



Quality of life in a Palestinian population during the pandemic age: the role of mental health, fear of Covid-19, and vaccine hesitancy

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Abstract

Aim Two years after the onset of the Covid-19 pandemic, extensive research has documented its profound impact on the quality of life and mental health of millions of people worldwide. However, there remains a need to explore the relationships between people's mental health, their fear of Covid-19, and vaccine hesitancy, as well as their impact on populations living with marginalization, in poverty, and under military violence. The present study aimed to investigate the relationships between mental health, hesitancy to the vaccine, and fear of Covid-19 within the Palestinian population.

Subject and methods The study included a sample of 1122 participants, of which 772 (68.8%) were women, residing in the West Bank, Gaza, East Jerusalem, and Israel. The Fear of Covid-19 Scale, Depression Anxiety Stress Scale, The Covid-19 Vaccines Acceptance scale, and the World Health Organization Quality of Life were administered.

Results Our findings revealed an inverse correlation between participants' quality of life and their fear of Covid-19. Additionally, higher levels of fear of Covid-19 were associated with increased levels of depression, anxiety, stress, and vaccine hesitancy.

Conclusion The study provides valuable insight that can guide the development of interventions aimed at supporting the well-being and mental health of the Palestinian population.

Keywords Mental Health, Social inequalities · Quality of Life · Covid-19 · Palestine · Vaccine hesitancy

Introduction

Over two years after the emergence of coronavirus disease (COVID-19), many researchers have highlighted its devastating impact on the mental health and quality of life of people around the globe (Harper et al. 2021; Pakpour and Griffiths 2020; WHO 2021). An increase in depressive symptoms, anxiety, manifestations of extreme fear, insomnia problems, stress, and nervous exhaustion has been reported

among all populations (Cavazzoni et al. 2023; Jones et al. 2021; Kola et al. 2021; Liu et al. 2022; O'Connor et al. 2021; Robinson et al. 2022; Veronese et al. 2021a, b, among others). In addition to the explored determinants of mental health, fear of Covid-19 (*coronaphobia*, Asmundson and Taylor 2020) emerged as crucial in predicting people's psychological well-being and quality of life. Understanding *Quality of Life* as the way individuals assess their functioning and satisfaction in multiple domains of their lives (sense of emotional control, social network, satisfaction with one's socioeconomic status) (Diener et al. 1999), the pandemic's onset had a preponderant impact in all domains. Containment measures have prevented people from benefiting from their family and social relationships – crucial to personal well-being (Kafetsios and Sideridis 2006; Lan et al. 2015; Yilmaz et al. 2017) – and have led to the closure of many activities not considered essential, causing an unprecedented impact on household income (Brooks et al. 2020; Clark et al. 2021; Veronese et al. 2021a, b). The feeling of uncontrollability of the virus, combined with the experience of extreme

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precariousness of one's living and working conditions, are potent triggers of feelings of anxiety, stress, depression, and death anxiety (Liao et al. 2020; Rajkumar 2020). Indeed, the fear of Covid-19 is capable of exacerbating already existing situations of fragility, eliciting extreme anxiety and stress reactions, depressive experiences, and provoking irrational thoughts (Bakioğlu et al. 2020; Colizzi et al. 2020; Harper et al. 2021; Satıcı et al. 2020; Sun et al. 2020).

Moreover, the pandemic outbreak bolded global inequalities, undermining the quality of life of millions worldwide but mainly in the Global South (Baptiste et al. 2020; Shek 2021).

Following a first focus directed at exploring the impact of the pandemic's outbreak on people's mental health and quality of life – and its related containment measures implemented (e.g., closure of services, lockdowns, social isolation) – nowadays, several are contributions which analyze its long-term impact on people's mental health and quality of life. For instance, among the studies focused on longitudinal trends, a large-scale improvement in people's mental health has emerged between Covid-19 first and second wave (Fancourt et al. 2021; Daly and Robinson 2022; Pierce et al. 2021), depicting a lowering of the levels of distress and anxiety (Fancourt et al. 2021; and Daly and Robinson 2022). On the other hand, the arrival of the vaccine has triggered new aspects of anxiety and distress relative to fear of the vaccine (in terms of fear of side effects, vaccine safety, vaccine effectiveness (Lin et al. 2020) or the inability to access it, which reinforced feelings of uncertainty and unsafety (McNeil and Purdon 2022; Shek 2021).

As of October 2022, when vaccines are widely available, a significant concern exists within the scientific communities in exploring the relationship between Covid fear, vaccine hesitancy – defined as “the reluctance or refusal to vaccinate despite the availability of vaccines” (WHO 2014, p.3) – and the related impact on people's quality of life. Indeed, the relationship between fear of Covid and adherence to vaccination protocols still requires further exploration, with divergent results within different countries concerning people's mental health. For example, recent studies highlight a positive correlation between fear of Covid and vaccine hesitancy (McElfish et al. 2021; Willis et al. 2021; Machado et al. 2021). More specifically, a greater fear of Covid seemed to correspond to a greater willingness to vaccinate, which was then connected to better life satisfaction. Similarly, in an extensive work among low- and middle-income countries (Brazil, Malaysia, Thailand, Bangladesh, Democratic Republic of Congo, Benin, Uganda, Malawi, and Mali), researchers highlight that fear of Covid was a significant predictor of vaccination (Bono et al. 2021), capable then of lowering anxiety and stress levels.

In contrast, in Nigeria, Chutiya et al. (2022) find they find no correlation between the two variables, reporting hesitation to vaccination as predicted by greater fear about

vaccine safety, compared with equal fear toward Covid infection. Moreover, recent research highlighted how reluctance to the vaccine was highly related to demographic aspects. Lower-income, precarious living conditions, low access to health facilities, as well as lower levels of education have been correlated with higher levels of vaccine hesitancy (Bono et al. 2021; McElfish et al. 2021; Funk and Tyson 2020; Malik et al. 2020; Willis et al. 2021).

Hence, our study aimed to explore the effects of mental distress and Covid-19 and Covid vaccine-related factors on people's quality of life (QoL) in a population living in marginalization, poverty and military violence.

The study

Regarding the Palestinian context – where the present study took place – very few contributions have gone to investigate the role of Covid fear and vaccine hesitancy in predicting people's quality of life and mental health. For instance, in a recent cross-sectional survey on attitude and acceptance toward vaccines carried out between May and June 2021 in the West Bank and Gaza Strip (Al-Kafarna et al. 2022), scholars highlighted a positive association between fear of Covid and vaccine acceptance, evidencing how people with higher levels of anxiety and stress related to the pandemic were more likely to vaccinate (Al-Kafarna et al. 2022). However, it was not sufficiently investigated whether the possibility of having access to the vaccine was then able to reduce anxiety and stress levels, generating better outcomes when in terms of quality of life. Moreover, there is a paucity of research aimed at investigating Palestinians' quality of life, Covid fear, and vaccine hesitancy with diverse geographical contexts within the oPts and Israel; thus, research that aimed at placing a focus on the impact of social inequalities present.

Therefore, our paper sought to investigate the effect of mental health (specifically in terms of depression, anxiety, and stress), vaccine hesitancy and fear of Covid-19 on the quality of Life (QoL) within a population facing ongoing military violence in the West Bank and Gaza Strip, as well as social inequality and poverty in Israel. We first expected that levels of depression, anxiety, and stress would serve as predictors of the quality of life (**H1**). Furthermore, we expected that fear of Covid-19 and vaccine hesitancy were both associated with quality of life (**H2** and **H3**, respectively). Differences between the diverse geographical contexts were also explored. We expected higher levels of mental distress in the oPts (West Bank and Gaza) compared to Israel. Moreover, we anticipated to observe greater vaccine hesitancy in the oPts and higher levels of fear of Covid-19 in Israel, where the vaccination campaign was extensive and capillary even among the Palestinian population resident into the '48 borders.

Methods

The research was conducted in line with the ethical guidelines of the American Psychological Association (APA, 2010) and the Declaration of Helsinki (2013) and had been approved locally by the An-Najah National University IRB (Protocol INTR. June.2022/9).

Participants

One thousand one hundred twenty-two participants participated in the research. Of them, 772 (68.8%) were women. Nearly 15% ($n = 162$) hold secondary education, 53.7% ($n = 602$) a bachelor's degree and 31.8% ($n = 357$) a master's degree or higher. To ensure diversity and representation within the study, we selected four distinct geographical regions: Gaza, the West Bank, East Jerusalem, and Israel. Nearly half of our participants resided in Gaza ($n = 559$), followed by the West Bank ($n = 398$, 35.5%) and East Jerusalem ($n = 57$, 5.1%). Finally, 107 (9.5%) were Palestinians living in Israel. The sample was mostly characterized by its urban setting, where nearly 70% ($n = 776$) live in a city compared to 221 (19.7%) and 124 (11.1%) who live in villages and registered refugee camps, respectively. Inclusion criteria comprised: being Palestinian adults, residing both in Israel and Palestinian territory, and being native Arabic speakers. By focusing on both Israel and Palestinian territory we aimed to account for the significant variations in access to healthcare, exposure to ongoing military violence, and the level of public health measures, including vaccination campaigns in each areas. Non-Palestinian origins were excluded from the study.

Measures

Depression, Anxiety, and Stress Scale (DASS-21)

This scale is a 21-item self-reported questionnaire designed by Lovibond and Lovibond (1995) to measure the severity of a range of symptoms common in depression and anxiety. In completing the DASS-21, the individual must indicate the presence of symptoms over the previous week. Each item is scored from 0 (did not apply to me at all over the past week) to 3 (applied to me very much or most of the time over the past week).

World Health Organization Quality of Life (WHOQOL-BREF)

WHOQOL is self-administered questionnaire comprising 26 questions on the individual's perceptions of their health and

well-being over the previous two weeks. Responses to questions are on a 1–5 Likert scale. One example of an item is “How much do you enjoy life?”, rated on the following response options (1) not at all, (2) a little, (3) a moderate amount, (4) very much, and (5) an extreme amount. High scores on WHOQOL-BREF indicate a higher degree of health and a better quality of life.

The Fear of Coronavirus-19 Scale (FCV-19S)

This scale is a self-report measure to assess fear of COVID-19. The scale consists of seven items about emotional fear reactions toward the pandemic. Participants are requested to respond on a five-item Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). The total score ranges between 7 and 35, with a higher sum score indicating higher fear of COVID-19 (Ahorsu et al. 2020).

The COVID-19 Vaccines Acceptance scale (VAC-COVID-19)

The scale consists in a questionnaire developed by Mejia et al. (2021) to assess participants' beliefs and behaviors, and attitudes toward vaccination. The scale ended up with 11 items with two main sub-factors: Factor 1 (reasons for not receiving vaccination), the items (1–7) represent this factor, while Factor 2 (reasons for receiving vaccination), represented by items (8–11). The responses to the items are interpreted on a 5-point Likert scale ranging from 1 to 5 (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). In the current study, we only used the first dimension of the scale (reasons for not receiving vaccination).

Data analysis

Data from the protocol were analyzed using SPSS.25 software. Correlation analysis indicated the association between the study variables. Moreover, one-way ANOVA was performed to detect differences between the multiple Palestinian contexts, while linear regression analysis was run to detect the association between independent (depression, anxiety, and stress) and target (QoL) variables.

Results

Descriptive statistics were assessed and shown in Table 1. All scales showed high-reliability alpha Cronbach ranging from .82 (stress) to .91 (Fear of COVID).

One-way ANOVA indicated a significant difference in the context related to QoL, $F(3,1117) = 9.56, p < .001$, Stress, $F(3,1117) = 5.18, p = .001$, Anxiety, $F(3, 1117) = 19.80, p < .001$, depression, $F(3, 1117) = 7.70, p < .001$, Fear of

Table 1 Descriptive statistics for research variables ($N = 1122$)

Variable	Mean	S.D	Min	Max	Range	Skewness	Kurtosis	Reliability
QoL	3.4147	.01939	1.21	4.96	3.75	-.516	.323	.90
Stress	2.1559	.01999	1.00	4.00	3.00	.489	.054	.82
Anxiety	1.8097	.02080	1.00	4.00	3.00	1.042	.851	.85
Depression	2.1289	.01989	1.00	4.00	3.00	.524	.145	.86
Fear of COVID	1.6615	.02739	.29	5.00	4.71	1.483	1.548	.91
Reluctance	2.4368	.01818	.15	4.00	3.85	.138	.019	.86

covid, $F(2, 1111) = 17.51, p < .001$, reluctance to vaccine, $F(3, 1111) = 2.78, p < .04$. LSD *post hoc* tests showed that Gazan residents revealed lower QoL than West Bank residents ($p < .001$) and 1948 region residents ($p = .001$). In addition, Gazan residents reported more stress than those who live in the West Bank ($p = .001$) and East Jerusalem ($p = .007$). Regarding anxiety, 1948 residents reported more anxiety than Gazan residents ($p < .001$), West Bank residents ($p < .001$), and East Jerusalem ($p < .001$). Likewise, Gazan residents reported more anxiety than those who live in West Bank ($p < .001$) and East Jerusalem ($p < .001$). Moreover, East Jerusalem residents reported less depression compared to Gazan residents ($p = .02$) and 1948 residents ($p = .02$), Gaza residents reported more depression than West Bank ($p < .001$). Furthermore, 1948 residents reported more fear of Covid than Gazan residents ($p < .001$), West Bank residents ($p < .001$), and East Jerusalem residents ($p < .001$). Similarly, Gazan residents reported more fear of Covid than those who live in the West Bank ($p < .001$) and in East Jerusalem ($p = .01$). Finally, East Jerusalem residents reported more reluctance to the vaccine compared to those in the West Bank ($p = .006$), and Gazan residents ($p = .03$).

Pearson's correlation analyses were performed to investigate associations between several continuous variables. Results indicated that fear of covid positively correlated with stress, anxiety, depression, and vaccine hesitancy. However, it negatively correlated to QoL (see Table 2).

Prediction of QoL

In order to predict the QoL, *first* (in step 1), we entered each of the independent variables (fear of Covid, depression,

anxiety, stress depression, and reluctance to vaccine) alone as a predictor of QoL as a dependent variable. Simple linear regression shows that QoL significantly was predicted by fear of Covid ($\beta = -.160, p < .001$) (H2), stress ($\beta = -.355, p < .001$), anxiety ($\beta = -.360, p < .001$), depression ($\beta = -.376, p < .001$) (H1), and reluctance to vaccine ($\beta = -.086, p = .004$) (H3). *Second* (in step 2), we entered all of the independent variables (fear of Covid, stress, anxiety, depression, and reluctance to the vaccine) together as predictors of QoL (DV). Simple linear regression shows that QoL is significantly predicted by anxiety ($\beta = -.145, p = .008$) and depression ($\beta = -.226, p = .001$) (see Table 3) proving a relevant role of mental distress (excluded stress) as a risk factor for QoL among Palestinians.

Discussion

Our work sought to explore QoL in a group of Palestinian adult residents in different contexts in the oPt and Israel during the pandemic and how mental health, fear of Covid, and vaccine reluctance influenced it. The picture that emerged is relatively composite and complex, showing an association between the independent variables included in our study and QoL in all the studied contexts. Gaza Strip results evidenced the more compromised mental distress and QoL disruption, followed by the West Bank and the Israeli territories (Veronese et al. 2014, 2015). Gaza has been enduring a severe siege for more than a decade, making the life of inhabitants almost impossible due to political, military, and environmental restrictions (Gleeson 2017). Thus, stress and

Table 2 Correlation among fear of Covid, stress, anxiety, depression, reluctance to vaccine and QoL

	1	2	3	4	5	6
1. Fear of covid	–					
2. Stress	.327**	–				
3. Anxiety	.456**	.816**	–			
4. Depression	.371**	.894**	.832**	–		
5. Reluctance to vaccine	.232**	.282**	.276**	.289**	–	
6. QoL	-.160**	-.355**	-.360**	-.376**	-.086**	–

**Correlation is significant at the 0.01 level (2-tailed).

*Correlation is significant at the 0.05 level (2-tailed)

Table 3 Hierarchical regression analysis for QoL by fear of Covid, stress, anxiety, depression, and reluctance to the vaccine ($N = 1113$)

	QoL (step 1)		β	QoL (step 2)	
	B [95% CI]			B [95% CI]	β
Fear of Covid	-.114 [-.155, -.073]***		-.160	-.002 [3.96, 4.30]	-.002
Stress	-.344 [-.397, -.291]***		-.355	-.004 [-.167, .080]	-.045
Anxiety	-.366 [-.387, -.285]***		-.360	-.135 [-.234, -.036]**	-.145
Depression	-.367 [-.420, -.314]***		-.376	-.221 [-.350, -.092]**	-.226
Reluctance to vaccine	-.092 [-.155, -.029]**		-.086	.038 [-.024, .100]	.035
R^2				.151†	
Adjusted R^2	.147				

* $p < 0.05$.** $p < 0.01$ *** $p < 0.001$ † R^2 change: QoL: $F(5, 1108) = 39.50, p < .001$

depression are the most serious concerns for QoL in Gaza compared to the other Palestinian contexts. In Israel, the marginalization and pressure on the Palestinian population of Muslim and Christian descent and a climate of chronic economic and political uncertainty are increasing the anxiety among the population, as well as more concerns about the Covid-19 pandemic and its consequences (Peleg and Zoabi 2014). The West Bank of the Palestinian territories and East Jerusalem seemed to display better mental health compared to Gaza and less fear of the virus, while the population appeared less confident in the health authority vaccination campaign during the pandemic. East Jerusalem is enduring a low-intensity and prolonged ethnic cleansing that is isolating the Palestinian population over the years. If the military occupation appears lesser violent and aggressive than in the Palestinian territory, a diffuse sense of dispossession and insecurity is widespread among the population and contributed to undermining QoL (Hammoudeh et al. 2016). This bold and pervasive sense of insecurity might have undermined the trust toward the authority, making the people skeptical about the vaccination campaign that could have been seen as an ulterior occasion of surveillance and control by the occupier (Lederman et al. 2022). Indeed, research indicates that lower levels of trust in ones' government or administration highly correlate with higher hesitancy to the vaccine (Soares et al. 2021; Trent et al. 2022). The Covid-19 fear and reluctance to the vaccine, in general, resulted in added burdens to a deteriorated mental well-being (anxiety, stress, and depression) in the whole tested population belonging to the four main territorial entities in the region (Veronese et al. 2021a, b; Watt et al. 2021). Covid-19 fear and refusal of the vaccination revealed a role as aggravating factors for a Palestinian population living with distressful mental conditions and chronic stress. The pandemic outbreak added to the indigenous Palestinian population additional burdens that risk compromising their already precarious QoL and well-being (Gabriel 2023; Helbich and Jabr

2021). Hence, over the past three years, Palestinians have perceived vaccines and Covid-19 as added stressors to their already precarious mental well-being, which might impede the development of a decent existence and life satisfaction (Giacaman et al. 2011).

Some limitations of the study must be acknowledged. First, online surveys might exclude from the participants' selection those individuals that have less access to technologies and less general QoL. A longitudinal, stratified sample research design could be more inclusive and accurate than the present pilot research. Mixed method approaches are recommendable to fully understand the meaning of a compromised QoL during the pandemic. Furthermore, instruments and procedures capable of clearly detecting the influence of political antecedents and determinants on people's QoL are recommendable, even to better understand how Covid-19 compromised the already precarious situation.

Future research might be oriented toward a deeper understanding of the determinants and antecedents of the syndemic Covid-19 crisis in Palestine (Kenyon 2020).

Conclusion

Mental public health approaches in Palestine, mainly during the pandemic outbreak, must consider the already undermined QoL of the civil population (Khamis 2020). The diffuse social suffering in the whole indigenous population living in the area, plus the burdens of the pandemic, dramatically reduced the self-perceived QoL among individuals, highlighting the human rights crisis in the region. Health and mental health interventions, so far, cannot avoid considering dimensions related to social, political, and ethnic inequality, making the Covid-19 crisis a syndemic issue (Mendenhall 2020). Accordingly, interventions to ease the coronavirus consequences in a population affected in its QoL by multiple levels of inequality cannot be avoided, including human rights-oriented models

and approaches advocating for restoring social justice and equity in the region (Diab et al. 2018, 2020). An intersectional approach to the QoL assessment and explanation will contribute to revealing the stratified determinants of mental suffering in the Covid-19 age in populations affected by systematic violence, marginalization, and exclusion.

Authors' contributions GV, BE, MD, FM, and FC developed the research design. DB and AI did the data collection. GV, BE, MD, FM, FC, and DB worked on the data analysis. All authors contributed to the writing of the paper and approved the final version.

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Data availability N/A

Declarations

Ethical statement The research adhered to the ethical principles outlined by the American Psychological Association (APA, 2010) and the Declaration of Helsinki (2013) and was granted local approval by the An-Najah National University IRB (Protocol INTR). June.2022/9).

Ethics approval The research was conducted in line with the ethical guidelines of the American Psychological Association (APA, 2010) and the Declaration of Helsinki (2013) and had been approved locally by the An-Najah National University IRB (Protocol INTR). June.2022/9).

Informed consent Informed consent was obtained from all individual participants included in the study.

Consent for publication All authors have authorized the submission of their manuscript and approved any statements or declarations.

Conflict of interest The authors have no conflicting interests to declare.

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