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Mediated effects of subjective well-being in the association of religiosity and religious belief with quality of life among patients with cancer: A cross-sectional study

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ABSTRACT

Purpose: The present study examined the associations between religiosity, religious beliefs, and quality of life (QoL) and evaluated the potential mediating role of well-being components in these associations among cancer patients.

Methods: A cross-sectional study was conducted among Algerian cancer patients recruited from the University Hospital of Sidi Bel Abbes Cancer Center. Participants completed Arabic versions of the World Health Organization Quality of Life Brief and questions assessing well-being, religiosity, and religious beliefs.

Results: Religiosity was significantly associated with religious beliefs, well-being domains, and the physical and psychological QoL domains. Religious beliefs were significantly associated with three well-being domains (happiness, life satisfaction, and mental and physical health) and three QoL domains (physical, psychological, and environmental). All well-being domains were significantly associated with QoL domains, except for life satisfaction and physical health with social QoL. Structural equation modeling showed significant paths from religiosity to well-being ($\beta = 0.38$, $p < .001$), religious beliefs to well-being ($\beta = 0.21$, $p = 0.013$), and well-being to QoL ($\beta = 0.72$, $p < 0.001$). Mediated effects of well-being were significant in the associations of religiosity ($\beta = 0.28$, $p < 0.001$) and religious beliefs ($\beta = 0.15$, $p = 0.034$) with QoL.

Conclusion: The findings highlight the pivotal role of well-being in mediating the positive associations between religiosity, religious beliefs, and QoL among Algerian cancer patients. Integrating religious interventions to enhance well-being may optimize QoL. The present study is one of the first to explicitly examine the mediating pathways through which religiosity impacts the QoL among Muslim Arabic-speaking cancer patients, shedding light on potential cultural nuances in how religious beliefs and practices may foster well-being, indirectly enhancing QoL.

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1. Introduction

Cancer is a leading global health challenge and the second major cause of death after cardiovascular diseases (Fitzmaurice et al., 2017). Its incidence has risen among all age groups, profoundly affecting individuals' physical, psychological, social well-being and thereby influencing their quality of life (QoL) (Conley et al., 2016; Delgado-Guay et al., 2011; Kim et al., 2011; Pirkhaefi and Salehi, 2013). In Algeria (where the present study was conducted), the most prevalent cancers include colorectal, lung, prostate, and bladder cancers among men, and breast, cervical, and thyroid cancers among women, with notable regional epidemiological variations (Bounedjar et al., 2022; Herrag et al., 2024), where cancer patients experience moderate to high post-traumatic stress disorder (Sabah et al., 2025).

Religiosity and religious beliefs can be crucial in helping patients cope with cancer's physical and emotional challenges, providing strength, hope, and a framework for navigating significant life changes (Estakhri et al., 2016; Jangi Aghdam and Sardari, 2022). Research indicates a significant positive association between religiosity and QOL, with several studies showing that religious practices and well-being contribute to enhanced life satisfaction, happiness, mental health, and physical health (Abdel-Khalek, 2010, 2011, 2020; dos Reis et al., 2020; Panzini et al., 2017; Tay et al., 2014). Moreover, religiosity can buffer the adverse effects of stressful life events, fostering resilience and subjective well-being in diverse cultural contexts (Aljaberi et al., 2021; Momtaz et al., 2010; Tay et al., 2014).

Among advanced cancer patients receiving palliative care, religiosity is associated with higher perceived QoL, even though pain can diminish its impact (Delgado-Guay et al., 2011). Similarly, well-being, including hope and physical dimensions, directly correlates with improved QoL, with hope partially mediating these effects (Sharif Nia et al., 2021, 2024). Moreover, a recent systematic review by Nagy et al. (2024) highlighted religiosity and religion's significant role in improving cancer patients' well-being. For cancer survivors and caregivers, well-being positively influences individual mental and partner physical health, demonstrating its holistic impact (Kim et al., 2011).

In Algeria, where religiosity is deeply embedded in cultural practices (Tiliouine and Belgoumidi, 2009), studies have demonstrated its significant role in enhancing well-being through increased happiness and life satisfaction (Abdel-Khalek and Naceur, 2007). Subjective well-being is a broad term that encompasses happiness, satisfaction with life, joy, enjoyment, fulfillment, pleasure, contentment, and other indicators of a fulfilling life (Abdel–Khalek and Lester, 2018; Diener et al., 2002; Ruggeri et al., 2020). Despite high religiosity levels, the association with QoL among cancer patients remains complex and warrants further exploration, particularly concerning the mediating role of well-being components (Abdel-Khalek and Lester, 2010; Assimakopoulos et al., 2009).

Therefore, the present study examined the mediated effects of well-being (encompassing happiness, life satisfaction, mental health, and physical health) in the relationship between religiosity and QoL among Algerian cancer patients. In the proposed model, religiosity and religious belief were the two independent variables using observed scores directly; well-being was the mediator using a latent score constructed using four domains of well-being (i.e., happiness, life satisfaction, mental health, and physical health), and QoL was the dependent variable using a latent score constructed using four domains of QoL (i.e., physical, psychological, social, and environment QoL). Understanding these dynamics will likely guide the development of culturally informed interventions to enhance holistic well-being and QoL among this population.

The present study is among the first to explicitly examine the mediating pathways through which religiosity impacts QoL among Muslim Arabic-speaking cancer patients providing a robust and nuanced analysis using structural equation modeling (SEM). It was envisaged that the findings would provide cultural nuances in how religious beliefs and practices foster subjective well-being components (e.g., happiness, life satisfaction, mental health, and physical health) which in turn may enhance QoL. The study fills a critical gap in the literature by focusing on an underrepresented population within a predominantly Muslim sociocultural context in Algeria. It was envisaged that the findings would offer valuable empirical support for developing culturally sensitive, religion-accommodating psychosocial interventions to optimize well-being and QoL in similar cultural settings.

2. Methods

2.1. Study design and participants

The present cross-sectional survey study was conducted from October 2022 to May 2023. The participants were recruited from cancer patients at a cancer center at the University Hospital of Sidi Bel Abbes, a regional health facility in Algeria's western and southwestern regions. Each participant completed the survey in a private room with an interviewer (i.e., the psychologist) without disturbance. The study sample originally comprised 128 patients who had been diagnosed with cancer and were undergoing chemotherapy, radiotherapy, or chemo-radiotherapy. More specifically, several physicians or oncologists help identified eligible participants and referred them to the present study's researchers. A psychologist then met with the participants to additionally ensure participation willingness and ensured they met the recruitment eligibility criteria. Meetings were held with the psychologist to discuss the study. Subsequently, private rooms were set up to meet with the patients who met the following inclusion criteria to complete the questions: (i) had been diagnosed with cancer, (ii) were aware of their cancer diagnosis, (iii) were aged 18 years or older, and (iv) were capable of completing the written questions used in the present study. Five participants did not complete all the questions and were excluded from data analysis, resulting in a final sample of 123 participants.

2.2. Sample size estimation

The present study assumed a moderate association between religious belief/religiosity and well-being (standardized coefficient at 0.3), a strong association between well-being and QoL (standardized coefficient at 0.7), and a weak association between religious belief/religiosity and QoL after considering the mediating role of well-being (standardized coefficient at 0.15). Via Monte Carlo simulation method with 1000 replications (Schoemann et al., 2017), the power will be 0.9 when the sample size is 115. Considering a 10 % non-response rate, the sample size was increased to 128 (i.e., inviting 128 individuals to participate).

2.3. Ethics and informed consent

Ethical approval was obtained from the Institutional Review Board of the aforementioned cancer center (Reference number: 664/M.F.A.W/M.AM.M.S/2022). The Directorate of Health and Population also approved the study. This study was performed in line with the principles of the Declaration of Helsinki. All participants voluntarily agreed to participate in the study and provided written informed consent. All identifying information was removed to ensure anonymity and to protect patient confidentiality.

2.4. Measures

2.4.1. Demographics

The survey included questions regarding the patients' sociodemographic details, including age, marital status, occupation, education, and smoking status. Clinical information was also collected, including the type of cancer and treatment.

2.4.2. The World Health Organization Quality of Life Brief scale

QoL was assessed using the 26-item World Health Organization Quality of Life Brief (WHOQOL-BREF; Arabic version: Abdel-Khalek, 2010), which is a shortened 26-item version of the WHOQOL-100. It includes items taken from field trial data (Skevington et al., 2004). The scale is divided into four QoL domains: physical (seven items), psychological (six items), social (three items), and environmental (eight items). Additionally, two items from the overall QoL and general health facet were included (WHOQOL Group, 1998). Each of the 26 items is rated on a five-point Likert scale, where higher scores indicate a better quality of life. In the present study, the Cronbach's α was 0.827.

2.4.3. Well-being, religiosity, and religious beliefs

Six separate self-rating questions (developed by Abdel-Khalek [2006]) were used to evaluate well-being (happiness, life satisfaction, mental health, and physical health), religiosity, and religious belief. The six questions were: (i) *"To what degree do you feel happy in general?"* (i.e., happiness; assessing well-being); (ii) *"To what degree do you feel satisfied with your life in general?"* (i.e., life satisfaction; assessing well-being); (iii) *"What is your estimation of your mental health in general?"* (i.e., mental well-being; assessing well-being); (iv) *"What is your estimation of your physical health in general?"* (i.e., physical well-being; assessing well-being); (v) *"What is your level of religiosity in general?"* (assessing religiosity), and (vi) *"What is the strength of your religious belief compared to others?"* (assessing religious belief).

Each question was followed by a scale ranging from 0 to 10. The participant was asked to respond based on their overall estimation and general feeling, not their present state. They were instructed that 0 was the minimum score and 10 was the maximum score, and to circle a number that accurately described their actual feelings. A high score indicates a high level of the trait or attribute being rated. The one-week test-retest reliability of the six self-rating scales by Abdel-Khalek (2015) ranged between 0.76 and 0.88, indicating high temporal stability and confirming the trait-like nature of the scores. The criterion-related validity of these questions has been well-demonstrated (Abdel-Khalek, 2019; Abdel-Khalek and Lester, 2010). In the present study, the Cronbach's α was 0.80 for the four items assessing well-being.

2.5. Data analysis

Descriptive statistics were used to summarize the participants' characteristics (including their demographics and clinical conditions) and the measures' scores. Then, bivariate correlations between the studied variables (i.e., religiosity, religious belief, well-being, and QoL) were analyzed using Pearson correlation coefficients. Lastly, a proposed model was examined via SEM. Because Mardia's multivariate kurtosis showed that the data analyzed in the SEM violated multivariate normal distribution (value = 131.1; $p < 0.001$), robust weighted least squares (WLS) estimation was used (Du and Bentler, 2022).

In the proposed model, religiosity and religious belief were the two independent variables using observed scores directly; well-being was the mediator using a latent score constructed using the four domains of well-being (i.e., happiness, life satisfaction, mental health and physical health); and QoL was the dependent variable using a latent score constructed using four domains of QoL (i.e., physical, psychological, social, and environment QoL).

Before examining the significance of path coefficients and mediated effects in the proposed model, several fit indices were used to evaluate whether the proposed model fitted the data well. The indices with cut-offs were comparative fit index (CFI) and Tucker-Lewis index (TLI) > 0.95, together with standardized root mean square residual (SRMR) < 0.08, and root mean square error of approximation (RMSEA) < 0.06 (Abiddine et al., 2024; Aljaberi et al., 2022; Fares et al., 2021; Hu and Bentler, 1999). All the analyses were performed using jamovi 2.3.21, an open statistical software (jamovi, 2024).

3. Results

The 123 participants with cancers (mean age = 46.54 years; SD == 10.50) were mostly female (n = 106; 86.2 %) and more than half were currently married (n = 79; 64.2 %) (Table 1). Their educational levels were relatively balanced: 22 with no formal education (17.9 %), 16 with primary school education (13.0 %), 31 with middle school education (25.2 %), 33 with secondary school education (26.8 %), and 21 with university education (17.1 %) (Table 1). Over two-thirds were employed (n = 85; 69.1 %), and nearly three-quarters were diagnosed with breast cancer (n = 90; 73.3 %) (Table 1). Table 1 also reports detailed information regarding the participants' characteristics.

Regarding the correlations between the studied variables (Table 2), religiosity was significantly associated with religious belief ($r = 0.291$; $p < 0.01$), all domains of well-being ($r = 0.254$ to 0.469; $p < 0.01$), and two domains of QoL ($r = 0.203$ for physical QoL, and 0.265 for psychological QoL; $p < 0.05$) (Table 2). Religious belief was significantly associated with three domains of well-being ($r = 0.259$ for happiness, 0.286 for mental health, and 0.306 for physical health; $p < 0.01$), and three domains of QoL ($r = 0.204$ for physical QoL, 0.293 for psychological QoL, and 0.262 for environment QoL; $p < 0.05$) (Table 2). Moreover, all domains of well-being were significantly associated with all domains of QoL, except for the correlations of life satisfaction and physical health with social QoL ($r = 0.157$ [$p = 0.082$] and 0.177 [$p = 0.0503$], respectively) (Table 2).

The SEM results showed satisfactory fit indices for the proposed model: CFI = 0.987; TLI = 0.981; SRMR = 0.053; RMSEA (95 % CI) = 0.047 (0.000, 0.068); χ^2(df)/p-value = 19.9 (31)/0.938. Path coefficients and mediated effects of well-being (Table 3; Fig. 1) were further examined based on the satisfactory fit indices. Significant coefficients were observed in the following paths: (i) from religiosity to well-being (standardized coefficient [β] = 0.380; $p < 0.001$), (ii) from religious belief to well-being (β = 0.210; $p = 0.013$), and (iii) from well-being to QoL (β = 0.723; $p < 0.001$) (Table 3). Moreover, mediated effects of well-being were significant in the association of religiosity (β = 0.276; $p < 0.001$) and religious belief (β = 0.152; $p = 0.034$) with QoL (Table 3). In the proposed model, $R^2 = 0.224$ for well-being, and 0.582 for QoL (Fig. 1).

Table 1
Participants' characteristics (N = 123).

Age (year); M (SD)	46.54 (10.50)
Gender; n (%)	
Male	17 (13.8)
Female	106 (86.2)
Educational level; n (%)	
No formal education	22 (17.9)
Primary school	16 (13.0)
Middle school	31 (25.2)
Secondary school	33 (26.8)
University	21 (17.1)
Marital status; n (%)	
Single	25 (20.3)
Married	79 (64.2)
Divorced	14 (11.4)
Widowed	5 (4.1)
Employed; n (%)	
Yes	38 (30.9)
No	85 (69.1)
Cancer type; n (%)	
Breast cancer	90 (73.3)
Uterine cancer	10 (8.1)
Other	13 (10.6)
Treatment type; n (%)	
Chemotherapy	59 (48.0)
Radiotherapy	3 (2.4)
Chemoradiotherapy	61 (49.6)
Smoking status; n (%)	
Yes	5 (4.1)
No	118 (95.9)

Table 2
Correlations between studied variables.

	M	SD	r								
			R	RB	H	LS	MH	PH	Ph.QoL	Ps.QoL	S.QoL	E.QoL
R	8.80	1.48	–									
RB	7.94	2.05	0.221*	–								
H	6.81	2.64	0.291**	0.259**	–							
LS	7.94	2.46	0.469***	−0.009	0.562***	–						
MH	7.09	2.32	0.388***	0.286**	0.677***	0.500***	–					
PH	6.48	2.36	0.254**	0.306**	0.606***	0.397***	0.654***	–				
Ph.QoL	22.42	4.55	0.203*	0.204*	0.434***	0.233**	0.456***	0.485***	–			
Ps.QoL	21.82	3.39	0.265**	0.293**	0.470***	0.182*	0.545***	0.401***	0.482***	–		
S.QoL	10.40	3.07	0.085	0.158	0.269**	0.157	0.262**	0.177	0.247***	0.404***	–	
E.QoL	26.13	4.27	0.159	0.262**	0.514***	0.284**	0.399***	0.378***	0.455***	0.519***	0.323***	–

Notes. R = religiosity; RB = religious belief; H = happiness; LS = life satisfaction; MH = mental health; PH = physical health; Ph.QoL = physical quality of life; Ps.QoL = psychological quality of life; S.QoL = satisfactory quality of life; E.QoL = environment quality of life.
Cronbach's alpha = 0.839 for well-being (i.e., happiness, life satisfaction, mental and physical health); = 0.725 for quality of life (i.e., physical, psychological, social, and environment quality of life).
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

Table 3
Results of proposed model testing associations between religiosity, religious belief, well-being, and quality of life (QoL).

Path	Unstandardized coefficient	SE	95 % LLCI	95 % ULCI	Standardized coefficient	p-value
Religiosity→Well-being	0.571	0.131	0.314	0.828	0.380	<0.001
Religious belief→Well-being	0.228	0.092	0.048	0.407	0.210	0.013
Religiosity→QoL	−0.126	0.189	−0.495	0.244	−0.060	0.506
Religious belief→QoL	0.239	0.135	−0.024	0.503	0.159	0.075
Well-being→QoL	1.006	0.185	0.644	1.369	0.723	<0.001
Religiosity→Well-being→QoL	0.575	0.170	0.242	0.907	0.276	<0.001
Religious belief→Wellbeing→QoL	0.229	0.108	0.018	0.440	0.152	0.034

SE = standard error; LLCI = lower limit confidence interval at 95 %; ULCI = upper limit confidence interval at 95 %.

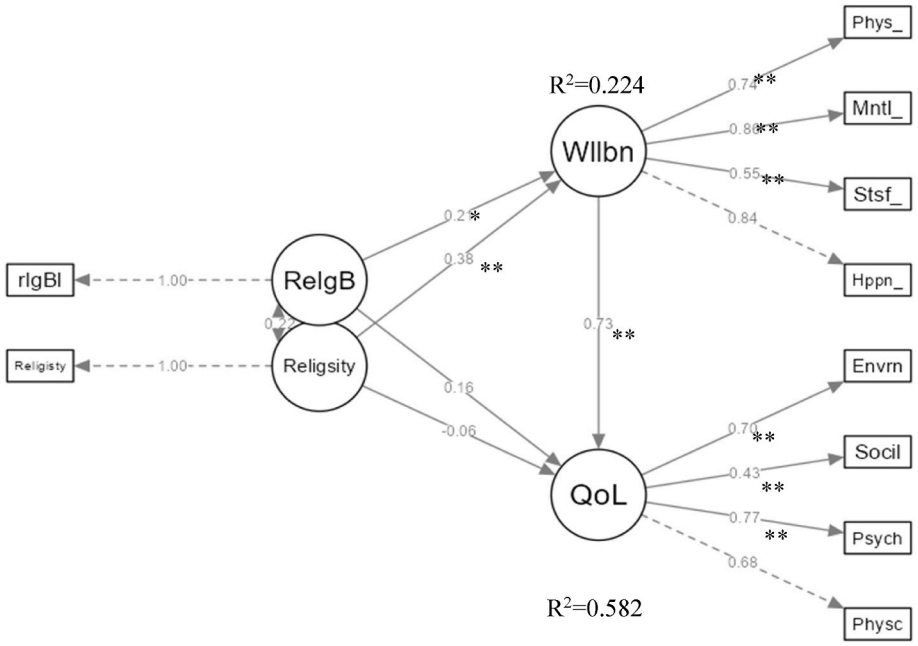

Fig. 1. Structural equation modeling examining the associations between religiosity, religious belief (RelgB), well-being (Wllbn), and quality of life (QoL).
Note. Religious belief (RelgB) and religiosity were observed variables; Wllbn and QoL were latent variables. Phys_ = physical well-being; Mntl = mental well-being; Stsf_ = life satisfaction; Hppn_ = happiness; Envrn = environment QoL; Socil = social QoL; Psych = psychological QoL; and Physc = physical QoL.
The coefficients reported in the figures are all standardized.
*$p < 0.05$; **$p < 0.001$.

4. Discussion

The present study examined the associations between religiosity, religious belief, and QoL, as well as the potential mediating role of subjective well-being components (happiness, life satisfaction, mental health, and physical health) in these associations among cancer patients. The findings corroborated previous research highlighting the positive influence of religiosity on well-being and QoL among patients

undergoing cancer treatment (Ahmadi et al., 2015; Almaraz et al., 2022; Jetan et al., 2023; Alvi et al., 2023).

Consistent with Delgado-Guay et al. (2011), the majority of cancer patients considered themselves religious. However, pain was common and associated with lower self-perceived religiosity and QoL. This aligns with the observation that higher religiosity is related to greater subjective well-being and better QoL (Abdel-Khalek, 2010, 2011; Abdel--Khalek and Lester, 2010). As reported in prior studies, religious beliefs and practices significantly correlated with QoL among the participants (Alvi et al., 2023; Saffari et al., 2012).

The mediating role of subjective well-being components such as happiness, life satisfaction, and mental/physical health in the religiosity-QoL association emerged as a key finding. This is consistent with Abdel-Khalek's studies (2010, 2011), which identified religiosity as a salient component of and a contributing factor to QoL and well-being among Muslim populations. Similar to Sharif Nia et al.'s (2021) findings with cancer patients, hope partially mediated the relationship between well-being and QoL.

The present study's results aligned with the proposed multilevel perspective on religiosity and subjective well-being by Tay et al. (2014). At the individual level, religiosity may fulfill psychological needs, thereby enhancing subjective well-being components such as happiness and life satisfaction, which in turn positively impact QOL. This indirect effect of religiosity on QoL through subjective well-being appears to be robust across cultures (Abdel-Khalek and Lester, 2010).

Interestingly, while religiosity levels were high among the Greek Orthodox cancer patients studied by Assimakopoulos et al. (2009), associations with QoL were relatively weak. This could potentially be explained by cultural nuances in religious expressions and belief systems modulating the mediating pathways. Nonetheless, the overall positive trend between religiosity, subjective well-being, and QoL is evident across diverse religious and cultural backgrounds (Tay et al., 2014).

The present findings extend the understanding of the complex interplay between religiosity, subjective well-being, and QoL, specifically among cancer patients. Enhancing positive religious coping strategies and well-being may foster greater happiness, life satisfaction, and better mental/physical health, thereby indirectly boosting QoL among this vulnerable population. This has important implications for developing holistic, religion-sensitive psychotherapeutic interventions to improve overall well-being and treatment outcomes.

The present study provides valuable insights into the intricate relationships between religiosity, religious beliefs, subjective well-being components (happiness, life satisfaction, mental health, and physical health), and QoL among Algerian cancer patients. The results underscore the pivotal role played by subjective well-being in mediating the positive associations between religiosity, religious beliefs, and overall QoL in this population.

Enhancing religious coping strategies and well-being may foster greater happiness, life satisfaction, better mental health, and improved physical health among religious cancer patients. In turn, these elevated well-being components could indirectly boost their QoL across multiple domains (i.e., physical, psychological, social, and environmental). These findings align with and extend previous research highlighting the salutary effects of religiosity on well-being and quality of life (Abdel-Khalek, 2010, 2011; Abdel-Khalek and Lester, 2010), particularly in Muslim-majority contexts like Algeria.

Algeria's cultural and religious milieu, where religious practices significantly influence daily living, likely amplifies the observed effects. As noted, prior work among Algerians has associated religiosity with higher happiness and life satisfaction levels (Abdel-Khalek, 2011). The present study corroborated this association while elucidating the potential mechanisms through which religiosity impacts QoL via the mediation of subjective well-being factors.

Set against foundational validation studies of the WHOQOL-BREF, the present study's results demonstrate clear points of convergence with, and notable extensions of, the current evidence-base. Consistent with work among stroke survivors (Akinpelu et al., 2006) and homeless veterans (Garcia-Rea and LePage, 2010), the present study among Algerian cancer patients had Cronbach's alphas exceeding 0.75 in the physical, psychological, and environmental domains, whereas the social relationships domain—mirroring earlier reports among Brazilian stroke patients (de Oliveira and Orsini, 2009), Serbian medical students (Ilić et al., 2019) and Norwegian cancer relatives (Kalfoss et al., 2008)—remained comparatively lower. The acceptable fit indices observed in the present study parallel confirmatory-factor findings among Korean older adults (Kim et al., 2021), Taiwanese lung-cancer patients (Lin et al., 2017), community elders (Sun et al., 2008), and individuals with schizophrenia (Su et al., 2014), further attesting to the scale's cross-cultural robustness. Beyond these psychometric parallels, the present study diverges from the prior validation focus (Bortnick, 2024) and environmental-health work (Ogunseitan, 2011) by showing that religiosity influences cancer patients' QoL chiefly through subjective-well-being pathways. This insight using mediation analysis extends the literature by illustrating the WHOQOL-BREF's sensitivity to religiously-driven affective processes within an Algerian oncology context.

4.1. Implications

From a clinical perspective, the present study's results underscore the importance of adopting holistic, culturally sensitive approaches that appreciate the pivotal role of religiosity and well-being in cancer care for Algerian patients. Integrating religious interventions alongside traditional therapies may optimize psychotherapeutic outcomes by bolstering positive religious coping, hope, meaning-making, and other well-being enhancing pathways. Interdisciplinary collaborations between oncologists, psychologists, religious scholars, and community stakeholders are vital to developing such multifaceted interventions.

Moreover, by examining the mediating role of subjective well-being, the present study offers a theoretically grounded framework to guide future empirical efforts aimed at improving psychosocial care and QoL for religious cancer patients in Algeria, as well as analogous sociocultural contexts (such as other Muslim-majority countries in North Africa and the Middle East, parts of sub-Saharan Africa and South Asia with strong religious traditions, immigrant Muslim communities in Western nations, etc.). Integrating such evidence-based, culture-specific approaches into holistic cancer care pathways would likely enhance treatment efficacy, adherence, and long-term well-being outcomes for this underserved patient population.

4.2. Limitations

While promising, the present findings must be interpreted in light of a number of specific limitations, primarily the small sample size (which was expected given the niche population studied), cross-sectional design (which means that causation between the variables studied could not be determined), non-random recruitment from a single center (which means the sample may not have been representative of cancer patients in Algeria), and reliance on self-report measures from a single-center sample (which may have resulted in biases such as social desirability). Longitudinal and observational studies with more diverse participant pools are needed to establish robust causal pathways and generalizability. Exploring potential moderating influences of religious orientations, denominations, and acculturation levels may further refine understanding in this area.

5. Conclusion

Despite the limitations, the present study highlights the pivotal role of subjective well-being in mediating the positive associations between religiosity, religious beliefs, and QoL. By employing structural equation modeling, the findings provide a nuanced understanding of how

religiosity and religious beliefs influence QoL through subjective well-being components, such as happiness, life satisfaction, mental health, and physical health. The study is among the first to examine these relationships within a Muslim Arabic-speaking cancer patient population, addressing a critical gap in the literature and offering valuable insights into the cultural and religious dimensions of cancer care.

CRediT authorship contribution statement

Fares Zine El Abiddine: Supervision, Resources, Methodology, Investigation, Data curation, Conceptualization. **Mustapha Hallouche:** Resources, Data curation, Conceptualization. **Fatima Belhaouari:** Resources, Data curation, Conceptualization. **Musheer A. Aljaberi:** Writing – review & editing, Writing – original draft, Resources, Methodology, Investigation. **Mahboubeh Dadfar:** Writing – original draft, Resources. **Ahmed Alduais:** Writing – review & editing, Writing – original draft. **Chung-Ying Lin:** Writing – review & editing, Writing – original draft, Resources, Formal analysis. **Mark D. Griffiths:** Writing – review & editing, Writing – original draft, Resources, Investigation.

Declaration of competing interest

The authors have no competing interests to declare that are relevant to the content of this research or article.

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