effect size (e.g., Cohen's *d*) and statistical significance (*p* value) are essential results to be reported. Cohen (1992) stated: "The primary product of a research inquiry is one or more measure of effect size, not P values" (p. 1307). For the interpretation of Cohen's *d* we used the Hyde's (2005) guidelines: small effect ( $0.11 < d < 0.35$ ); moderate effect ( $0.36 < d < 0.65$ ), large effect for ( $d = 0.66 - 1.00$ ), or very large effect ( $d > 1.00$ ).

We also used the Pearson correlations between sociodemographic variables (age and years of education) and the psychological measures administered in the study. We follow Cohen's guidelines to interpret the correlations: *r* between .10 and .29 small correlation; *r* between .30 and .49 medium correlation; *r* between .50 and 1.0 large correlation.

## Results

*Comparison of an elderly period COVID group (COV) and an elderly pre-COVID group (preCOV) in measuring emotional regulation and quality of life*

The dimensions of Emotional Adjustment assessed by EPS on the research sample were compared to the average

assessments of the Italian standardization sample collected in pre-Covid period (Lauriola, 2020), consisting of 127 subjects (60 men and 67 women) between 59 and 85 years of age. This was done to test whether there were statistically significant and large differences between the two groups.

The results in Table 2 show a small effect, with the present sample reporting slightly higher scores than pre-Covid data on Unprocessed emotions and Emotional experience. A very large difference in the same direction was found for Avoidance and the EPS Total score. Therefore, the elderly assessed during the COVID period reported more emotional processing deficits than elderly Italians taking the EPS before the COVID emergency.

The same comparison was made for the total score of the quality of life measure (OPQOL-35), whose normative reference sample consisted of 560 older adults between 65 and more than 75 years of age. The results reported in table 2 did not show differences between the present sample and the normative data.

Tab. 2. Comparisons of two groups COV and PreCOV on EPS and OPQOL-35

	Cohen's d	COV vs PreCOV
Emotional regulation (EPS)	Suppression	.03
	Unprocessed emotions	.27
	Control	.10
	Avoidance	1.16
	Emotional experience	.23
EPS total score	1.65	COV > PreCOV
Older People Quality of Life-35	OPQOL-35 total score	.01

Note. For the interpretation of Cohen's d we used the Hyde's (2005) guidelines: small effect (0.11 < d < 0.35); moderate effect (0.36 < d < 0.65), large effect for (d = 0.66 – 1.00), or very large effect (d > 1.00).

*Relationship between emotional regulation, quality of life, perceived acute stress, and risk perception with the age and years of education variables*

The results reported in Table 3 show that age correlated significantly and positively with the total the Emotional Processing Scale (EPS) total and subscale scores like Unprocessed Emotions and Avoidance. Age, moreover, was negatively related to the Independence score of the Older People Quality of Life-35 (OPQOL-35) and positively with Affective Risk, Probability, global Risk perception. We observed a negative correlation of education with the EPS total score, Suppression, Unprocessed emotions, and Avoidance. As the level of education increased, participants reported less emotional processing difficulties. Furthermore, education was positively correlated with the Independence and Financial situation scores of the OPQOL-35. Education was negatively correlated with the Leisure activities score of OPQOL-35 and the "Affective risk" dimension.

Tab. 3. Correlations between dependent variables and age and education of the elderly assessed during the pandemic isolation for COVID-19 (n=150)

	Age	Years of education	
Emotional regulation (EPS)	Suppression	.095	-.224**
	Unprocessed emotions	.167*	-.222**
	Control	.076	-.128
	Avoidance	.135*	-.257**
	Emotional experience	.109	-.167*
	Total score	.147*	-.253**
Older People Quality of Life-35	Life in general	-.122	.174'
	Social relations	-.109	-.071
	Independence	-.205**	.159*
	Home and neighbourhood	.017	.084
	Psychological and emotional well-being	-.029	.054
	Financial situation	-.134	.295**
	Activities and leisure time	.106	-.155*
	OPQOL total score	-.088	.097
Acute stress	Severity of acute stress disorder (NSESSS)	.122	-.109
	Direct and indirect knowledge	-.091	.061
Perception of risk	Affective risk	.204**	-.152*
	Probability	.236**	-.095
	Risk total score	.222**	-.122

Note. \*p<.05; \*\*p<.01. Cohen's guidelines to interpret the correlations: r between .10 and .29 small correlation; r between .30 and .49 medium correlation: r between .50 and 1.0 large correlation.

*Relationship between emotional regulation, quality of life, perceived acute stress, and risk perception with the gender and cohabitation status variables*

About gender, a small effect was found for the total score of the emotional regulation scale (EPS), and in particular on the dimensions of suppression and emotional experience, a greater effect was also found on Avoidance (see Table 4). In general, women had more difficulty than men in regulating emotions and tended to use avoidance and suppression mechanisms more often than men.

In relation to the quality of life variable, there was a small effect in favor of men on the total OPQOL score. However, analyzing the subscales, there was a small effect in favor of women for satisfaction with social relationships and a moderate effect in favor of men with higher satisfaction levels for the dimensions of life in general, independence, and financial situation.

A moderate gender effect in favor of women also emerges for the stress measure and dimensions related to perceived risk such as affective risk, probability, and the total score of the

perceived risk measure: the elderly women perceive the risk of contagion more strongly and the resulting stress higher.

From the results shown in table 4, compared to the group of older people living with someone else during the COVID period (EC), the group of older people living alone (EA) generally showed higher scores in emotional regulation (EPS), perceived stress (NSESSS) and risk perception and lower scores in measures of satisfaction with their quality of life. They, therefore, had higher levels of difficulty in processing their emotions, higher perceived stress, higher perceptions of risk of infection, and lower levels of satisfaction with their lives.

Tab. 4. Differences by gender and cohabitation status on dependent variables (n=150)

		Gender		Cohabitation status	
		Cohen's d	F vs M	Cohen's d	EA vs EC
Emotional regulation (EPS)	Suppression	.14	F>M	.17	EA>EC
	Unprocessed emotions	.09		.29	EA>EC
	Control	.09		.20	EA>EC
	Avoidance	.64	F>M	.00	
	Emotional experience	.14	F>M	.00	
	Total score	.27	F>M	.18	EA>EC
Older People Quality of Life-35	Life in general	.46	M>F	.42	EC>EA
	Social relations	.18	F>M	.33	EC>EA
	Independence	.41	M>F	.28	EC>EA
	Home and neighbourhood	.00		.26	EC>EA
	Psychological and emotional well-being	.00		.39	EC>EA
	Financial situation	.26	M>F	.09	
	Activities and leisure time	.39	F>M	.00	
	OPQOL total score	.11	M>F	.41	EC>EA
Acute stress	Severity of acute stress disorder (NSESSS)	.38	F>M	.26	EA>EC
	Direct and indirect knowledge	.00		.15	EC>EA
Perception of risk	Affective risk	.21	F>M	.22	EA>EC
	Probability	.11	F>M	.11	EA>EC
	Risk total score	.18	F>M	.14	EA>EC

Note. F: female; M: male; EA: Elderly living alone; EC: Elderly cohabiting. For the interpretation of Cohen's d we used the Hyde's (2005) guidelines: small effect ( $0.11 < d < 0.35$ ); moderate effect ( $0.36 < d < 0.65$ ), large effect for ( $d = 0.66 - 1.00$ ), or very large effect ( $d > 1.00$ ).

## Discussion and Conclusions

The COVID-19 pandemic puts a strain on physical and mental health, especially for the elderly who are particularly at risk. The present work aimed to investigate the relationship between

emotional processing, quality of life, acute stress, and perceived risk of infection among a group of 150 older adults assessed during the COVID period. As also reported in Robb et al. (2020), a further goal was investigating how these dimensions are influenced by status variables such as age, gender, years of education, and type of cohabitation (living alone or with others).

The results have shown that the 150 elders assessed during the Covid period had a lower capacity for emotional regulation than the normative sample evaluated in a period before the health emergency. In particular, they are more prone to have intrusive and persistent emotional experiences and have more difficulty in experiencing and labelling their emotions. They are also much more likely to avoid stimuli that might trigger a negative emotional response. This result is probably due to the high stressful stimuli and the worldwide crisis due to the current pandemic, which leads the elderly to a decrease in their ability to regulate themselves in the face of stressful events emotionally. In contrast, no effect on the perceived quality of life was found.

On the other hand, concerning personal and age-related factors that might influence the subjects' ability to cope with adverse events, the results have shown that the age had a small positive correlation with emotional regulation ability in general and, in particular, the ability to process emotions and the tendency to avoid. Older participants proved less capable (higher EPS total scores) of emotional regulation than relatively younger ones. In addition, older individuals have a perceived higher risk of COVID-19 infection than younger ones, and they are less satisfied with their independence.

The results also showed that the higher the level of education of the elderly, the greater their ability to regulate themselves emotionally, both in general and their tendency to avoid stressful stimuli, suppress and process their emotions. The higher capacity for emotional regulation is probably why they also reported a lower perceived risk (especially affective risk) than older people with fewer years of education. In particular, older people with a higher capacity for emotional regulation may be better able to make an objective assessment of the risk of infection without giving in to panic or despair about the pandemic. In addition, the more educated elderly report greater satisfaction with their independence and financial situation.

The gender variable was then considered, confirming the result already found in the literature (Malhi et al., 2018; Robb et al., 2020) as older women present more difficulties when faced with a stressful event such as a pandemic. Older women showed a lower capacity for emotional regulation (tending to make greater use of avoidance and suppression mechanisms) and higher stress and perceived risk than men. The only exceptions to this pattern are the dimensions of satisfaction with one's independence, financial situation, and quality of life in general, which are higher in men.

Finally, the analyses revealed that older people living alone seem to be more vulnerable than older people living with others. The socially isolated elderly reported significantly higher emotional regulation capacity, acute stress levels and perceived risk compared to the elderly living with other people, in addition to a significantly lower quality of life of the elderly living alone compared to the accompanied elderly. As Robb et

al. (2020) have also shown, this result is not surprising, as social isolation appears to be one of the major factors influencing the variables considered.

The limitation of the present research is that having a pre-Covid control sample only for the emotional processing dimension, a control sample for the quality of life, and acute stress dimensions of the preCovid period is lacking, and therefore inferences must be drawn with due caution.

However, it is reasonable to say that this health emergency on such a large scale is having a profound effect on the population's quality of life and, in particular, on the weaker population groups such as the elderly. Therefore, it is vital to understand which risk and protective factors influence the ability to cope with stress and regulate emotions to offer support and help better. In conclusion, this work has shown that social isolation is a significant risk factor for the elderly population and that a good level of education can help to alleviate some of the critical issues in this historical period in which the COVID-19 pandemic is severely testing not only the physical but also the psychological health of the population.

#### Author Contributions

The authors contributed equally to this manuscript.

#### Compliance with Ethical Standards

##### Conflict of interest

The authors declare that they have no competing interests.

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#### Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

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