



# Spiritual coping strategies and quality of life in older adults who have sustained a hip fracture: A cross-sectional survey

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## Abstract

**Aims:** To investigate the relationship between spiritual coping strategies and quality of life in persons with a hip fracture.

**Design:** A correlational, cross-sectional survey design.

**Methods:** The total population of Maltese-speaking adults over 65 years ( $N = 299$ ), with a hip fracture receiving treatment in a public hospital in Malta in 2015, were invited.

The WHOQOL-BREF questionnaire and the Spiritual Coping Strategies Scale were used.

**Results:** A response rate of 51% ( $n = 147$ ) was achieved. The poorest quality of life was for the physical and psychological domains. Spiritual coping strategies were associated with better quality of life with the exception of physical quality of life. Non-religious coping strategies were the stronger predictor of quality of life compared with religious coping strategies. The former predicted physical, psychological, environmental, social and overall quality of life.

**Conclusion:** Hip fractures have serious implications on quality of life which could be improved by promoting non-religious spiritual coping strategies.

## KEYWORDS

femur, fracture, hip fracture, older adult, quality of life, religious coping, spiritual coping

## 1 | INTRODUCTION

The femur is the strongest bone in the body and is responsible for withstanding most of the load bearing by the lower extremity bones (Mangram et al., 2014). Fracture of the head of femur, particularly in older persons, is consequently associated with a difficult recovery, including increased risk of morbidity, complications and chances of early mortality (Griffin et al., 2015). It is estimated that around 25%–50% of older persons with a hip fracture require institutionalization in a nursing home or residential help due to difficulty in recovering to pre-fracture functional status (Cuschieri et al., 2016).

Hip fractures are consequently characterized by a decline in the person's overall quality of life (Buecking et al., 2014; Mendonca et al., 2008; Segev-Jacobovsk et al., 2019). The decline in physical quality of life usually leads to a decline in social quality of life due to a decrease in social interactions, subsequently resulting in a negative psychological effect on the person (Buecking et al., 2014; Haydari-Fard et al., 2014).

Spiritual coping strategies can be applied by individuals to deal with the challenges related to hip fractures. Spiritual coping strategies provide individuals with a feeling of a more competent outside force of help that guides their recovery (Nasr et al., 2012). These

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strategies are known to enhance physical and mental health, two quality-of-life aspects that deteriorate following a hip fracture (Haydari-Fard et al., 2014; Pargament et al., 2004).

## 1.1 | Background

### 1.1.1 | Theoretical framework

Two theories were used to provide a framework for this study:

1. Maslow's Theory of Motivation: Hierarchy of Human Needs (Maslow, 1999) and
2. Lazarus and Folkman's Transactional Model of Stress and Coping (Lazarus & Folkman, 1984).

Maslow's (1999) theory considers a person as a well-organized, integrated, holistic being who is constantly motivated towards addressing personal needs (Zlenski & Raspa, 2006). According to this theory, human needs consist of five levels which are grouped into two main overarching needs:

1. Deficiency needs—physical/biological, safety, love and belongingness needs.
2. Being (growth) needs—self-esteem and self-actualization needs

According to Maslow, individuals are motivated to satisfy needs at lower levels before desiring needs at a higher level (Maslow, 1968, p. 172; Minshull et al., 1986).

In patients suffering from hip fractures, healthcare professionals tend to emphasize the physical aspects of recovery. Whilst a hip fracture may physiologically heal with time, the client might still experience poor quality of life due to the need for a sense of meaning in life and safety, security and social support (Peeters et al., 2016).

The Transactional Model of Stress and Coping provides a framework for coping with stressful events (Lazarus & Folkman, 1987). Stress is considered as the affect a challenging environment or situation has on an individual (Lazarus & Folkman, 1987). Coping is how an individual responds and acts towards managing, altering or tolerating stressful events (Lazarus & Folkman, 1987).

Humans engage in two different cognitive activities when faced with a stressor (Lazarus & Folkman, 1987): primary appraisal, which establishes the significance of the stressful situation to the person's well-being, and secondary appraisal, where the individual assesses the coping resources available to handle stressors.

Lazarus and Folkman's (1987) theory suggests two styles of coping strategies, emotional-focused and problem-focused coping (Lazarus, 1993; Lazarus & Folkman, 1987). Problem-focused coping is the effort invested in managing and recovering from the main cause of the stressful situation which is used when a person perceives control over a stressor (Lazarus & Folkman, 1987; Papathanasiou et al., 2015). Emotional-focused coping is used when

it is not possible to alter the stressor, except with an emotional response, such as by seeking emotional support.

Spiritual coping is a form of emotional-based coping. To achieve emotional equilibrium, a person may refer to sources of coping such as spirituality, developing a sense of positivity and resilience and looking at the stressor with optimism (Nasr et al., 2012).

### 1.1.2 | Studies on quality of life following a hip fracture

Studies which longitudinally measured quality of life of persons, who had sustained a hip fracture, consistently indicate a decrease in quality of life compared with pre-fracture quality of life. In the study by Tidermark et al. (2002), for example, after 1 week, patients with a hip fracture had a substantially poorer QOL compared with pre-fracture levels (M difference = 0.34).

Overall, these studies report an improvement in quality of life over the following 4 months. Griffin et al. (2015), for example, report that participants' quality of life recovered quickly during the first 4 weeks. There is, however, a subsequent slowing down in recovery of quality of life, with quality of life never reaching pre-hip fracture levels (Beaupre et al., 2012; Ekstrom et al., 2009; Gjersten et al., 2016). The results of these studies imply that health carers' efforts to achieve improved quality of life need to be concentrated on the initial period postfracture as progress is subsequently more difficult.

### 1.1.3 | Spiritual coping strategies following a hip fracture

After an extensive literature search, no literature could be identified related to spiritual coping strategies in older adults with a hip fracture. Likewise, there is a lack of literature about the relationship between spiritual coping strategies and quality of life. This paper consequently makes reference to studies related to religious coping, although spiritual coping is much broader and includes persons who have experienced other events besides hip fracture.

In the study by Haydari-Fard et al. (2014), 51% ( $N = 102$ ) of the participants reported moderate levels of religious coping (mean score = 81.25). Higher levels of religious coping were associated with higher levels of quality of life in social functioning ( $r = .2$ ;  $p = .04$ ) and mental health ( $r = .2$ ;  $p = .003$ ) (Haydari-Fard et al., 2014).

Bosworth et al. (2003) similarly reported that higher public religious practice was associated with lower depression scores ( $B = -0.2$ ;  $p = .03$ ) in the first 6 months. After 6 months, lower depression scores were related to high levels of private religious practice ( $B = -0.2$ ;  $p = .03$ ) but not public religious practice ( $B = -0.13$ ;  $p = .21$ ). Increasing levels of positive religious coping, such as reliance on God to give strength, were also associated with less depression at 6 months ( $B = -0.24$ ;  $p = .03$ ) (Bosworth et al., 2003).

## 2 | THE STUDY

### 2.1 | Research question

This study addresses the question “what is the relationship between spiritual coping strategies and quality of life, in persons who had sustained a hip fracture?”

### 2.2 | Design

A correlational, cross-sectional survey design was used.

### 2.3 | Sample/Participants

The study included the total population of persons over 65 years of age who had sustained a hip fracture during 2015 and had received surgical treatment in a public general hospital in Malta ( $N = 299$ ). This is a 1000-bed hospital which in 2015 admitted 489 persons with a hip fracture of whom 171 could not be included in the study as 114 had passed away by the time of data collection and others were not eligible to participate, in view of reasons such as them being foreigners who had returned to their country of origin or having sustained multiple hip fractures. Individuals with multiple injuries beyond a hip fracture were excluded due to expected difference in the recovery process. Participants had to be Maltese speakers.

Participants were identified by an intermediary person from the Clinical Performance Unit at the hospital where this study was conducted. The intermediary person obtained postal addresses from the Clinical Patient Administration System software. In this way, the researchers did not have any access to the participants' personal information. The intermediary person is not an author of this paper.

### 2.4 | Data collection

Data were collected between November 2016–January 2017 with the use of a questionnaire which included the World Health Organization Quality of Life-BREF (WHOQOL-BREF) and the Spiritual Coping Strategies Scale (Baldacchino & Draper, 2001). The WHOQOL-BREF questionnaire is a five-point Likert-form scale designed to measure quality of life. Items are answered on a scale of 1 to 5 with higher scores denoting better quality of life except for three negatively coded items. Participants were asked to answer the statements according to their perceived quality of life during the 4 weeks prior to data collection. The WHOQOL-BREF consisted of 26 questions which covered the physical (7 items), psychological (6 items), social (3 items), environmental (8 items) and overall (2 items) QOL domains (WHO, 1997).

The Spiritual Coping Strategies Scale is a four-point Likert-form scale which consists of twenty items related to two factors: religious and non-religious coping strategies (Baldacchino & Buhagiar, 2003;

Baldacchino & Draper, 2001). Items related to religious coping measure attitudes in relation to religion and belief in God. Items related to non-religious coping measure frequency of use of strategies related to the relationship with self, others and the environment.

Scores range from 0–3, with higher scores representing increasing frequency of use of the spiritual coping item (Baldacchino & Buhagiar, 2003). This scale was chosen over other scales as it includes both religious and non-religious aspects of spiritual coping, thus making it suitable for use with both believers and non-believers. In addition, this scale was tested psychometrically in both the English and Maltese language and this was viewed to be added advantage as some of the participants may have been only English or Maltese speakers; others could have been bilingual. Participants were therefore given the choice to choose which language they preferred when answering the questionnaire.

Demographic data were also collected as part of this questionnaire

An intermediary person was provided with a stamped envelope which included a participant information letter, questionnaire and stamped self-addressed envelope. The intermediary person affixed a label with the person's name and address to the envelope and posted it to the participants. Two reminders including the full pack were sent to all potential participants at 3-week intervals. No compensation was provided to participants in return for participating in the study. As it was anticipated that some of the participants may be unable to complete the questionnaires due to their literacy ability or physical condition, they were informed that they could be assisted by an informal caregiver.

Data collected in this study will be made available to other researchers upon request by the corresponding author.

### 2.5 | Validity and reliability

The WHOQOL-BREF questionnaire was derived from the WHOQOL-100 questionnaire (WHO, 1997). Its content validity was assessed by a group of experts from 15 WHO international field centres (Croatia, the Netherlands, Australia, the United Kingdom, the United States of America, France, Israel, Japan, Russia, Zimbabwe, Panama, Spain, India and Thailand) (WHO, 1997).

The conceptual structure of the WHOQOL-BREF questionnaire was analysed by a confirmatory factor analysis test and reported to consist of a four-factor structure representing physical, psychological, social and environmental aspects of quality of life (The WHOQOL Group, 1998).

The psychometric properties of the WHOQOL-BREF questionnaire were analysed for use with older adults in various international studies (Castro et al., 2014; Hwang et al., 2003; Kalfoss et al., 2008; Liang et al., 2009; Lucas-Carrasco et al., 2011; Steinbuechel et al., 2006). Several authors such as the WHOQOL Group (1998) and Lucas-Carrasco et al. (2011) have assessed the questionnaire's internal consistency reliability using Cronbach's  $\alpha$  coefficient. The minimal recommended value for internal

consistency is Cronbach's  $\alpha$  of 0.70 (Polit & Beck, 2010, p. 375). Overall, this questionnaire achieved good internal consistency scores in the physical, psychological and environmental domains; in the main, the score for the social domain is below the acceptable level (Kalfoss et al., 2008; Lucas-Carrasco et al., 2011; Steinbuechel et al., 2006).

In the present study, the physical domain obtained Cronbach's alpha coefficient of 0.80, the psychological domain 0.78 and the environmental domain 0.77, all above the minimum of 0.7, demonstrating good internal consistency reliability. As with previous studies, the social domain obtained Cronbach's alpha of 0.67, below the minimum of 0.7. This low Cronbach's  $\alpha$  value for the social domain may be attributable to the small number of items in this subscale ( $N = 3$ ) (Field, 2009).

The Maltese version of the WHOQOL-BREF questionnaire was previously tested for test-retest reliability (Cassar & Baldacchino, 2012). The results showed that all the subscales reached a statistically significant correlational coefficient indicating good stability of the tool (Cassar & Baldacchino, 2012).

The content validity of the Spiritual Coping Strategies Scale was determined by a group of 10 multidisciplinary experts from different professions including theology, sociology, nursing, philosophy, pastoral care and psychology (Baldacchino & Buhagiar, 2003). The translation of the Spiritual Coping Strategies Scale into the Maltese language was carried out following a thorough translation process involving a group of three linguistics experts. Construct validity of the scale was carried out by exploratory factor analysis which concluded that two factors underlay the twenty different items of the spiritual coping scale that of religious and non-religious coping (Baldacchino & Buhagiar, 2003).

The Maltese version of this scale achieved an acceptable overall Cronbach's  $\alpha$  score of 0.73; Cronbach's alpha for non-religious coping was, however, low (0.59) and that for religious coping was good at 0.77 (Baldacchino & Buhagiar, 2003). The test-retest reliability resulted in satisfactory results, where Spearman's coefficient scores ranged between  $0.5 \leq r_s \leq 0.93$  (Baldacchino & Buhagiar, 2003).

Cronbach's  $\alpha$  was calculated for the Spiritual Coping Strategies Scale in the present study. The results demonstrate good internal consistency for religious coping (0.71), non-religious coping (0.81) and overall spiritual coping (0.85).

## 2.6 | Ethical considerations

Permission to carry out this study was sought and granted by the Faculty of Health Sciences Research Ethics Committee and the University of Malta Research Ethics Committee. Full information on the nature of the study was provided in the participant information sheet to ensure that participants could take an informed decision as to whether they would like to participate. Participation was anonymous as there was no way to link a person to a questionnaire. Returning a completed questionnaire was taken to indicate the participant's consent to participate in the study.

## 2.7 | Data analysis

Data analysis was carried out using the Statistical Package for Social Sciences (SPSS) version 24. The score for the Spiritual Coping Strategies Scales was computed by summing the score of the 20 items in the Spiritual Coping Strategies Scale and dividing by the number of items to obtain a mean score. Mean scores for the QOL domains were calculated by inputting into SPSS the equations provided with the WHOQOL-BREF. Standard deviations were also provided.

Linear regression was used to assess the extent to which overall spiritual coping strategies predicted each quality-of-life domain. This was followed by a stepwise multiple regression analysis to identify whether religious and non-religious coping strategies predicted the score on each quality-of-life domain. In this analysis, the non-significant predictor for the quality-of-life domain score was excluded from the model. All tests were computed at the 0.05 level of significance, where  $p$ -values  $< .05$  were taken to indicate a statistically significant result. Since gender, age and number of comorbidities could be confounding factors, the regression models were fitted twice to include or exclude confounding factors. The results with confounding factors accounted for are reported in the text, whilst results with confounding factors included and excluded are reported in the tables.

## 3 | RESULTS

### 3.1 | Demographic characteristics of the participants

Of the 299 questionnaires posted, twelve were undelivered due to invalid or wrong addresses. A response rate of 51% was achieved, with 147 (out of 287) questionnaires returned.

The participants mostly consisted of females, with 105 (71%) women as opposed to 42 men (29%). Most were 80 years of age or over ( $N = 88$ , 60%). Most were either married ( $N = 50$ , 34%) or widowed, separated or divorced ( $N = 65$ , 44%). A smaller number reported being single ( $N = 29$ , 20%) or belonging to a religious order ( $N = 3$ , 2%).

Most of the participants lived with family members ( $N = 75$ , 51%) or alone ( $N = 51$ , 35%) before the hip fracture occurred. Following the hip fracture, the number of persons living in an elderly home increased to 43 (29%) from 18 (12%). Most participants reported walking independently ( $N = 119$ , 81%) before the hip fracture; this decreased to 38 ( $N = 26\%$ ) following the hip fracture.

### 3.2 | Quality of life of patients who have sustained a fractured femur

This section outlines participants' quality of life consisting of physical, psychological, social and environmental aspects as reported by the WHOQOL-BREF questionnaire. As seen in Table 1, for the physical domain, participants scored highest on the item related to sleep

and relaxation (mean = 3.40, SD: 1.20) and lowest (mean = 2.33, SD: 1.25) on working capability. For the psychological domain, the highest mean score was recorded for negative emotions/feelings (mean = 3.53, SD: 0.98) whilst the lowest score was reported for

positive emotions/feelings (mean = 2.38, SD: 0.92). For the social domain, participants scored highest in the item related to personal relationships (mean = 3.5, SD: 1.06), whilst the lowest scoring item was related to sexual intimacy (mean = 2.46, SD: 1.36). The highest

**TABLE 1** The demographic characteristics of the participants

	Gender n (%)		Total n (%)
	Females	Males	
<b>Age group</b>			
65–69 years	11 (11)	6 (14)	17 (12)
70–74 years	15 (14)	5 (12)	20 (14)
75–79 years	16 (15)	6 (14)	22 (15)
80–84 years	28 (27)	13 (31)	41 (28)
85–89 years	19 (18)	9 (21)	28 (19)
90+ years	16 (15)	3 (7)	19 (13)
<b>Marital status</b>			
Single	22 (21)	7 (17)	29 (20)
Married	32 (31)	17 (35)	49 (34)
Widowed/Separated/Divorced	50 (48)	15 (37)	65 (46)
Religious role	1 (1)	2 (4.9)	3 (2.1)
<b>Living Status before and after the fracture</b>			
Alone before	38 (37)	12 (29)	51 (35)
Alone after	24 (23)	9 (22)	33 (28)
With family members before	50 (48)	32 (58)	74 (51)
With family members after	43 (41)	21 (51)	64 (44)
In nursing home before	15 (14)	3 (7)	18 (12)
In nursing home after	34 (32)	9 (22)	43 (30)
In religious community before	1 (1)	2 (5)	3 (2)
In religious community after	1 (1)	2 (5)	3 (2)
With live-in carer before	0 (0)	0 (0)	0 (0)
With live-in carer after	3 (3)	0 (3)	3 (2)
<b>Mobility before and after the fracture</b>			
Walks independently before the fracture	86 (82)	33 (80)	119 (82)
Walks independently after the fracture	25 (24)	13 (32)	38 (26)
Walks with one aide before the fracture	7 (7)	5 (12)	12 (8)
Walks with one aide after the fracture	23 (22)	12 (29)	5 (24)
Walks with two aids or frame before the fracture	9 (9)	1 (2)	10 (7)
Walks with two aids or frame after the fracture	29 (28)	7 (17)	36 (25)
Bed bound before the fracture	0 (0)	2 (5)	2 (1)
Bed bound after the fracture	0 (0)	2 (5)	2 (1)
Chair bound or uses wheelchair before the fracture	2 (2)	0 (0)	2 (1)
Chair bound or uses wheelchair after the fracture	18 (17)	5 (12)	23 (16)
Never leaves the house without help before the fracture	1 (1)	0 (0)	1 (1)
Never leaves the house without help after the fracture	10 (10)	2 (5)	12 (8)

score for the environmental domain was reported for the personal residential environment (mean = 3.92, *SD*: 0.86) and the lowest for recreational and relaxing activities (mean = 2.02, *SD*: 1.01). Participants in this study rated their overall QOL (mean = 3.88, *SD*: 3.82) slightly higher than how satisfied they were with their health (mean = 3.06, *SD*: 0.93).

### 3.3 | Spiritual coping strategies of patients who sustained a hip fracture

The score for each item in the Spiritual Coping Strategies Scale ranged from 0–3, with higher scores representing increased frequency or helpfulness of the related item. As seen in Table 2, the participants scored a mean of 2.03 (*SD*: 0.54) for overall use of spiritual coping strategies.

### 3.4 | Religious coping strategies factor

For the religious coping strategies factor, the item related to “placing trust in a higher order with the optimism of a better future”

(mean = 2.69, *SD*: 0.65) was the item which was scored the highest by participants (Table 2). Contrastingly, the item related to “reading spirituality related material” (mean = 1.10, *SD*: 1.18) had the lowest mean score.

### 3.5 | Non-Religious coping strategies factor

For the non-religious coping strategies, participants reported the highest mean score for the item related to “developing and sustaining relationships with family and friends” (mean = 2.71, *SD*: 0.69). The least reported non-religious coping strategy was “discussing difficulties with others suffering similarly” (mean = 1.08, *SD*: 1.12).

### 3.6 | The relationship between spiritual coping strategies and quality of life

The following sections present the results for the linear regression with overall coping strategy score as the independent variable and each of the different aspects of quality of life as the dependent variable (Table 3). This is followed by the results for the stepwise

**TABLE 2** Mean score on the coping strategies scale

Item No	Item	Mean	SD
Religious coping strategies			
1	Individual prayers	2.56	0.80
2	Relationship with God	2.67	0.81
4	Praying with others	1.50	1.26
6	Significance of spiritual/religious items	1.86	1.18
8	Religious programmes and music on television and/or radio	1.84	1.24
10	Reading spirituality related material	1.10	1.18
15	Attendance to church or place of worship	1.88	1.25
18	Placing trust in a higher order with the optimism of a better future	2.69	0.65
19	Receiving communion	2.46	0.94
	Mean Religious coping strategies factor score	2.07	0.60
Non-religious coping strategies			
3	Develop and sustain relationships with family and friends	2.71	0.69
5	Discussing difficulties with others suffering similarly	1.08	1.12
7	Look at situations with optimism and positivity	1.76	1.18
9	Living day by day with optimism that things will improve	2.13	1.08
11	Accepting illness	2.12	1.01
12	Finding meaning and purpose of living through an illness	1.87	1.15
13	Appreciating the arts and music	1.99	1.14
14	Extent of relating and disclosing with family and friends	2.32	0.95
16	Ability to self-reflect to identify personal potential and strengths	1.44	1.11
17	Giving help to others as a way of expressing love and peace	1.99	1.14
20	Appreciating nature and the environment	2.52	0.85
	Mean Non-religious coping strategies factor score	2.00	0.62
	Overall Spiritual Coping Score	2.03	0.54

**TABLE 3** Results of regression models where the predictor is the spiritual coping scale score and dependent variables are quality-of-life domains

Dependent Variable	With confounding factors			No confounding factors		
	B	SE	p-value	B	SE	p-value
Physical	0.132	0.114	.250	0.196	0.114	.088
Psychological	0.603	0.104	.000	0.645	0.097	.000
Social	0.608	0.147	.000	0.580	0.139	.000
Environmental	0.276	0.101	.008	0.300	0.099	.003
Quality of life	0.411	0.130	.002	0.480	0.127	.000
Comorbidities	0.092	0.117	.434			
Age	0.103	0.108	.342			
Gender (male)	0.012	0.124	.922			

regression analysis with religious coping and non-religious coping as the independent variables and the different aspects of quality of life as the dependent variable (Table 4).

### 3.7 | Physical quality of life

As seen in Table 3, overall spiritual coping scores did not significantly predict physical QOL domain scores ( $\beta = 0.13$ ,  $p = .25$ ). Non-religious coping strategies were the only significant predictor for physical QOL (Table 4). Religious coping strategies did not contribute significantly and were excluded from the model. Non-religious

coping strategies accounts for 25% variation in physical QOL score ( $R^2 = 0.25$ ,  $\beta = 0.38$ ,  $p = .000$ ).

### 3.8 | Psychological quality of life

Overall spiritual coping strategies scores significantly predicted psychological QOL domain scores ( $\beta = 0.60$ ,  $p = .001$ ) (Table 3). Non-religious coping strategies were the better predictor of psychological QOL. Non-religious coping strategies accounted for 37% of the variation in psychological QOL domain scores ( $R^2 = 0.37$ ,  $\beta = 0.63$ ,  $p = .000$ ) (Table 4).

**TABLE 4** The relationship between non-religious and religious coping strategies and the different quality-of-life domains

Coping strategy	No confounding factors			With confounding factors		
	B	SE	p-value	B	SE	p-value
Dependent variable: Physical quality of life						
Non-Religious	0.371	0.134	.007	0.382	0.144	.009
Religious	-0.167	0.131	.205	-0.221	0.133	.099
	$R^2 = 0.06$			$R^2 = 0.249$		
Dependent variable: Psychological quality of life						
Non-Religious	0.603	0.103	.000	0.632	0.118	.000
Religious	0.044	0.102	.668	-0.004	0.111	.970
	$R^2 = 0.31$			$R^2 = 0.37$		
Dependent variable: Social quality of life						
Non-Religious	0.721	0.150	.000	0.823	0.170	.000
Religious	-0.128	0.147	.384	-0.170	0.158	.284
	$R^2 = 0.20$			$R^2 = 0.33$		
Dependent variable: Environmental quality of life						
Non-Religious	0.347	0.106	.001	0.373	0.118	.002
Religious	-0.046	0.106	.665	-0.080	0.111	.474
	$R^2 = 0.10$			$R^2 = 0.23$		
Dependent variable: Overall quality of life						
Non-Religious	0.763	0.129	.000	0.800	0.141	.000
Religious	-0.280	0.128	.031	-0.346	0.133	.010
	$R^2 = 0.23$			$R^2 = 0.36$		

### 3.9 | Social quality of life

Overall spiritual coping strategies scores significantly predicted social QOL domain scores ( $\beta = 0.61, p = .000$ ) (Table 3). Non-religious coping strategies significantly predicted social QOL domain scores, whilst religious coping strategies did not. Non-religious coping strategies contributed for 33% of the variation in social QOL domain scores ( $R^2 = 0.33, \beta = 0.82, p = .000$ ) (Table 4).

### 3.10 | Environmental quality of life

Spiritual coping strategies significantly predicted environmental QOL domain scores ( $\beta = 0.28, p = .001$ ) (Table 3). Non-religious coping strategies accounted for 23% of the variation in the environmental QOL domain scores ( $R^2 = 0.23, \beta = 0.37, p = .002$ ). Religious coping strategies did not significantly predict environmental QOL domain scores (Table 4).

### 3.11 | Overall quality of life

Overall spiritual coping strategies scores significantly predicted overall QOL domain scores ( $\beta = 0.41, p = .002$ ) (Table 3). Non-religious coping strategies were the strongest predictor for overall QOL ( $\beta = 0.8, p = .000$ ); religious coping strategies was negatively related to overall quality of life ( $\beta = -0.35, p = .01$ ). These variables together accounted for 36% of the variance in the overall QOL score ( $R^2 = 0.36$ ) (Table 4).

## 4 | DISCUSSION

### 4.1 | Participants' reported quality of life and use of spiritual coping strategies

Participants reported an average score of 3.11 on the overall quality-of-life scale which implies that their perceived quality of life was satisfactory. Participants had the poorest scores in the physical and psychological quality-of-life aspects. Patients recovering from hip fractures experience declines in general health and psychological, social and physical functioning (Randell et al., 2000). Previous studies similarly reported that declines in quality of life were significantly greater in patients with a hip fracture than in older adults without a hip fracture (Hajbaghery & Abbasinia, 2013; Orive et al., 2015).

The highest scores in quality of life were reported for the social and environmental quality-of-life domains. Environmental quality of life refers to the impact the surrounding environment has with regard to safety, security, home environment, financial resources, transport, physical environment and opportunities for learning and leisure/recreation. The high scores on social quality of life indicate that the participants received good support from family members.

Participants reported an average spiritual coping strategies frequency score of 2.03 which implies that these are used sometimes and that they are fairly helpful (Baldacchino & Buhagiar, 2003). The use of religion and spirituality gives a sense of support and strength to cope with stressors, and this can have a positive influence on a person's physical, psychological and social health (Baldacchino & Draper, 2001).

Although the use of religious and non-religious coping strategies did not differ greatly in the present study, participants used religious coping strategies more frequently with the item related to "placing trust in a higher order with the optimism of a better future" obtaining the highest score. Dunn and Horgas (2004) likewise found that older adults regularly used religious coping strategies to cope with chronic pain. In these strategies, individuals place their trust and work with a higher order to cope with their suffering (Dunn & Horgas, 2004).

### 4.2 | The relationship between spiritual coping strategies and quality of life

There was a positive relationship between overall spiritual coping strategies and each quality-of-life domain with the exception of physical QOL. The positive association between use of spiritual coping methods and quality of life was identified in previous research studies (Haydari-Fard et al., 2014; Scandrett & Mitchell, 2009).

Each quality-of-life domain was best predicted by non-religious coping strategies. This was especially so with regard to the social and psychological quality-of-life domains. This implies the need to encourage older adults to use non-religious coping strategies which were mostly helpful for participants in this study, such as nurturing and sustaining relationships with family and friends and appreciating nature.

The physical limitations imposed on older adults by the hip fracture could limit their ability to use these coping strategies. The results of the present study, for example, showed that mobility was much lower post-hip fracture than prior to the hip fracture. However, this could be facilitated by making the relatives aware of the importance of helping their loved ones make use of these non-religious coping strategies to enhance quality of life.

This study agrees with the assumption on motivation in Maslow's theory which purports that it is difficult to reach self-actualization (holistic QOL) state without achieving lower level goals. The present study's findings indicate that a hip fracture has considerable negative consequences on physical functioning. Participants in this study mostly reported poor physical quality of life and had lower mobility than prior to the fracture, and a substantial number had to revert to living in a long-term care residence. Unmet needs at the lowest biological (physical quality of life) level could have led to further repercussions although a participant may have been satisfied with psychological, social and environmental quality of life. This emphasizes the importance of physical recovery following hip fracture as this is a precedent to recovery in other quality-of-life and functional aspects.

Use of spiritual and non-religious coping strategies was highly related and predictive of improved quality-of-life scores. As

hypothesized by Lazarus and Folkman (1984), the stressors related to hip fracture triggered individuals to engage in primary appraisal of the situation, where the hip fracture was deemed as threatening or harmful. This led participants to engage in secondary appraisal to identify coping resources to help them cope and improve quality of life. Spiritual coping strategies are a type of emotional-focused coping strategies that do not resolve the entire person's suffering but give hope that decreases the feeling of distress (Lazarus, 1993; Lazarus & Folkman, 1987; Papathanasiou et al., 2015). Most of the study's participants perceived an external locus of control as they tried to find meaning in their suffering through the use of non-religious coping strategies. This appeared to be successful as these were related to improved scores in all quality-of-life domains. This implies that the use of non-religious spiritual coping strategies, such as seeking and achieving support and solidarity from family and friends, is very important in improving quality of life after a hip fracture. Gilboa et al. (2019) similarly report that social support is associated with better community reintegration and health-related quality of life following a hip fracture. This is supported by the conclusions of Auias et al.'s (2019) scoping review that social support following a hip fracture is associated with better physical recovery and lower mortality.

### 4.3 | Limitations

This research study was conducted using a quantitative correlational survey design. A limitation of this approach is the lack of depth in the data collected particularly with regard to subjective topics such as spiritual coping and quality of life. The results might therefore not present a complete representation of the experience of sustaining a hip fracture. Moreover, the WHOQOL-BREF questionnaire is a generic questionnaire which was not specifically designed to collect data from persons who have sustained a hip fracture.

Although reminders were used to maximize participation, the response rate achieved was low at 51%. Moreover, the recruited population represents a group of individuals who have survived at least the first year since the fracture episode. This study's findings may consequently be more generalizable to a slightly healthier group of individuals.

Proxy respondents could assist older adults in completing questionnaires in view of possible difficulties of participants to complete the questionnaire unaided, such as illiteracy, poor vision and cognitive impairments. This may have had an influence on the responses to the questionnaire, and there was no way to identify whether the questionnaire had been filled in by the person for whom the questionnaire was intended.

Another limitation of this study was the poor internal consistency score for the social quality-of-life subscale. The Spiritual Coping Strategies Scale's questions are also inclined towards the Catholic religion with, for example, questions related to receiving communion and church attendance. This could have biased the results by causing self-selection of people who are Catholic, excluding those who are of other Christian denominations or who are non-Christian.

## 5 | CONCLUSION

This study highlighted the poor quality of life and health status experienced by persons following a hip fracture, which persists for a long period of time following this life-changing event. These declines were increasingly evident for the physical and psychological quality-of-life domains. The use of spiritual coping strategies was suggestive of an effective coping mechanism by which older adults adapt to the stressors imposed by hip fractures. Of the two spiritual coping strategies factors, non-religious coping strategies mostly involving relationships with family and friends were the most effective in predicting levels of quality of life, including the physical, psychological, social and environmental quality of life, showing the importance of family ties.

### ACKNOWLEDGEMENTS

None.

### CONFLICT OF INTEREST

The authors declare that they are not aware of any conflict of interest.

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**How to cite this article:** Sammut R, Azzopardi C, Camilleri L. Spiritual coping strategies and quality of life in older adults who have sustained a hip fracture: A cross-sectional survey. *Nurs Open*. 2020;00:1–10. <https://doi.org/10.1002/nop2.662>