



Environmental concerns, physical and mental health among Palestinians: the mediating roles of optimism, pessimism and meaning in life

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Abstract

Objective We investigated the association between environmental concerns, health and mental health among Palestinians and whether optimism, pessimism and meaning in life mediate the association between these variables.

Methods Our study sample consisted of 504 participants who were selected using online tools.

Findings The results revealed that pessimism negatively correlated with optimism, mental health, physical health and meaning in life, while optimism positively correlated with mental health, physical health and meaning in life and negatively correlated with environmental concerns. Moreover, meaning in life correlated negatively with environmental concerns. Structural equation modelling (SEM) analysis showed that optimism, pessimism and meaning in life mediate the correlation between environmental concerns, health and mental health with a good fit for our model.

Conclusion In the case of Palestinian territories, environmental concerns and issues are driven mainly by politics affecting people's health and mental well-being. Therefore, it is recommended to conduct similar studies to explore protective factors against environmental concerns in the Palestinian context, which will help develop appropriate interventions to enhance mental health in a society characterized by high stressors and prolonged trauma.

Keywords Environmental concerns · Optimism · Pessimism · The meaning in life · Mental health · Palestine

Introduction

The world is witnessing environmental degradation due to several ecological problems, such as air and water pollution and climate change (Chandra 2015). The conditions can be considered even worse in Palestine due to the destructive environmental practices (and politics) of decades of military occupation and colonization. Territorial degradation

is perceivable in different areas, such as the case of draining the Hula wetlands in northern Israel, which resulted in a significant impact on the valley system and drying the Dead Sea (Qumsiyeh 2017). Furthermore, putting some of the worst polluting Israeli industries in Palestinian areas created a severe risk for the population's health and safety (Qumsiyeh 2017). The Israeli settlements and the separation wall between Israel and the Palestinian areas, built with little or no environmental impact assessment, scarred the biblical and natural landscape almost all over the occupied Palestinian territory (oPt). Finally, settlers' attacks against Palestinian property led to massive destruction, eradication or burning trees and dumping of sewage on farmland (Schilling et al. 2017).

The Israeli and settler colonialism practices and its "logic of elimination" aim to control the Palestinian land and access it; there is even a policy of "destroy to replace". Accordingly, the unlawful construction of the apartheid wall in the oPt resulted in an acute environmental crisis by losing part of the forests, green land, and natural resources, decreasing agricultural facilities (Daoudi 2009; Shalhoub-Kevorkian

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2014). Declining agriculture resulted in the dependency on commercial imports to supply domestic food demand and enhanced food insecurity, with four out of ten Palestinians now being food insecure (Mahamid and Berte 2020).

Environmental problems and degradation have been found to raise individuals' environmental concerns (EC) (Echavarren 2017). EC are related to people's attitudes about environmental problems and challenges. These concerns can range from anxiety and fear about environmental problems to a personal desire to care for environmental issues (Strife 2012).

Scholars have reported how environmental concerns might negatively affect individuals' health and mental well-being (Fritze et al. 2008; Ingle and Mikulewicz 2020; Ventriglio et al. 2021). For example, in India, environmental concerns were found to be associated with higher infant mortality rates, lower life expectancy, chronic diseases, and lower quality of life (Chandra 2015). In addition, air pollution seems to have various malign health effects in early human life, such as respiratory, cardiovascular, mental and perinatal disorders, leading to infant mortality or chronic disease in adulthood (Manisalidis et al. 2020). Moreover, although it is legitimate to be worried about environmental problems, people reported severe levels of mental health problems (Budziszewska and Jonsson 2021). While according to a report released by the American Psychological Association (APA) in 2009, climate change was predicted to become the most significant challenge to human well-being (APA 2009).

Complicated or ecological grief emerged as a response to slow, gradual and ongoing ecological degradation, such as longer-term changes to weather patterns, landscapes or ecosystems (Cunsolo and Ellis 2018). Furthermore, a study summarizing the mental health impacts of climate change found that mental health problems were the most common impacts within the adult population (Palinkas and Wong 2020). Also, in a systematic descriptive review, post-traumatic stress emerged as one of the most impacting psychological consequences of exposure to extreme or prolonged weather-related events or changes, and it can be transmitted to later generations (Cianconi et al. 2020).

In contrast, several psychological factors are expected to play an essential role in mediating environmental concerns and their impact on health and mental health. For example, optimism and pessimism, in general, have been studied as essential factors. Hence, optimists with generalized positive outcome expectancies are likely to suffer less from the negative environmental impact, as optimism has been associated with better physical and mental health. Optimists were found to show lesser mood disturbance in response to several stressors (Abdullah 2018). Also, optimists are expected to cope better when facing challenges, as they usually have positive expectations for the future, so they will try their

best to complete more complex tasks and goals. In contrast, pessimists are expected to withdraw when facing difficulties, as they commonly have negative expectations for the future (Boileau et al. 2021).

In a study that investigated the associations between optimism and pessimism as personal traits with pro-environmental behaviours, subjective well-being and life satisfaction, findings pointed out positive correlations between optimism, subjective well-being and pro-environmental behaviours. Moreover, a negative association emerged between pessimism, subjective well-being, life satisfaction and pro-environmental behaviour (Kaida and Kaida 2019). In addition, it was found that optimism concerning climate change worked as a buffer against a high degree of general negative affect among highly problem-focused children (Ojala 2012).

A typical protective factor from debilitating levels of concern impairing mental health and well-being in the face of co-occurring traumatization due to the political situation is having a clear sense of meaning in life. Such a construct might be defined as the sense of coherence or understanding of existence, a sense of purpose in one's life, the pursuit and attainment of worthwhile goals, and an accompanying sense of fulfillment (Swan et al. 2018). A sense of purpose in life is considered a crucial factor that reinforces individuals' well-being; meaning in life means having a purpose, being able to understand, be responsible and enjoy positive experiences (McDonald et al. 2012).

Meaning in life positively correlated with better psychological adjustment, life satisfaction, positive functioning, and happiness and protected people against psychological distress. It is considered a coping strategy when individuals are exposed to a traumatic event (Krok 2015; Owens et al. 2009). In addition, it was found that meaning in life was negatively associated with mental health distress and positively associated with hope for the future (Hedayati and Khazaei 2014). Thus, a study investigating how Swedish adolescents cope with climate change and how different coping strategies are associated with environmental efficacy, pro-environmental behaviour and subjective well-being showed that meaning in life was positively associated with well-being and optimism (Ojala 2013). Following the studies mentioned above and research on environmental distress and mental health, our study sought to investigate the correlation between EC, physical health and mental health and the mediating role of meaning in life, optimism and pessimism in a context characterized by ongoing environmental crisis and political instability.

Current study

The current study examines the relationship between EC, health and mental health and whether optimism, pessimism and meaning in life mediate the relationship between EC

(the predictor) and health and mental health (the outcome variables) in Palestine.

We focused on the construct of EC, acknowledging its bidirectional connotation. EC can lead to positive (positive emotions, psychological well-being and happiness) and negative psychological states (pessimism, anxiety and mental distress) (Kaida and Kaida 2019). In a context characterized by environmental crisis and degradation, such as Palestine, EC might be linked to either positive or negative health and mental health. Accordingly, rather than directing on constructs such as eco-anxiety and climate change anxiety, we sought to explore whether EC can be associated with physical and mental health when people are capable or precluded from giving sense to their life in an optimistic way, as well as when they interpret EC pessimistically in a context characterized by political instability and turmoil (Hughes et al. 2023). Historically, environment manipulation and its rhetoric have been used by settler-colonial powers to subjugate and inferiorize the indigenous population in Palestine. The environment turns into a dispositive of power aimed at producing a sense of unpredictability (e.g. scarcity of water, loss of control and pollution by Israeli industries) and highlighting the asymmetry between dominator and dominated (Hawari et al. 2019; Weizman 2012).

Based on prior research (Budziszewska and Jonsson 2021; Chandra 2015; Cianconi et al. 2020; Kaida and Kaida 2019; Manisalidis et al. 2020; Ojala 2012, 2013; Palinkas and Wong 2020), study hypotheses were defined as follows: First, EC would be negatively associated with health and mental health (H1); Second, optimism and meaning in life would be positively associated with health and mental health, while pessimism would be associated negatively with health and mental health (H2); Third, optimism, pessimism and meaning in life would mediate the association between EC, physical health and mental health (H3).

Methods

Participants and procedures

We conducted our correlational study in March 2023 and targeted Palestinians in the West Bank of Palestine. Participants were recruited from online advertisements, e-mail campaigns and social media. Our study targeted Palestinian adults living in the West Bank of Palestinian March 2022. The aims of our study were presented online, participants who were interested in participation sent an e-mail indicating their willingness to participate in the study. All participants received a letter clarifying objectives and ethical issues of the study. All participants replied with written informed consent upon accepting the conditions of participation in the study. Participants were 504 adults: 397 women and 107

men; 41.6% of participants were from villages, and 58.4% were from Palestinian cities; 18.7% hold a master degree, and 81.3% of participants hold a bachelor's degree. To be included in the study, participants are required to be: (1) native Arabic speaker, (2) Palestinian and (3) resident in the oPt. We received approval for our study from the An-Najah Institutional Review Board (IRB) before we collected the data.

Measures

Environmental Motive Concerns (EMS) The EMS is a 12-item measure designed to evaluate different concerns about environmental behaviours (Schultz 2001). The scale includes three subscales: (1) Egoistic (myself, my life, health and my future), (2) biospheric (birds, animals, plants and marine life) and (3) altruistic (all people, children and all generations). However, we only used items related to the altruistic concern sub-scale in the current study. Participants reported their EC on a 5-point Likert scale ranging from 7 (very important) to 1 (not important). Reliability analysis of EMS indicated a high degree of reliability in evaluating environmental concerns of Palestinians ($\alpha=0.87$).

The Warwick-Edinburgh Mental Well-being Scale (WEMWBS) The WEMWBS has 14 items covering several mental health issues (Tennant 2007), such as clear thinking, relaxation, positive thinking, good communication skills and self-acceptance. Participants completed the scale by describing their experiences over the past two weeks by answering a 5-point Likert scale ranging from 5 (all of the time) to 1 (none of the time). Reliability analysis of EMS indicated a high degree of reliability in evaluating the general mental health of Palestinians ($\alpha=0.88$).

The Revised Life Orientation Test (LOT-R) The LOTR is a 10-item scale that measures two dimensions of how pessimistic and optimistic people may feel about the future (Scheier and Carver 1993). Participants answered ten negative and positive statements using a 5-point Likert scale ranging from 4 (strongly agree) to 0 (strongly disagree). The items of the scale include "I expect the best in this life" and "If something goes wrong for me, it will be". Reliability analysis of LOTR indicated a high degree of reliability in evaluating pessimistic and optimistic Palestinians ($\alpha=0.91$).

Patient-Reported Outcomes Measurement Information System (PROMIS) The PROMIS includes ten items designed to measure different aspects of physical and mental health (Bevans et al. 2014). The scale includes two overall factors: physical health and mental health (Barile et al. 2013). In our study, we only used items related to the physical health subscale. Questions are answered using 5-point Likert scales;

excellent (5) to never (1). Reliability analysis of PROMIS indicated a high degree of reliability in evaluating health and mental health of Palestinians ($\alpha=0.91$).

Positive emotion, Engagement, Relationships, Meaning and Accomplishment (PERMA) scale The PERMA-Profilier consists of 23 items designed to assess positive emotions, engagements, relationships and the meaning of life with accomplishment (Mahamid et al. 2023). However, we only used items related to the meaning in life sub-scale in the current study. Each scale item is rated on a 5-point scale ranging from 0 (never) to 5 (always) or 0 (not at all) to 5 (completely). Reliability analysis of PROMIS indicated a high degree of reliability in evaluating the general health of Palestinians ($\alpha=0.93$).

Data analysis

We used descriptive statistics to test the main characteristics of study variables; moreover, we test the correlations between study variables (pessimism, optimism, mental health, physical health, meaning in life and environmental concerns). Structural equation modelling (SEM) was used to test the conceptual model (see Fig. 1) of our study, where environmental concerns were used as a predictive variable; optimism, pessimism and meaning in life as mediating variables. Finally, health and mental health were considered as

outcome variables. The model revealed good fit indicators, CFI=0.89, SRMR=0.048 and RMSEA=0.054. The SEM model (see Fig. 2) was tested using AMOS25 statistical analysis software.

Findings

Descriptive statistics for environmental concerns, pessimism, optimism, mental health, health and meaning of life were tested, as shown in Table 1. Participants recorded high scores on optimism, mental health, health and meaning of life, mediate scores on EC and low scores on pessimism. In addition, all measures used in this study showed a high degree of reliability ranging from 0.87 (environmental concerns) to 0.93 (meaning of life).

Results of the correlational analysis in Table 2 showed that pessimism negatively correlated with optimism ($r=-0.14$, $p<0.01$), mental health ($r=-0.32$, $p<0.01$), physical health ($r=-0.33$, $p<0.01$) and meaning in life ($r=-0.32$, $p<0.01$), while pessimism positively correlated with EC ($r=0.18$, $p<0.01$). Optimism positively correlated with mental health ($r=0.64$, $p<0.05$), physical health ($r=0.38$, $p<0.01$), meaning in life ($r=0.49$, $p<0.01$), and negatively correlated with EC ($r=-0.38$, $p<0.01$). Moreover, mental health positively correlated with physical health ($r=0.75$, $p<0.01$) and meaning in life ($r=0.58$, $p<0.01$),

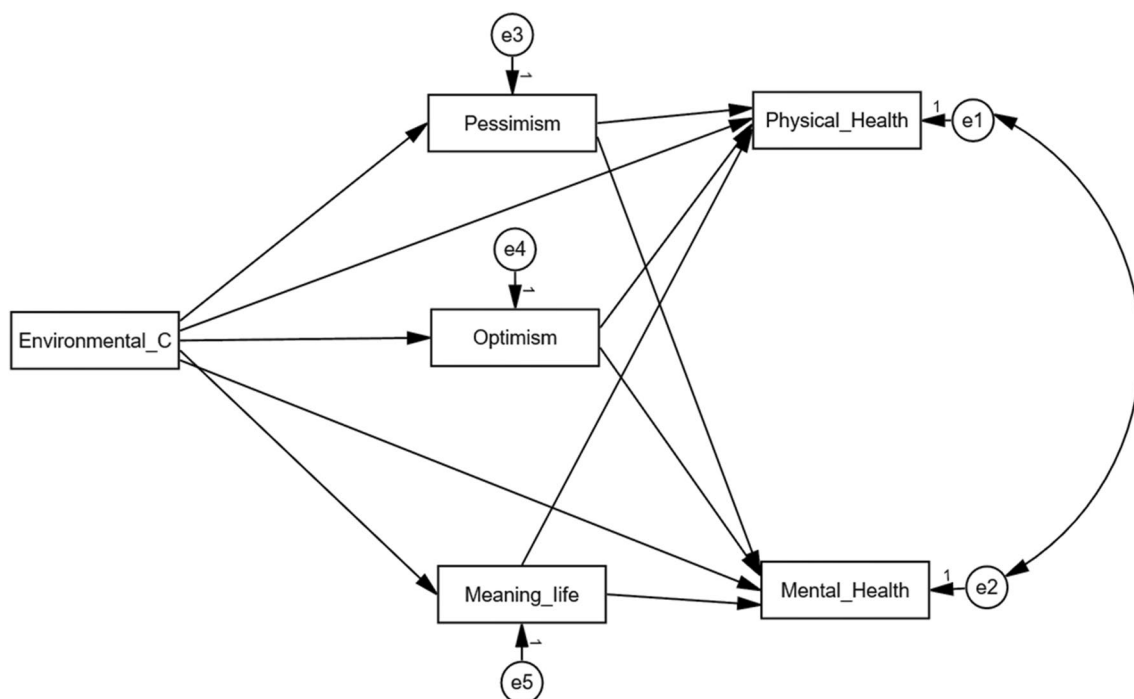


Fig. 1 Conceptualized effect of environmental concerns on physical health and mental health, and the mediating roles of optimism, pessimism and meaning of life

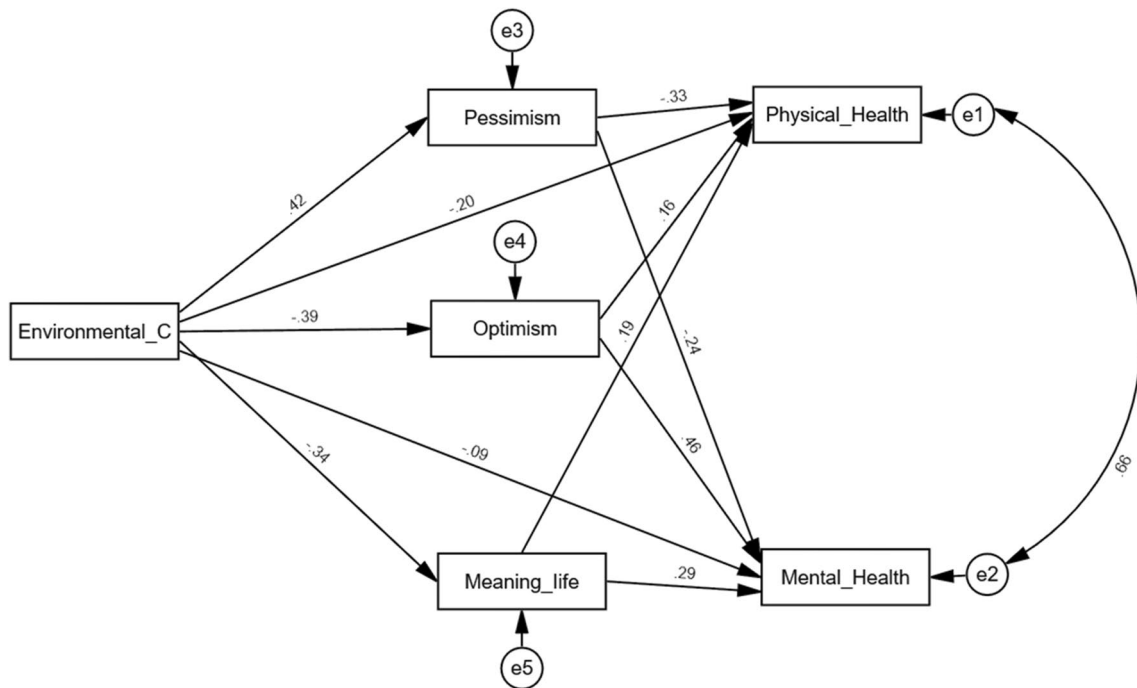


Fig. 2 Structural equation modelling of environmental concerns on physical health and mental health and the mediating roles of optimism, pessimism and meaning of life

Table 1 Descriptive statistics for research variables (*N* = 504)

Variable	M	S.D	Min	Max	Range	Skewness	Kurtosis	Cronbach's alpha
Pessimism	2.77	.49	1.67	4.33	2.67	.47	1.09	.90
Optimism	4.24	.49	3.00	5.00	2.00	-.22	-.41	.92
Mental health	3.95	.36	3.23	4.67	1.43	-.18	-.48	.88
Physical health	3.55	.57	2.11	4.67	2.56	-.17	-.22	.91
Meaning in life	4.24	.48	3.00	5.00	2.00	-.08	-.36	.93
Environmental concerns	3.12	.47	1.92	4.00	2.08	-.12	-.92	.87

Table 2 Correlations among study variables (*N* = 504)

Measures	1	2	3	4	5	6
1. Pessimism	1	-.14**	-.32**	-.33**	-.32**	.18**
2. Optimism		1	.64**	.38**	.49**	-.38**
3. Mental health			1	.75**	.58**	-.34**
4. Health				1	.44**	-.31**
5. Meaning of life					1	-.34**
6. Environmental concerns						1

** α is significant at ≤ 0.01

and negatively correlated with pessimism ($r = -0.34$, $p < 0.01$). Physical health positively correlated with meaning in life ($r = 0.44$, $p < 0.01$) and negatively correlated with EC ($r = -0.31$, $p < 0.01$). Finally, meaning in life negatively correlated with EC ($r = -0.34$, $p < 0.01$).

Structural equation modelling (SEM)

SEM results are shown in Fig. 2, and the hypothesized model in Fig. 1 with EC as a predictor, optimism, pessimism, meaning in life as mediating variables, and physical health

and mental health as outcome variables. Our study showed that optimism, pessimism and meaning in life mediated the correlation between EC, physical health and mental health. Moreover, all paths of our model were significant with a good fit ($\chi^2_{(4)} = 344.82; p = 0.001; GFI = 0.94; AGFI = 0.95; RMSEA = 0.042; NFI = 0.956; CFI = 0.948$).

Concerning the mediating hypothesis (H3), our model revealed a standardized total effect of meaning in life on mental health ($\beta_{X,M} = 0.29; p < 0.001$). This effect was composed of a statistical significant indirect effect (via meaning in life $\beta_{X,M,Y} = 0.13; p < 0.05$) and a statistical significant direct effect ($\beta_{X,Y,M} = 0.16; p < 0.05$). In addition, the model revealed a total effect of meaning in life on health ($\beta_{X,M} = 0.33; p < 0.001$), with indirect effect (via meaning in life $\beta_{X,M,Y} = 0.14; p < 0.05$) and a statistical significant direct effect ($\beta_{X,M,Y} = 0.19; p < 0.05$).

Moreover the model showed a standardized total effect of optimism on mental health ($\beta_{X,M} = 0.46; p < 0.001$), with significant indirect effect via meaning in life ($\beta_{X,M,Y} = 0.16; p < 0.05$) and significant direct effect ($\beta_{X,M,Y} = 0.30; p < 0.05$). Moreover, a standardized total effect of optimism on physical health was found ($\beta_{X,M,Y} = 0.37; p < 0.05$), with significant indirect effect via meaning in life ($\beta_{X,M,Y} = 0.15; p < 0.05$) and significant direct effect ($\beta_{X,M,Y} = 0.22; p < 0.05$). Finally, our model indicated a standardized total effect of pessimism on mental health ($\beta_{X,M} = -0.44; p < 0.001$), with significant indirect effect via pessimism ($\beta_{X,M,Y} = -0.18; p < 0.05$) and significant direct effect ($\beta_{X,M,Y} = -0.26; p < 0.05$). In addition, a standardized total effect of pessimism on physical health was found ($\beta_{X,M,Y} = -0.41; p < 0.05$), with significant indirect effect via pessimism ($\beta_{X,M,Y} = -0.17; p < 0.05$) and significant direct effect ($\beta_{X,M,Y} = -0.24; p < 0.05$). Thus, the association between EC, health and mental health among Palestinians was mediated by optimism, pessimism and meaning in life. The role of demographic variables (gender, academic level and area of residence) was tested in the model, and no significant differences were found due to these variables.

Discussion

Guided by our data, the current study found a significant correlation between EC concerns, physical health and mental health among Palestinians living under military occupation and the mediating roles of optimism, pessimism and meaning in life. Specifically, results showed a negative correlation between EC, physical and mental health. On the other hand, the results showed a negative correlation between EC and optimism; meanwhile, a negative correlation was also shown between EC and meaning in life; moreover, a positive correlation was found between EC and pessimism.

The finding between meaning in life and mental health showed a positive correlation; a positive correlation was also found between meaning in life and physical health. In addition, a positive correlation was reported between optimism and physical health, also between optimism and mental health. Finally, an adverse effect was found between pessimism and physical health, also between pessimism and mental health.

In countries hit by an environmental crisis due to natural and human-made disasters, people are likely to notice increases in physical health and mental health problems, and the ability to recover will be determined by efforts that promote resilience. For many, the ominous reality of EC results in feelings of powerlessness and hopelessness, leaving them with an unresolved sense of loss, helplessness and frustration (Ingle and Mikulewicz 2020). Overall, individuals aware of climate change's potentially terrible consequences are probably more anxious; others may even be so frightened and depressed that they refuse to think about it at all (Helm et al. 2018). Among Palestinians, high scores were reported on optimism, mental health, physical health and meaning in life, mediate scores on environmental concerns and low scores on pessimism.

The relationships between mental health, life satisfaction, physical health, optimism and hope were examined among university students studying in different countries. Results revealed a strong association between these variables (Yang et al. 2016). Additionally, a positive relationship was noted between optimism, happiness and general mental health (Witvliet et al. 2019). Another study looked into the relationship between health, meaning in life and mental well-being among university-aged emerging adults. The findings suggested that mental well-being could lead to formulating meaningful objectives, spiritually meaningful experiences and meaning in life (Kardas et al. 2019).

Optimists reported higher levels of physical health and mental health in this study, consistent with earlier research findings indicating optimists have better mental well-being than pessimists (Kaida and Kaida 2019; Ojala 2012). Our findings suggest that pessimists with a lower level of mental health and physical health are similar (Schou-Bredal et al. 2019).

In this study, optimists reported higher meaning in life, consistent with earlier findings indicating that optimists have better mental health and meaning in life indicators than pessimists. Previous findings suggested that pessimists have a higher prevalence of anxiety and depression (Schou-Bredal et al. 2019).

In sum, according to the results of our conceptual model, EC can be considered an additional stressor that might negatively affect the mental health of Palestinians. Those EC could be related to the political condition in Palestine and the disruptive colonial practices related to the military

occupation that controls the Palestinian land and its natural resources (Daoudi 2009; Qumsiyeh 2017; Schilling et al. 2017; Shalhoub-Kevorkian 2014). Traditionally, Palestinians were optimistic and capable of coping with the ongoing traumatic reality through individual and collective mechanisms despite the worsening living conditions in a war-torn environment. Exposure to adversity or trauma does not necessarily lead to impairment and the development of psychopathology in all exposed cases. Individual characteristics and protective factors that may predict resilience among Palestinians under occupation in traumatic environments are pre-trauma strengths and resources such as family support, constructive coping strategies, optimism, creative cognitive-emotional processing of trauma and meaning in life (Aitcheson et al. 2017; Mahamid 2020; Veronese et al. 2012). Thus, our findings confirmed the mediating role of optimism and meaning in life in the association between EC and mental health among Palestinians, as emerged in previous studies that found and considered optimism and meaning in life as a coping strategy against mental distress (Aitcheson et al. 2017; Krok 2015; McDonald et al. 2012; Owens et al. 2009; Veronese et al. 2012).

On the other hand, historically, the living environment, space and place have been used by Palestinians as a source of agency and resistance against deteriorating living conditions (Veronese et al. 2020); losing such an essential resource for mental well-being because of the environmental crisis in Palestine might constitute a crucial risk factor for human functioning and health (Sousa et al. 2019). Consequently, the sense of coherence and meaning in life—related to narratives of land and landscapes' memories—might be undermined and suffocated by environmental concerns and challenges. Environmental degradation and uncertainty remind Palestinian people of loss and dispossession due to the colonial system (land, ground, underground and sky) controlling Palestinian lives (Alatout 2006; Weizman 2002, 2012).

Limitations

Some limitations of the study are worthy of being acknowledged and discussed. First, the cross-sectional nature of our study may prevent generalizing the results and drive causal conclusions. Second, although the results of the association analysis between the variables of our study were promising for testing in future experimental and longitudinal studies. The online recruitment of the study sample may have limited access to affected and clinical groups in the Palestinian context. Targeting these group in future studies may provide more insight into how optimism/pessimism and meaning in life worked in mediating the association between environmental concerns, health and mental health among diverse groups in the Palestinian population. In future studies, more traditional pencil

and paper administration of the questionnaires is recommended to test the conceptual model of this study among affected groups in the Palestinian context and elsewhere. Finally, our respondents belong to an educated and potentially more aware population. Lower educated and lower socioeconomic classes are not represented in this research, limiting the possibility of generalization of our results. Therefore, testing the current study variables among several groups in the Palestinian context is needed to generalize the results.

Conclusion

Climate change and ecological loss are inextricably related. In the case of Palestinian territories, EC and issues are driven mainly by politics affecting people's physical health and mental well-being (Barber et al. 2014). Concerns related to environmental degradation and destruction mirror the human rights crisis affecting the Palestinian territory and how those violations and deprivation might affect health and mental health among the population (Foltz 2010). Accordingly, environmental rights in Palestine can be deemed as a determinant of health and mental health and should be considered as a priority by policymakers and human rights defenders (Schoenfeld 2010). As a matter of fact, individual and collective resilience operationalizable in terms of optimism and meaning in life showed to be relevantly tied to the EC affecting the population that can cope with the ongoing adversities and political instability due to the military occupation even owing to ecological resources (Abujidi 2014; Marie et al. 2018). Conversely, political conflict undermines the environmental resources, diminishing the community's environmental and psychological resilience.

Abbreviations *EFA*: Exploratory factor analysis; *CFA*: Confirmatory factor analysis; *PERMA*: Positive emotion, engagement, relationships, meaning, and accomplishment; *IRB*: An-Najah Institutional Review Board; *SEM*: Structural equation modelling; *EMS*: Environmental motive concerns; *WEMWBS*: The Warwick-Edinburgh Mental Well-being Scale; *LOT-R*: The Revised Life Orientation Test; *PROMIS*: Patient-Reported Outcomes Measurement Information System

Authors' contributions All authors contributed equally to this article, Dr. Fayez Mahamid and Dr. Dana Bdier prepared the literature review section, Dr. Guido Veronese prepared methodology and analysis sections. Finally, Dr. Hala Kittaneh prepared the discussion section.

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Availability of data and materials The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Declarations

Ethics approval and consent to participate All procedures performed in this study involving human participants were in accordance with the ethical standards of An-Najah University's Research Ethics Board, the American Psychological Association (APA 2010) and with the 2013 Helsinki Declaration.

Informed consent Informed consent was obtained from all participants.

Competing interests The authors declare that they have no competing interests.

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