

The effects of COVID-19 home confinement on the psychological well-being of the Moroccan population: Regular versus irregular dynamics

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Abstract

Background: Amidst the COVID-19 pandemic and the implementation of home confinement measures, understanding the psychological well-being of individuals has become crucial.

Aim: This study examines the irregular effects of gender, age, marital status, and educational level on the psychological well-being of the Moroccan population during COVID-19 home confinement.

Design: A cross-sectional study design was utilized.

Setting: The study was conducted online, with participants residing in Morocco.

Population: The study included individuals from the Moroccan population ($n=1.051$) who experienced home confinement during the COVID-19 pandemic.

Methods: Data was gathered through an anonymous psychological well-being scale administered online.

Results: Data analysis revealed three underlying traits: The first is the unexpected impact of age, gender, education levels, and marital status on certain well-being parameters. The second is the varied impact of gender, specifically in its interaction with age and marital status. The varied impact was also reflected in the participants' mean scores across the well-being parameters. The third indicator revealed the nonlinear impact of the education level on some well-being parameters.

Conclusion: The study drew the attention of public health decision-makers to the need to include different scenarios in the elaboration of anticipatory plans in the case of a new pandemic and to avoid sticking to regular models based on regular scenarios only.

Take-home message: In our research, we have developed an understanding that complex patterns characterize the association between socio-demographic factors and various core domains of psychological well-being. These patterns are nonlinear, non-deterministic, and irregular in nature, indicating that the relationship between these factors is not straightforward or predictable.

Keywords: Home-confinement; intra-individual variability; intra-gender variability; nonlinear impacts; irregular impact; varied impact, unexpected impact.

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INTRODUCTION

Psychological well-being is a broad concept whose definition varies according to the contexts and fields in which it is studied [1]. In psychology, most researchers refer to well-being as the optimal psychological functioning and experience in life [2,3]. It should include two aspects, a hedonic one (enjoyment, pleasure) and a eudaemonic one (experiences of meaning and purpose). To achieve psychological well-being, individuals must develop a sense of meaning and fulfillment in life [2].

During the COVID-19 pandemic, people were forced to quarantine, so the long-standing privilege of freedom was jeopardized. The motto "staying at home to save lives" negatively affected individuals' psychological well-being, as underlined by several systematic review studies [4-6]. The uncertainty surrounding the pandemic, the fear of contracting the virus, and continuous exposure to distressing news can intensify individuals' stress levels and psychological distress. The prolonged duration of the pandemic and the necessity of repeated periods of confinement further amplify these detrimental effects.

Furthermore, the general trend of COVID-19 home confinement (C19HC) literature reported that fragile populations such as women, older people, singles, and less educated individuals are more

prone to experience negative emotional and mental states during home confinement [4-7]. Several researchers from different countries, applying diverse surveying and sampling methods on various populations, reported a basic and simplistic picture regarding COVID-19 home confinement and well-being [8-10]. They overlooked the numerous forms of variability experienced by the individual in terms of psychological well-being. They endorsed determinist and linear models to explain and predict human behaviors [11]. As an outcome, comparable results were captured all over the world. However, the experience of happiness may change from one society and culture to another -cross-cultural variability [12], from one individual to another -inter-individual variability- and within the same individual from one context to another -intra-individual variability [13]. Understanding and acknowledging these variabilities are crucial for developing comprehensive approaches to promoting happiness and well-being. It requires recognizing and respecting cultural diversity, addressing individual differences, and recognizing that happiness is not a fixed state but a nuanced and evolving experience.

According to the linear and regular assumptions, older people suffered more during house confinement than other age groups [6,14]. The same results have been confirmed in many countries, such as Italy, China, Vietnam, and Saudi Arabia [14].

Numerous studies conducted in a variety of countries, including Bangladesh [15], Portugal [16], the United Kingdom [17], Australia [18], and the Middle East and North Africa (MENA) [7], have examined the linear and regular effects of gender on psychological well-being during home confinement. They have concluded that women were indeed inclined to experience extreme anxiety, as opposed to men.

Linear and regular approaches have also been used in apprehending the effect of marital status [18]. Consistent with this hypothesis, some empirical studies stipulated that subjects who were not in a relationship had higher rates of depression, anxiety, stress, low self-esteem, and a lower level of life satisfaction than married subjects [18-20]. Conversely, some studies have tried to distance themselves from linear and regular approaches. They asserted that old age could be a positive factor in coping with psychological well-being parameters by choosing to adopt a nonlinear and dynamic complex system analysis to approach the intricate, subtle relationship between age and well-being [21], studies from Portugal [16], Spain [22], South India [20], and the USA [23] have refuted stereotypes regarding the well-being of "the weak, frail, and vulnerable older adults" during the lockdown. Other empirical studies following a nonlinear and irregular perspective supported the idea that the relationship between gender and psychological well-being was, in fact, nonlinear [24].

Nonlinear and irregular approaches have also questioned the effects of education level on psychological well-being. In Bangladesh, it was verified that the relationship between education level and psychological well-being was, in fact, nonlinear [15]. In Vietnam, a cross-sectional study confirmed that literacy was a protective factor for life satisfaction during the pandemic [25]. Effects of marital status on psychological well-being have been studied, in turn, under nonlinear and irregular methods. In Bangladesh, married individuals reported more feelings of depression, anxiety, and stress than single individuals [15].

Based on what has been outlined in this introduction, we believe that linear and regular conclusions have failed to capture the dynamic variability underlying human behavior [5,6,26,27]. Thus, through this study, we attempt to discern the nonlinear impact of several socio-demographic factors (gender, age, marital status, and educational level) on the psychological well-being of the Moroccan population during C19HC.

METHODS

Study design and procedure

A cross-sectional study was conducted in Morocco, from April the 10TH to April the 29TH of 2020, during the confinement, which lasted from March the 20TH to June the 9TH of 2020. Data was collected through a questionnaire based on the Arabic version of Ryff's "Psychological Well-being Scale" [28,29]. Some of them were modified and adapted to home confinement in the Moroccan context.

Study participants and sampling

The sample participating consisted of 1,051 Moroccan residents. Participants' selection was based on non-probabilistic sampling (voluntary response sampling, snowball sampling) through a web-based protocol.

Study instruments

The present study was designed as an exploratory investigation to develop a psychological well-being questionnaire adapted to the COVID-19-induced home confinement context. Most items were borrowed from Ryff's "Psychological Well-being Scale". Ryff's scale (1989) attempted to assess six domains of psychological well-being, namely i) autonomy, ii) environmental mastery, iii) personal growth, iv) positive relationships with others, v) purpose in life, and vi) self-acceptance [28,29]. The adapted questionnaire was modified to match the cultural parameters of the context (COVID-19) and the target population (The Moroccan population). A Likert scale ranging from 1 "I strongly disagree" to 7 "I strongly agree" served as a scoring base. The questionnaire was conceived and administered in Arabic through Google Forms.

To ascertain the reliability of the survey, validate its content, and ensure the clarity of its items, a pilot study was initiated on a sample of 100 participants. Subsequently, 1,051 answers were gathered from Moroccan participants. Five components were then identified through Principal Component Analysis (PCA). These components were considered as the core domains of psychological well-being during the COVID-19-induced home confinement and were labeled as follows: (1) "Personal Project" (PP); (2) "Self-Reliance" (SR); (3) "Self-Esteem" (SE); (4) "Positive Relationships with Others" (PRO); and (5) "Enjoying Space Management" (ESM). To ascertain the reliability of the survey, validate its content, and ensure the clarity of its items, a pilot study was initiated on a sample of 100 participants (see TABLE 3 for the scale items).

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Data analysis

Descriptive statistical tests were applied to analyze data through SPSS software (Version 24). PCA was performed to reduce the survey's 42 items into components. The components were labeled to act as psychological well-being parameters. A four-way MANOVA and ANOVA were used to investigate the impact of the socio-demographic factors mentioned earlier on these psychological well-being parameters (PWBP). P-value < 0.05 was considered significant.

Ethical aspects

The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of the Institutional Ethics Review Board of the Department of Applied Psychology of the Faculty of Arts and Human Sciences. When using the Google Forms application, participants' consent was obtained by asking them to check the "Yes, I agree to participate" option on the survey's cover page. Only then were they allowed to access the questionnaire.

Data availability

The data used in this research paper is not publicly accessible; however, interested individuals can request access to the data from the corresponding author upon a reasonable request.

RESULTS

The sample for our study consists of 1,051 Moroccan citizens. An overview of the socio-demographic characteristic of the sample in terms of gender, age, marital status, and education level is presented in Appendix 1. The study included a total of 1,051 participants from the Moroccan population. The gender distribution comprised 535 men (51%) and 516 women (49%), providing a relatively equal representation of both genders. In terms of age, the participants were categorized into different groups. The largest group was individuals aged between 20 and 30 (344 participants, 32.7%),

followed by those aged between 30 and 40 (229 participants, 17.2%). The other age groups were also represented, with 162 participants (15.4%) aged 20 or below, 181 participants (21.8%) aged between 40 and 50 years, and 135 participants (12.8%) above the age of 50.

Regarding marital status, the study included individuals with diverse relationship statuses. Among the participants, 464 (44%) were married, 559 (53%) were single, and a smaller proportion of 28 (3%) were divorced or widowed. This variation in marital status allows for examining the potential influences of relationship status on psychological well-being.

Regarding education level, the participants had a range of educational backgrounds. The highest proportion, 512 participants (49%), held a bachelor's degree, followed by 315 (30%) with a postgraduate degree. Additionally, 138 participants (13.1%) had obtained a Ph.D., while smaller proportions had completed high school (63 participants, 6%), middle school (12 participants, 1%), or primary school (11 participants, 1%).

When analyzing the data using Principal Component Analysis (PCA), five principal components emerged after varimax rotation, explaining up to 48.89% of the total variance. The first component -labeled "Personal project"; (PP) - is made of nine items (15, 16, 17, 18, 19, 20, 21, 22, and 33). It explains 14.53% of the variance, with a factorial saturation ranging from 0.563 (Item 15) to 0,785 (Item 22). The second component -labeled "self-esteem" (SE) - includes nine items (31, 32, 34, 35, 37, 39, 40, 41, and 42) and explains up to 10.6% of the total variance. Its loading factors range from 0.472 (Item 31) to 7.08 (Item 37). The third component -labeled "self-reliance" (SR) - which includes 11 items (1, 2, 3, 4, 5, 6, 8, 9, 10, 11, and 12), explains 8.76 % of the total variance. Its loading factors range from 0.322 (Item 9) to 0.664 (Item 3).

The fourth component -labeled "positive relationship with others" (PRO), which includes items 23, 24, 25, 26, 27, 28, and 29, explains 8% of the total variance. Its loading factor ranges from 0.502 (Item 28) to 0.633 (Item 26). The fifth component -labeled "enjoying space management"; (ESM) - consists of six items (7, 13, 14, 30, 36, and 38) and explains 7.16% of the total variance, with a loading factor ranging from 0.379 (Item 30) to 5.73 (Item 13) (See Table 1).

Each component and cross-component revealed high internal consistency (α Component 1 =0.771; α Component 2 = 0.74, Component 3 = 0.807, α Component 5 =0.763, α cross comp =0.812).

Table 1. Well-being scale of home confinement principal components and respective loading factors resulting from PCA, after Varimax Rotation and with Kaiser Normalization.

	Components				
	PP	SE	SR	PRO	ESM
Item 22	0.785				
Item 19	0.772				
Item 20	0.752				
Item 17	0.735				
Item 18	0.717				
Item 21	0.634				
Item 33	0.634				
Item 16	0.631				
Item 15	0.563				

Item 37	0.708		
Item 39	0.706		
Item 41	0.693		
Item 35	0.631		
Item 40	0.621		
Item 42	0.544		
Item 32	0.476		
Item 34	0.474		
Item 31	0.472		
Item 3		0.664	
Item 6		0.607	
Item 2		0.605	
Item 4		0.585	
Item 5		0.543	
Item 8		0.523	
Item 10		0.502	
Item 1		0.453	
Item 12		0.41	
Item 9		0.322	
Item 26			0.633
Item 25			0.62
Item 29			0.584
Item 24			0.556
Item 27			0.542
Item 28			0.502
Item 11		0.457	
Item 13			0.573
Item 38			0.572

Item 36		0.56
Item 23	0.429	
Item 14		0.424
Item 7		0.416
Item 30		0.379

The result of MANOVA showed that the participants' mean scores differ among well-being parameters (AWP). In the terms that the mean scores of all the participants are higher in PP (M = 52, SD = 13), SR (M = 52.41, SD = 12.51), and (SE) (M = 49.18, SD = 10.46) than in PRO (M = 37.1960, SD = 8.609) and (ESM) (M = 28.7773, SD = 5.002) ($F(955) = 505, p = 0.000$) (See Table 2).

ANOVA analysis indicated that contrary to what was expected, women scored higher on (ESM) (M = 29.18, SD = 4.80) than men (M = 28.39, SD = 5.16), ($F(1, 1049) = 6.545, p = 0.01$). However, the gender effect reminded variable and irregular, especially in its interaction with marital status ($F(2, 1045) = 2.950, p = 0.012$) and with age ($F(4, 1041) = 3.35, p = 0.010$). In its interaction with marital status, single females (M = 49, 091, SD = 10.88) scored higher than single males on (SE) (M = 47.07, SD = 11.11). However, a reversed trend occurred with married males (M = 50.53, SD = 9.30) compared to married females (M = 49.34, SD = 10.51) (Figure 1).

Table 2. Means and standard deviations of psychological well-being parameters by gender, age, marital status, and education level during home confinement.

Parameters	Categories	PP		SE		SR		PRO		ESM	
		M	SD	M	SD	M	SD	M	SD	M	SD
Gender	Women	53.30	13.38	49.23	10.71	51.89	12.62	37.56	8.44	29.18	4.80
	Men	51.93	13.55	49.14	10.22	52.92	12.39	36.84	8.76	28.39	5.16
	Across gender	52.60	13.48	49.18	10.46	52.42	12.51	37.20	8.61	28.78	5.00
Age	≤ 20	52.52	11.76	46.02	10.90	48.15	10.57	36.31	8.98	28.41	4.60
	20 > ≤ 30	52.59	13.82	49.15	10.15	51.64	12.44	37.80	8.61	28.94	5.27
	30 > ≤ 40	52.10	14.61	49.85	11.06	53.47	13.50	36.68	8.67	28.27	5.42
	40 > ≤ 50	52.85	13.14	50.09	9.20	54.27	12.18	37.01	7.80	28.93	4.36
	50 <	53.28	13.12	50.73	10.61	55.25	12.19	37.84	9.03	29.45	4.77

	Across ages	52.61	13.48	49.18	10.46	52.42	12.51	37.20	8.61	28.78	5.00
	Divorced/ Widow(er)	54.79	13.93	50.71	10.01	28.41	4.60	36.75	7.57	28.36	4.94
Marital Status	Married	53.09	12.92	50.14	9.72	28.94	5.27	37.28	8.34	28.78	4.81
	Single	52.09	13.90	48.31	11.0	51.35	12.57	37.15	8.89	28.80	5.17
	Across Marital Status	52.61	13.48	49.18	10.46	28.93	4.36	37.20	8.61	28.78	5.00
	Ph.D.	55.88	12.32	51.81	8.73	54.70	11.95	37.22	7.36	29.20	4.56
	Postgraduate	52.72	12.87	49.62	10.06	52.43	13.01	37.03	8.61	28.83	4.88
	Bachelor	51.95	14.21	48.40	11.01	51.59	12.45	37.44	8.96	28.71	5.23
Education Level	High School	49.37	12.62	47.28	10.76	52.83	11.92	35.51	9.05	28.16	5.14
	Middle school	50.33	11.21	46.00	10.59	51.17	6.28	36.83	5.83	28.75	3.25
	Primary school	59.82	5.91	54.45	5.99	60.82	11.71	40.36	5.48	4.12	11.00
	Across education level	52.60	13.48	49.18	10.46	52.42	12.51	37.20	8.61	28.78	5.00

PP: Personal Project; SE: Self-Esteem; SR: Self-Reliance; PRO: Positive Relationships with Others; ESM: Enjoying Space Management.

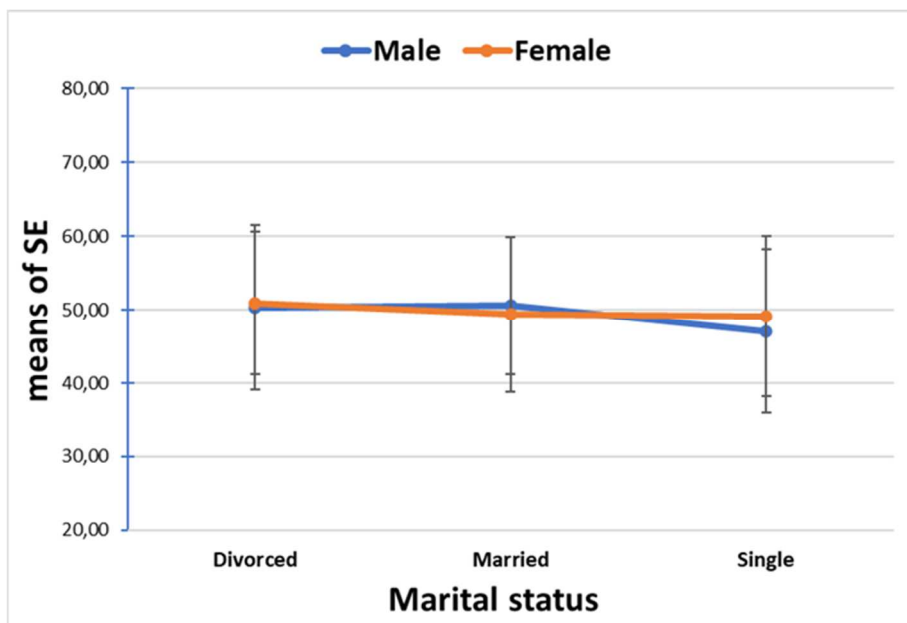


Figure 1. Marital status and gender interaction on SE.

Although, the interaction of gender effect with age on (SR) ($F(4, 1041) = 3.35, p = 0.010$) showed that both the trajectories, males and females, diverged at the beginning. The mean scores of young men were higher in (SR), compared to young women. However, this gap seems to narrow with older ages (Figure 2).

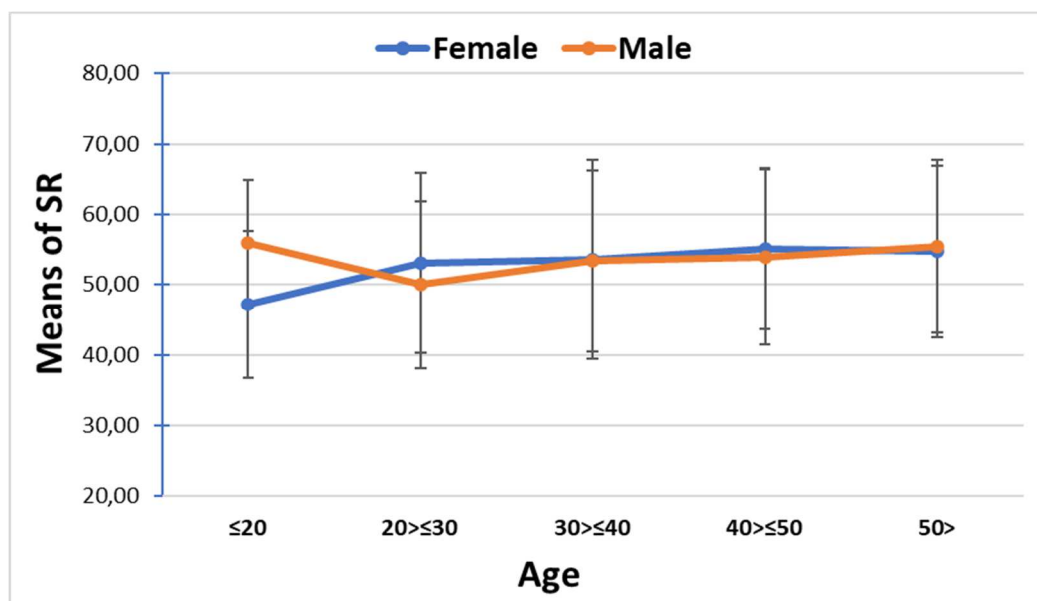


Figure 2. Age and gender interaction on SR.

The marital status effect showed an unexpected result, regarding the major search trend about C19HC, in the way that single participants scored higher than married participants on (SR) ($F(2, 1048) = 4.24, p = .012$), indicating that single individuals coped better with (SR) ($M = 51.35, SD = 12.57$) than married ones ($M = 28.94, SD = 5.27$), and divorced/widowed individuals ($M = 28.41, SD = 4.60$).

ANOVA result illustrated, also, an unexpected impact of age on (SE) ($F(4, 1049) = 5.093, p = 0, 000$) and (SR) ($F(4, 1046) = 8.395, p = 0.001$), indicating an increase, with age, of (SE) and (SR). In the way that older participants scored higher on (SE) and (SR) than other age categories (Figure 3)

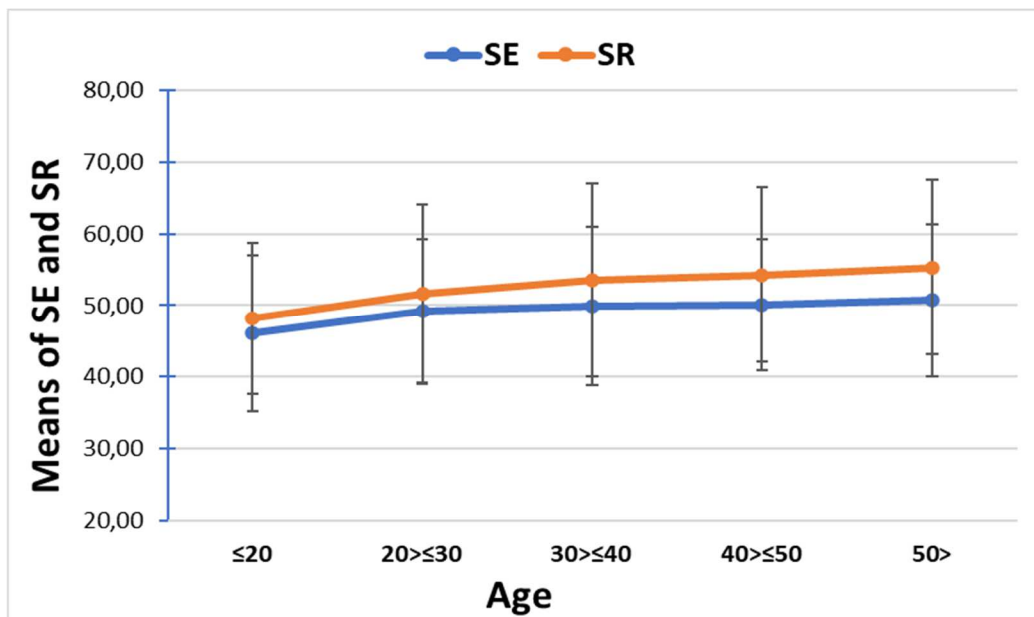


Figure 3. Effect of age on SE and SR.

Level of education, through ANOVA test, revealed a nonlinear impact on three parameters, followed a quasi-concave curve in (SE) ($F(5, 1045) = 2.40, p = 0.035$) (PP) ($F(5, 1048) = 3.3346, p = 0.005$) and a zigzagging curve in (SR) ($F(5, 1045) = 2.40, p = 0.035$), demonstrating that participants with low education level scored higher than participants with advance level of education (Figure 4).

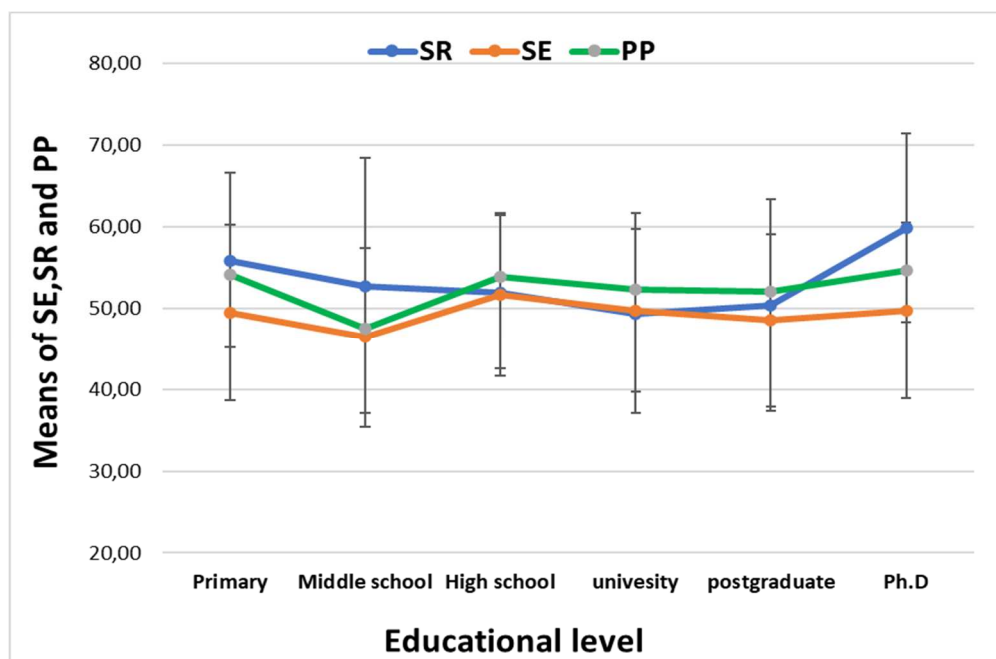


Figure 4. Effect of educational level on SE, SR, and PP.

DISCUSSION

This study has identified three indicators, proving that we are witnessing an irregular interaction between social demographic variables and well-being parameters. The first indicator is the unexpected impact of gender, age, and marital status compared to existing literature. The second indicator, named varied impact, is illustrated by the mean scores of the

participants' answers which varied across well-being parameters [30]. Although to the varied effect of gender, women generally scored higher than men in (SM), and single women also scored higher than single men in (SM). However, married men have demonstrated a higher level than married women for (SE), and young men showed higher SR than young women.

The three indicators in this study prove the limitation of using only the traditional causal and linear model to explain such results. In this study, the occurrence of this irregular dynamic requires further analysis. For instance, the gender factor revealed both unexpected impact and irregular impacts. The unexpected effect is illustrated by the fact that women have scored in (ESM) higher than men. This finding was aligned with what few studies demonstrated, on the fact that women during C19HC experienced low anxiety and depression states [19] and a higher level of self-esteem [31].

However, this finding is still an unexpected result in reference to numerous studies conducted in many countries [7,14,15,20,32,33]. According to those studies, because of their numerous household-related responsibilities, women during C19HC were more exposed than men to distress and anxiety [26,34]. Even athlete females were affected by this stereotype, for it was concluded that they would feel less motivated and more depressed than men [33].

In respect of these results, Moroccan women excelled in "ESM" because, we argue, home confinement revealed that when men and women are brought under the same conditions, i.e., men were forced to stay at home and participate in household responsibilities, women are far more disposed to enjoy their space management than men.

The variability of gender impact was demonstrated, in its turn, by its instability. For example, women, single ones, in particular, scored higher than men on (SE). However, married females displayed lower scores on the same parameter than married males (SE). In the same way, young males exhibited higher scores on (SR) than young females. These findings suggest the presence of an intra-gender variability, which proves that the gender effect is not static, but changes whenever a new socio-demographic factor is introduced (age and marital status in our case) [24].

Marital status also showed an unexpected impact insofar that single individuals displayed a higher score regarding (SR) than married individuals [16]. This result was deemed unexpected since it strongly disagrees with the conclusions of many studies. Many of those confirmed that single subjects are a risk factor for having low (PWB) during (C19HC) [18-21,35]. In this regard, it can be assumed that the high scores of (SR) in single subjects were since living without a partner, meaning the absence of a partner's assistance sometimes led them to be more autonomous in their decision-making processes and willing to mobilize their skills to manage their lifestyle during home confinement. The absence of a partner's presence and support may have prompted single individuals to become more proactive in addressing their needs and challenges. They may have been motivated to take responsibility for their well-being, making independent decisions and finding ways to cope effectively with the constraints of confinement. Additionally, single individuals may have had more flexibility in managing their time and resources during home confinement. They may have had fewer familial obligations and responsibilities, allowing them to focus on personal growth, self-care, and pursuing activities that contribute to their sense of well-being.

The age factor reveals an unexpected impact as well. Older individuals have displayed high levels of (SE) and (SR) compared to younger ones. This result goes against the findings of some studies, which stressed that elders were more prone to developing mental disorders during home confinement [6,14]. At this point, it would be interesting to keep an open eye on the age factor and its impact on populations in times like these. In addition, a study conducted in the USA on a population of 3.617 old adults showed that the subjects expressed a high level of (SE) than any other group age [23]. As reported by psychologists, old adults develop wisdom and refer to their previous experiences to deal with uncertainty in times of risk [36]. Older individuals may have developed a sense of self-worth and confidence over the years, allowing them to rely on their past successes and challenges to cope effectively with confinement. Their ability to draw upon a wealth of experiences and knowledge may provide them with a unique perspective and a sense of control, contributing to higher levels of self-esteem.

The education level, in turn, has engendered two aspects of irregular models. First, participants with a low level of education scored better in (PP), (SE) and (SR), compared to participants with a high level of education. This result calls into question another idea conveyed by several studies about people with a lower level of education, insofar as they develop bigger risks of anxiety, depression, stress, loneliness, and low self-esteem [1,7,18], along with lower levels of life satisfaction during home confinement [19,37]. This paper presents literacy and a low level of education as a protective factor of psychological well-being during COVID-19 home confinement, accordingly to a cross-sectional study [25] conducted in Vietnam, which confirmed that literacy acted as a shield for life satisfaction during the pandemic.

We suspect this situation was due to the fact that individuals with low levels of education were sometimes unable to understand scientific information about the pandemic and the intensity of home confinement. Moreover, they were also more prone to believe misinformation, such as conspiracy theories that have denied the existence of the virus, allowing themselves to live in a kind of psychological comfort and maintain the same lifestyle they had before the pandemic crisis. They were also the ones who demonstrated less responsible behaviors regarding health protocols [25].

The nonlinear impact of education appeared through the U-shaped curve of (PP) and SE and the zigzagged line of (SR). This pattern follows the same one as in a study conducted in Bangladesh [15].

The differences in means scores within (PWBP) are yet another example of irregular effects. Why did the population score higher on (PP), (SR), and (SE) than on (PRO) and (ESM)? We think (PRO) and (ESM) lower scores were due to the difficulty individuals faced when managing their relationships with others while sharing their living space, especially during an extended period of time [38]. When individuals are confined together for a prolonged period, tensions may arise due to the lack of personal space, privacy and the increased need for negotiation and compromise in daily interactions. This led to people living under the impression that their personal space and privacy were being invaded [39]. In such situations, individuals may experience increased stress, irritability, and conflicts with their cohabitants, which can strain their relationships and hinder the development of positive and fulfilling connections with others. The limited physical and social environments during confinement may restrict opportunities for engaging in meaningful social interactions, leading to loneliness, isolation, and dissatisfaction with one's relationships.

Furthermore, "others" became suddenly perceived as the source of contamination. In addition, the fact that social distancing encouraged individuals to focus on themselves and their autonomy might explain why (SR) was higher than (SM) and (PRO). The higher scores in Personal Project, Self-Reliance, and Self-Esteem within the perceived well-being parameters can be understood as individuals adapting to the challenging confinement conditions by focusing on personal growth and development. During the lockdown, people were left with more free time, which presented an opportunity to develop self-learning experiences and processes, positively impacting (SE) [39,40], indeed, being alone and having more free time than usual allowed individuals to reminisce about the chain of events and think further about their (PP) after the pandemic [40,41]. Self-reliance becomes crucial in confinement situations where individuals have limited access to external resources or support systems. In such circumstances, individuals may need to rely on their skills, knowledge, and abilities to meet their needs and overcome challenges. Self-reliance helps individuals navigate the practical aspects of daily life and fosters a sense of resilience and empowerment.

According to Mayrel et al. (2022), most studies on well-being and mental health during home confinement disregarded the possible heterogeneity within populations [42]. The present study took a risk by exposing the nonlinear and unexpected dynamics that emerged when introducing different socio-demographic factors into psychological well-being parameters in the context of the COVID-19 lockdown.

The results of the present study aligned with the scare research that focused on this specific aspect of the issue, particularly during the COVID-19 pandemic [43-47]. Through this study, we also hope to attract public health decision-makers attention to include different scenarios in elaborating anticipatory plans in the case of a new pandemic and avoid sticking to regular scenarios only. It is

crucial to recognize that the impacts of socio-demographic factors on psychological well-being are multifaceted and can vary across different populations, emphasizing the importance of adopting an individualized and inclusive approach to support psychological well-being during home confinement. The unexpected impacts of age, gender, education levels, and marital status underscore the need for tailored interventions that address the unique challenges different demographic groups face. By integrating these insights into public health planning, decision-makers can develop more effective and comprehensive approaches that promote the psychological well-being of the Moroccan population during home confinement and future crises.

The findings of this study underscore the importance of ongoing research and data collection to deepen our understanding of the complex interplay between socio-demographic factors and psychological well-being. Continued exploration and analysis of these factors will contribute to developing more effective and tailored strategies to promote well-being in diverse populations.

Despite the detailed design and execution of this study, some limitations should be considered when interpreting the results. Firstly, the study relied on a non-probabilistic sampling method, which may have resulted in a biased sample. Secondly, the study was conducted solely through an online survey, which may have limited the participation of individuals with limited access to the technology. Additionally, the study relied on self-reported data, which may be subject to response and social desirability biases. Applying a solely quantitative approach can also be considered a limitation of this study.

CONCLUSION

In conclusion, we have conceived that the relationship between socio-demographic factors and some psychological well-being core domains exhibits nonlinear, non-deterministic, and irregular patterns. The three indicators in this study unequivocally demonstrate the limitations of utilizing just the conventional causal and linear model to explain such outcomes.

From a practical perspective, we believe that the results of this study are important for national decision-makers to bring awareness to the importance of the irregular and nonlinear approach when developing preventive strategies during pandemics or disasters [48-53]. These so-called strategies should explore different scenarios, not just one, to face future uncertainties. Decision-makers should consider multiple scenarios and anticipate the potential diverse impacts on other demographic groups. This calls for developing comprehensive, inclusive, and context-specific interventions that cater to the specific needs and vulnerabilities of individuals within the population.

From a research perspective, these results underscore the importance of further investigations considering the intricate interactions and contextual dynamics in shaping psychological well-being outcomes. Future studies should explore additional factors and dimensions that may influence psychological well-being during times of crisis, such as social support networks, cultural influences, and coping mechanisms. Adopting a multidimensional approach will help to capture the complexity of human experiences and promote a more comprehensive understanding of psychological well-being.

Overall, the perspectives derived from this study open new avenues for research and inform practical strategies for promoting psychological well-being during times of crisis. By embracing a more nuanced and comprehensive understanding of the factors influencing psychological well-being, decision-makers can develop more effective and targeted approaches to support the population's mental health in challenging times.

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Appendix 1

A 1. Distribution of the sample by gender, age, marital status, and education level

VARIABLE	CATEGORIES	N (%)
Gender	Men	535 (51)
	Women	516 (49)
Age	≤ 20	162 (15.4)
	20 > ≤ 30	344 (32.7)
	30 > ≤ 40	229 (17.2)
	40 > ≤ 50	181(21.8)
	50 >	135(12.8)
Marital Status	Divorced/ Widow(er)	28 (3)
	Married	464 (44)
	Single	559 (53)
Education Level	Ph.D.	138 (13.1)
	Postgraduate	315 (30)
	Bachelor	512(49)
	High School	63(6)
	Middle school	12(1)
	Primary school	11 (1)

Appendix 2. Full items of the Well-being scale for home confinement.

Self-reliance (SR)

- 1-I consider myself to be independent of others. Therefore, in a sanitary confinement situation, I can isolate myself from others without problems.
- 2- Other individuals' behavior toward sanitary containment did not affect my behavior toward containment.
- 3- I was not very affected by the opinions of others during the COVID-19 time.
4. I am confident in my opinion of COVID-19 despite the presence of skeptics.
- 5- It was not difficult for me to express my positions on Covid-19 and sanitary containment.
- 6- I did not care about the attitude of my friends and family toward my behavior regarding COVID-19
- 8- The limited space of the sanitary containment area did not generate any frustration in me.
- 9- I was responsible for managing the housing area during the sanitary confinement.
- 10 - When I compare my psychological state between the time of the lockdown and today, I am grateful for my current state.
- 11- I think that others suffered more than me from the lockdown.
- 12 - During the lockdown, I was thinking about my day and what would come once the lockdown is lifted.

Enjoying space management (ESM)

- 7 - I felt responsible for my family members respecting the boundaries of the sanitary containment area.
- 13 - I didn't try to escape the lockdown space through the phone/social media.
- 14 - I didn't try to find an escape within the sanitary containment area.
- 30- I was not tired of managing the containment area.
- 36- I was not bothered by how the people confined with me used the sanitary containment area.
- 38 - I did not try to force any rules regarding managing the sanitary containment area upon the people confined with me.

Personal project (PP)

- 15 - I tried to develop a personal project during the health confinement.
- 16- The sanitary confinement was a new experience that allowed me to change the way I think about myself and the rest of the world.
- 17 - I feel that the sanitary confinement has strengthened my character.
- 18 - I wanted to change aspects of my personality during the health confinement.
- 19 - I feel that I have improved during sanitary confinement.
- 20- The sanitary confinement was a good opportunity for personal development by learning new things.
- 21 - I accepted that being in a health confinement situation required changing some of my habits.
- 22 - I was able to set new goals during the health lockdown.
- 33 - The lockdown was an opportunity to plan and work on many projects.

Positive relationship with others (PRO)

- 23 - I have become more considerate of my family during the health confinement.
- 24 - I managed to maintain a close relationship with my family members (husband, wife, father, children, etc.) during the health confinement.
- 25 - During the sanitary confinement, I did not feel lonely or isolated from my relatives (those not living in the same space as me).
- 26 - I greatly enjoyed the discussions and conversations I shared with my family during the health confinement.
- 27-I think my family members realized during the health confinement that I am a generous and helpful person.
- 28- My relationship with others was not especially cautious due to COVID-19 and sanitary containment.
- 29 - The sanitary confinement taught me to trust my family members and have them trust me in return.

Self-esteem (SE)

- 31 - The feeling of having a purpose in my life remained present despite the lockdown.

32 - My daily activities during the lockdown often seemed important and productive.

34 - I am not among those who lived without a goal during the lockdown.

35 - I did not feel that my life stopped during the health confinement and that there was no need to set goals anymore.

37 - I had a positive and confident outlook during the health confinement.

39 My relationship with myself remained positive despite the lockdown.

40 - I am not disappointed by COVID-19 and the lockdown, for they did not interfere with my life and plans.

41- Compared to others, my positions towards myself were positive during the health confinement.

42- When I compare myself to my friends and acquaintances and think of what they went through during the health confinement, I feel a kind of satisfaction and relief about my current self.



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