

Depression, Hope and Social Support Among Older People With Cancer: A Comparison of Muslim Palestinian and Jewish Israeli Cancer Patients

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Research Article

Keywords: Cancer patients, old age, Muslim Palestinian, Jewish Israeli, hope, depression, perceived social support

Posted Date: July 29th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-327509/v2>

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Version of Record: A version of this preprint was published at Supportive Care in Cancer on September 17th, 2021. See the published version at <https://doi.org/10.1007/s00520-021-06554-6>.

Abstract

Objectives

Studies of depression in older Muslim Palestinians diagnosed with cancer are scarce. To gain insight into the psychological response and coping ability of this very large, globally distributed population, we collected data from older Muslim Palestinian people diagnosed with cancer concerning depression hope and perceived social support. Both hope and social support were selected because they can be manipulated through intervention and education, as shown in the geriatric literature. Data were compared to data collected from older Jewish Israeli people diagnosed with cancer.

Design

The study sample comprised 143 Muslim Palestinian and 110 Jewish Israeli people diagnosed with cancer, aged ≥ 65 . All participants were either in treatment for active disease or within six months of such treatment. Self-administered measures included depression (the Five-Item Geriatric Depression Scale), perceived social support (Cancer Perceived Agents of Social Support Questionnaire) and hope (Snyder's Adult Hope Scale).

Results

Hope and depression were both found to be significantly higher among the Muslim Palestinian patients than in the Jewish Israeli participants. In both samples, higher levels of hope were associated with lower levels of depression, with this correlation stronger in the Jewish Israeli group.

Conclusion

To improve the psychological wellbeing of patients, healthcare providers must exercise cultural sensitivity in their interactions, respecting the perspectives of both the patients and their families. Incorporating the concept of hope into the therapeutic dialogue and language may improve psychological wellbeing and synchronize the needs and expectations of patients, caregivers, and healthcare professionals, resulting in more equitable, effective and value-oriented care.

Introduction

The number of older people worldwide diagnosed with cancer is expected to increase rapidly in the coming decade [1]. Older adults account for more than 62 percent of cancer survivors and represent a growing population with unique psychosocial needs [2]. Older people diagnosed with cancer might have increasing physical, cognitive, psychological and emotional needs, and may experience decline in any or all of these domains. In many cases this decline is associated with depression which is under diagnosed in the population of people age 70 years and older diagnosed with cancer [3]. Social support and hope play key roles in supporting these patients. Both these variables were recognized in the psycho-

oncology literature as important variables contributing significantly to positive psychological outcomes and to reduced depression in the cancer context [4,5].

To date, predictive and risk factors for depression among older cancer patients in the Middle East have not been adequately studied [6]. Our exploratory research compared relations and levels of depression, hope and perceived social support among a study population of older Muslim Palestinians diagnosed with cancer to those of a neighbouring population of older Jewish Israelis diagnosed with cancer illness.

The study's Muslim Palestinian participants come from Gaza strip and the West Bank, areas that are 98 to 99 percent Muslim. Some 2.69 to 3.62 percent of the population in these areas is aged 65 and older [7,8]. The crude incidence of cancer mortality among Muslim Palestinians in the West Bank is 49.2 and in Gaza 32.7 (rate per 100, above), with some 30 percent of the newly diagnosed cancers found in those aged 65 and over [9]. There is, as yet, no formal organized palliative care program in the West Bank [10]. In Israel, cancer is a leading cause of mortality – 26 percent among Israeli Jews [11]. Palliative care is not optimally implemented, but is far more widely available than under the Palestinian healthcare system [12]. The Israeli average socio-economic status is much better in comparison to the Palestinians in the West Bank and Gaza. In Israel, the Gross Domestic Product (GDP) per capita in 2019 was \$40,145, with an unemployment rate of 3.81% among the total population. Life expectancy was estimated at 83.15 at 2021, physicians density was 4.6/1000 (population) and infant mortality rate was 3.62 deaths/1,000 live births [13]. In the West Bank the GDP at 2019 was \$6,220, with an unemployment rate of 27.9% (2017 estimate). The total population life expectancy was estimated at 76.12 at 2021, physicians density was 1.45/1000 (population) and infant mortality rate was 15.68 deaths/1,000 live births [7]; In the Gaza Strip the GDP at 2019 was \$6,220 with unemployment rate of 27.9% (2017 estimate). The total population life expectancy was estimated as 75.14 at 2021 and physicians density of 1.45/1000 (population) and infant mortality rate of 15.6 deaths/1,000 live births [8].

In addition to these huge socio-economical differences, there are also significant socio-cultural differences. While this study labels Jewish Israelis people and Muslim Palestinians people according to faith, the differences between them are as much cultural as religious. These cultural differences find expression in divergent perceptions of healthcare, as well as in the way that appropriate cancer care is identified, understood and delivered [14]. In comparison with contemporary Westernized Jewish culture in Israel, the Muslim ethos tends toward traditional family and religious values. Muslim belief system is generally considered more deterministic and collectively oriented than the Jewish perspective [15,16], which places greater emphasis on obligation within duty-based ethics [17,18]. The typical Muslim Palestinian household tends to comprise more members than that of the Jewish Israeli [19,17]. In healthcare, Muslim tradition bestows on the extended family a collective responsibility for medical decision-making and disclosure of information to the patient, encharging family members with protecting patients from the emotional and physical anguish of directly addressing their cancer diagnosis and prognosis. Muslim Palestinian people diagnosed with cancer may, therefore, know less than their families about their own medical condition [20].

In the current study we examined the outcome variable of depression and its relation to perceived social support and hope in the two study populations. Perceived social support is conceptualized in two ways: according to the supportive agent – spouse, family, friends, and beliefs [21]. Hope conceptualization, in the current study, is based on the model of Snyder *et al.*[22]. This conceptualization defines hope as the perceived ability to find routes (pathways) to individual goals, and determination to attain these goals (agency).

In line with Islamic belief, the medical outcome for many Muslims depends on their faith. They are confident that God will remove barriers and enable individuals to reach their goals, which may, in turn, result in higher levels of hope [23]. The first hypothesis of this study, therefore, was that Muslim Palestinians people diagnosed with cancer would report higher levels of hope in comparison to those reports by their Jewish Israeli counterparts. The second hypothesis was that higher levels of perceived social support would be found among Muslim Palestinian people diagnosed with cancer in comparison to the Jewish Israelis people diagnosed with cancer— expected from traditional social values, family structure and larger numbers of family members per household, all more marked in the Muslim Palestinian community than among the Jewish Israeli patients. Third, we hypothesized higher levels of hope and social support would be associated with lower levels of depression in both cultures. The fourth hypothesis based on all the preceding three was that the Muslim Palestinian people diagnosed with cancer would report lower levels of depression in comparison to the Israeli Jewish people diagnosed with cancer.

Materials And Methods

Study population

The study population is part of ongoing cross-sectional research concerning distress, coping and hope among cancer patients aged ≥ 65 years and their informal caregivers [24,25]. The current study included groups of older Muslim Palestinians and Jewish Israelis diagnosed with cancer. Inclusion criteria for both groups were age >65 years, a cancer diagnosis, and active treatment within six months of the enrolment date. Patients with non-metastatic cancer more than two years after diagnosis were considered survivors and excluded from the study. All patients lived with a spouse, who had not been diagnosed with cancer, for at least 10 years.

Muslim Palestinian Group

The Muslim Palestinian patients were recruited from the outpatient oncology clinic of Makassed Hospital in East Jerusalem, a cancer tertiary care center for Palestinians from East Jerusalem, the West Bank and Gaza. A total of 153 eligible patients were approached. Three caregivers refused informed consent, one patient was excluded after failing to meet the active disease criterion, and six patients failed to complete all measures. The final number of Muslim Palestinian patients in the study was thus 143.

Jewish Israeli Group

The Jewish Israeli patients were recruited from the outpatient clinics of three major cancer centers in Israel. The sample comprised 350 patients with a substantially larger proportion of oldest old (aged >85 years) patients. To ensure similar age and gender distribution in the two groups, we selected a sub-sample of the Jewish Israeli participants, who most closely matched their Muslim Palestinian counterparts in the background parameters of gender, age, cancer stage (metastatic vs. non-metastatic) and time since diagnosis. (Age tolerance for matching was ± 4 years; time from diagnosis tolerance for matching was ± 6 months.) Where more than one Jewish Israeli met the matching criteria for the same Muslim Palestinian participant, selection was random. Not all Muslim Palestinian participants had Jewish Israeli matches, since the former were, overall, younger and with a shorter time from diagnosis. Hence, the sub-sample of Jewish Israeli participants, numbered 122 – of whom 12 participants failed to complete all the study measures. The final Jewish Israeli sample thus comprised 110.

Patients' Characteristics

Table 1 presents the sociodemographic and medical data of the patients by their study group. The mean age was 73 years for the Muslim Palestinians and 75 for the Jewish Israelis. Men comprised 56 percent of the Muslim sample and 43 percent of the Jewish sample; 22 percent of patients in the former had more than 12 years schooling, compared with 68 percent in the latter ($p < 0.0001$). All but four of the Muslim Palestinians identified themselves as religious (observant) or traditional in comparison with less than half (46 percent) of the Jewish Israelis. Common cancers in both samples included lung, colorectal, prostate and breast. Functional levels were similar in the two samples (63.5 percent of the Muslim Palestinians and 64 percent of the Jewish Israelis had minimal symptoms or none at all). Metastatic cancer was diagnosed in 32 percent of the Jewish Israeli sample and in 34.5 percent of the Muslim Palestinian group. The latter had more comorbidities than the former (mean of 1.19 vs. 0.79 respectively, $p < 0.005$). Mean time from diagnosis was 5.09 months among Muslim Palestinians and 5.45 months among Jewish Israelis (N.S).

Ethical Approval and Procedure

The study protocol was approved by the Medical Ethics Review Committees of the Hebrew University-Hadassah Medical Center, Chaim Sheba Medical Center, Assuta Ashdod University Hospital and Makassed Hospital. With the permission of the attending physicians, patients were approached during routine outpatient clinic visits or during chemotherapy. Each participant signed an informed consent form. Data were collected between May 2013 and June 2020 (Jewish Israeli participants) and December 2019 and June 2020 (Muslim Palestinian participants).

Measures

Background Data

Sociodemographic data were collected directly from the patients. Information concerning diagnosis, treatment, cancer stage, Eastern Cooperative Oncology Group (ECOG) performance status [26], and Charlson Comorbidity Index (CCI) [26] was obtained from the medical records.

Depression

Depression was measured using the five-item version of the Geriatric Depression Scale (5-item GDS). This is a shorter version of the 15-item Geriatric Depression Scale, proven to be as effective as the longer validated version [27]. The scale consists of five binary items (for example, “Are you basically satisfied with your life?”) with each individual item scoring 0–1, the five items together thus scoring in a range of 0–5. The English and Hebrew translations were validated and reported reliable [27,28] as was the longer Arabic version [29]. For the current study, we used the five relevant items from the longer validated Hebrew version together with a professional translation of the English version into Arabic, in accordance with Helsinki Committee requirements. The recommended cutoff score ≥ 2 is the clinical cutoff for susceptibility to depression [30].

Perceived Social Support

Caregiver support was assessed using the 12-item Cancer Perceived Agents of Social Support questionnaire [21], (for example: “To what extent do you feel you receive helpful information from your spouse?”), each item scoring in a range of 1–5. The scale combines two theoretical content facets of social support: agent and type. This study used the aggregate score of agents (spouse, family, friends, beliefs), each based on the mean of three items (instrumental, cognitive, and emotional support). The Hebrew version of the scale has been proven valid and reliable for Jewish patients and their spouses in Israel [21]. For the Muslim Palestinian sample, we used a professional translation of the Hebrew version into Arabic. Internal reliability (Cronbach’s alpha values) was: Muslim Palestinian group – Cronbach’s alpha = 0.79, 0.77, 0.64 and 0.84 (spouse, family, friends, beliefs, respectively); Jewish Israeli group – Cronbach’s alpha = 0.74, 0.85, 0.89 and 0.96 (spouse, family, friends, beliefs, respectively).

Hope

Hope was assessed by the Adult Hope Scale (AHS) [22] and by six single items targeting specific hope content. The AHS is a 12-item measure (4-point Likert-type scale), comprising two components: agency (goal-directed determination) and pathways (routes to achieving goals). The AHS comprises eight hope items and four fillers. For the Jewish Israeli sample we used an existing valid Hebrew translation of the English version [31]. For the Muslim Palestinian sample, we used a professional translation of the English version into Arabic. Cronbach’s alphas for the aggregate measure of the eight hope items were 0.81 in both samples.

Statistical Analysis

Missing Value Analysis

All study and background variables were screened for missing values. No missing value exceeded 2 percent, other than ECOG (3.7 percent) and treatment (7.4 percent). The data were found to match a ‘missing completely at random’ (MCAR) pattern (Little’s MCAR test $\text{Chi}^2(83) = 93.78, P = 0.196 \text{ N.S.}$), hence participants with missing values were excluded, with no steps taken to complete the data.

Comparison of Study Groups

A one-way MANOVA was used to compare reported levels of depression, hope and perceived social support between the two study groups. These comparisons were controlled for all background variables (used as covariates) except cancer type, since there were too many types with low frequencies in the 'other' category. Religiosity was not included as a covariate since almost all the Muslim Palestinians declared themselves religious (observant) or traditional.

Predicting Depression

A separate regression model was calculated for each of the study groups. The predicted variable was depression, and the predictors were perceived social support, hope (AHS) and all background variables. The data were analyzed using IBM SPSS Statistics (Version 25) predictive and analytic software.

Results

Comparison of Study Variables between Ethnic and Gender Groups

Depression, hope, and social support were compared between the two study groups by one-way MANOVA with all covariates (age, gender, number of persons per household, education, cancer stage, ECOG performance status, time from diagnosis and comorbidities). The analysis revealed a significant main ethnicity effect (Wilks' Lambda = 0.29, $F(6,238) = 100.04$, $p < 0.0001$). Table 2 presents the univariate ethnicity statistics. Contrary to our initial hypothesis, depression was higher (more than double) among the Muslim Palestinian patients in comparison to the Israeli Jewish patients. In post-hoc analysis we found that 87% of the Muslim population were above the acceptable cutoff for depression in comparison to only 28% of the Israeli Jewish population ($p < 0.0001$). Also, Contrary to our initial hypothesis perceived social support (from spouse and family) was significantly higher among the Jewish patients. As expected, hope (AHS) was significantly higher among Muslim Palestinian patients than in the Jewish Israeli group.

Predicting Depression

Depression was predicted separately in the Jewish Israeli and Muslim Palestinian groups. Each regression model included all background variables (age, gender, number of persons per household, education, cancer stage, ECOG performance status, time from diagnosis, CCI comorbidities), hope and social support. Both regression models were found to be significant. For the Muslim Palestinians: adjusted $R^2 = 0.155$, $F(13,129) = 3.00$, $p < 0.001$; for the Jewish Israelis: adjusted $R^2 = 0.62$, $F(13,96) = 14.87$, $p < 0.001$. Table 3 presents the regression results. The significant predictors of depression in Muslim Palestinian patients were age and hope: older age predicted higher levels of depression ($b = 0.033$, Beta = 0.16, $t = 2.02$, $p < 0.046$), while higher levels of hope predicted lower levels of depression ($b = -0.41$, Beta = -0.32, $t = -3.83$, $p < 0.0001$). Among the Jewish Israelis, significant predictors of depression were education and hope: higher levels of education were related to lower levels of depression ($b = -0.60$,

Beta = -0.18, $t = -2.73$, $p < 0.008$), and higher levels of hope were related to lower levels of depression ($b = -1.25$, Beta = -0.61, $t = -7.795$, $p < 0.0001$).

Post Hoc Analysis of Ethnicity as a Moderator of the Correlation between Hope and Depression:

Since the impact of hope on depression was greater among the Jewish Israeli patients than the Muslim Palestinians (Beta=-0.41, Beta=-0.61, respectively), we examined the moderating effect of ethnicity (Muslim vs. Jewish) on the relationship between hope and depression, using the PROCESS SPSS macro [32]. All background and social support variables were included in the model as covariates. The interaction between hope and ethnicity was found significant ($F(1,237) = 27.83$, $p < 0.0001$). Higher levels of hope were related to lower levels of depression, with the relationship between hope and depression stronger in the Jewish Israeli group. Figure 1 shows predicted levels of depression for Muslim Palestinian and Jewish Israeli patients at the 16th, 50th and 84th percentiles of hope (percentiles calculated from the overall sample).

Discussion

The goal of our research was to compare and explore the complex relationship between hope, perceived social support and depression in older Muslim Palestinian people and older Jewish Israelis people diagnosed with cancer. Contrary to our initial hypothesis and despite higher levels of hope among the Muslim Palestinians people diagnosed with cancer, this group reported on extremely high levels of depression: 87 percent of the Muslim Palestinians participants reported on depression levels that are above the clinical cutoff. This intriguing finding should signal a red alert to healthcare providers. Before considering any possible cultural explanation it has to be taken into account that the most prominent factor differentiating between the two populations depression might be a result of the low socio-economic status and lower levels and accessibility to mental health, medical and palliative care services among the Muslim Palestinian people [33]. The gaps in socio-economic status may also be reflected in the wide educational disparity between the two groups (78 percent of Jewish Israeli patients had 12 years of education or more in comparison with only 22 percent of the Muslim Palestinian patients). Education is considered a resource which can, to some extent, protect against depression in general and in patients diagnosed with cancer. The high levels of depression among the Muslim Palestinian people diagnosed with cancer may also be related to cultural factors. It is cautiously speculated that Muslims perceive cancer as inevitably terminal and, therefore, in some way a divine death sentence imposed by God [34]. A cancer diagnosis in certain instances in Muslim society is a social stigma and thus characterized by secrecy and shame among patients and family members, who wordlessly enter a conspiracy of silence to shield the elderly patient [35,20,36]. This over-protection may leave patients alone with their unexpressed anxieties and fears [37]. This speculation may also explain the higher perceived spousal and family support among the Israeli Jewish group. Whereas the Jewish Israelis diagnosed with cancer are in general fully informed about their condition and participated in their medical and healthcare decisions, the Muslim Palestinians usually remain shielded from such information by their families. The family may actively refrain from using the word 'cancer' and scarcely acknowledge the illness – all of which are

forms of protective denial which may leave patients alone with their thoughts and fears closed communications channels [17]. Another possible explanation may be the tendency among religious Muslim Palestinians to shun psychological support for psychological distress and depression [38].

As hypothesized, the general measure of hope among the Muslim Palestinian patients was significantly higher than among the Jewish Israelis. Higher levels of hope were found to be significantly related to lower levels of depression in both samples, with this association stronger among the Jewish Israelis. The higher levels of general hope among the Muslim Palestinian patients can be partially explained by their high levels of religiosity and the known positive correlation between hope (as defined by Snyder) and religiosity in the Muslim community in general [39]. Levels of hope in Muslim Palestinian cancer patients, therefore, may not necessarily reflect a positive psychological state but rather a general belief in the power of God. [40]. This corresponds with the finding that high generalized hope in the Muslim Palestinian group impacted far less on depression than in the Jewish Israeli group.

Study Limitations

First, detailed data regarding specific systemic treatments, their results and expected prognosis, which may have affected a patient's perceived prognosis and depression, were unavailable in medical records. Second, the cross-sectional template of the study made it difficult to establish causality. Third, external validation of these results and their generalization to other Muslim societies needs careful consideration.

Conclusion

Significantly higher levels of hope were found to be strongly related to lower levels of depression in both study groups. This correlation was noticeably higher in the Israeli Jewish sample and it can be assumed that the hope among the Palestinian Muslim participants was not high enough to lower their depression to an acceptable level. Given the central role of hope and its relevance to religious belief, healthcare professionals should consider hope-enhancing interventions as a therapeutic tool to decrease depression. Recognizing the association between hope and depression is an important first step toward achieving the potential dividends of integrating the factors that modify the oncology team's approach to hope [41].

Furthermore, hope should be considered within the framework of religious belief. It is thus crucial that healthcare personnel adapt their use of language and conceptual meaning to patients of different faiths and cultures without bias or stereotypical assumptions [42,43].

Understanding different religious beliefs about cancer, suffering and distress gives health practitioners insight into their patients and allows them to provide culturally competent care [44,45]. For patients, their families and their societies, viewing their illness from their perspective can substantially improve their wellbeing [38]. Clinicians should address their patients about hope, perceived social support and depressive symptoms – and listen to their responses. Bringing the conceptualization and language of hope into the dialogue may help synchronize the needs and expectations of patients, caregivers, and health care professionals, without providing false hope or denying prognosis, and thus lead to more equitable and value-oriented care.

Declarations

Funding This research was supported by grant #20201212 from the Israeli Cancer Society (ICS).

Conflicts of interest/Competing interests The authors declare that they have no conflicts of interest or competing interests.

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

Code availability n. a.

Ethics approval The study protocol was approved by the Medical Ethics Review Committees of Al-Makassed Hospital, East Jerusalem, Israel.

Consent to participate All participants provided written informed consent

prior to study participation.

Consent for publication n. a.

Authors' contributions: conceptualization and methodology – Lea Baider, Gil Goldzweig, Yakir Rottenberg; data curation and acquisition - Lea baider, Gil Goldzweig, Yakir Rottenberg, Ibtisam Ghrayeb; formal data analysis – Gil Goldzweig; data interpretation – all authors; original draft preparation, review and editing – all authors. All authors read and approved the final manuscript.

All co-authors have seen and agree with the contents of the manuscript.

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Tables

**p<0.01; ECOG = The Eastern Cooperative Oncology Group performance status: 0 = fully active; 1 = symptomatic but completely ambulatory; 2 = symptomatic, <50% in bed during the day; 3 = symptomatic, capable of only limited self-care; CCI = Charlson Comorbidity Index

Table 2. Comparison of depression, hope and social support between Palestinian Muslims and Israeli Jews

	Palestinian Muslims (N=143) mean ± std. error	Israeli Jews (N=110) mean ± std. error	F(1,243) =	P<
Depression	3.14 ± 0.115	1.32 ± 0.135	89.56	0.0001**
Hope (AHS)	5.05 ± 0.077	3.00 ± 0.09	250.77	0.0001**
Perceived spousal support	3.80 ± 0.06	4.62 ± 0.07	70.44	0.0001**
Perceived family support	3.91 ± 0.065	4.33 ± 0.08	14.68	0.0001**
Perceived support from friends	3.05 ± 0.08	3.17 ± 0.09	0.90	0.343, N.S
Perceived support from faith	2.61 ± 0.11	2.61 ± 0.13	0.001	0.973, N.S

**p<0.01.; AHS=Adult Hope Scale; Means are estimated marginal corrected for covariates included in the model (age, number of persons in household, education, cancer stage, ECOG – performance status, time from diagnosis, CCI – comorbidities)

Table 1. Patients' sociodemographic and medical data by study groups

	Palestinian Muslims (N=143)	Israeli Jews (N=110)	Differences
Age (years) mean ± SD	73.20 ± 6.38	74.73 ± 7.13	t(251)=1.79; N.S
Range	65 - 92	65 - 91	
Gender: Male n (%)	81 (56%)	62 (43%)	Chi ² (1)=0.60, N.S
Education: ≥12 year n (%)	31 (22%)	75 (68%)	Chi ² (1)=55.23,p<0.0001**
Number of persons in household			t(251)=6.39, p<0.0001**
mean ± SD	3.99 ± 2.55	2.33 ± 1.05	
range			
Religious status: traditional or observant n (%)	139 (97%)	51 (46%)	Chi ² (1)=85.93,p<0.0001**
Cancer type n (%)			Chi ² (7)=106.6, p<0.0001**
Breast	05 (3.5%)	18 (16%)	
Colorectal	16 (11%)	06 (5.5%)	
Lung	23 (16%)	21 (19%)	
Melanoma	0 (0.0%)	6 (5.5%)	
Prostate	11 (8.0%)	10 (9.0%)	
Brain	15 (10.5%)	00 (0.0%)	
Bladder	17 (12%)	00 (0.0%)	
Other	56 (39%)	00 (0.0%)	
		49 (44.5%)	
ECOG n (%)			Chi ² (1)=0.07, N.S
0-1	90 (63.0%)	71 (64.5%)	
2-3	53 (37.0%)	39 (35.5%)	
Cancer stage n(%)			Chi ² (1)=0.16, N.S

1-3	97 (68%)	72 (65.5%)	
4	46 (32%)	38 (34.5%)	
CCI mean ± SD	1.19 ± 1.255	0.79 ± 0.91	t (251)=2.81, p<.005**
Time from diagnosis mean ± SD (months)	5.09 ± 6.11	5.45 ± 3.64	t (269)=0.54, N.S

Table 3. Regression: the background variables of hope and perceived social support as predictors of depression

	Palestinian Muslims					Israeli Jews				
	B	Std. Error	Beta	t	Sig.	B	Std. Error	Beta	t	Sig.
Age	0.03	0.02	0.16	2.02	0.046*	0.03	0.02	0.13	1.73	0.086
Gender (0 = men; 1 = women)	0.05	0.22	0.02	0.25	0.802	0.36	0.21	0.11	1.71	0.090
Education (0 = 12 years or less; 1 = more than 12 years)	-0.15	0.26	-0.05	-0.57	0.570	-0.60	0.22	-0.18	-2.73	0.008**
Number of people in household	-0.03	0.04	-0.06	-0.68	0.496	0.06	0.09	0.04	0.61	0.545
CCI	0.10	0.08	0.09	1.12	0.265	0.15	0.11	0.09	1.42	0.158
Time from diagnosis	0.01	0.02	0.04	0.53	0.598	-0.02	0.03	-0.05	-0.84	0.403
ECOG (0-1 = 0; 2-3 = 1)	-0.02	0.23	-0.01	-0.08	0.934	0.35	0.21	0.11	1.63	0.106
Stage (1-3 = 0; 4 = 1)	0.28	0.23	0.10	1.20	0.231	0.26	0.21	0.08	1.26	0.211
Hope (AHS)	-0.41	0.11	-0.32	-3.83	0.0001**	-1.25	0.16	-0.61	-7.79	0.0001**
Perceived spousal support	-0.24	0.15	-0.14	-1.66	0.099	0.14	0.17	0.05	0.82	0.416
Perceived family support	0.16	0.21	0.06	0.76	0.447	0.01	0.11	0.00	0.05	0.963
Perceived support from friends	-0.14	0.23	-0.06	-0.63	0.527	0.00	0.09	0.00	-0.02	0.984
Perceived support from faith	-0.16	0.14	-0.10	-1.10	0.274	0.07	0.06	0.07	1.18	0.243

*p<0.05; p<0.05; **p<0.01.; AHS = Adult Hope Scale; ECOG – performance status; CCI – comorbidities.

Figures

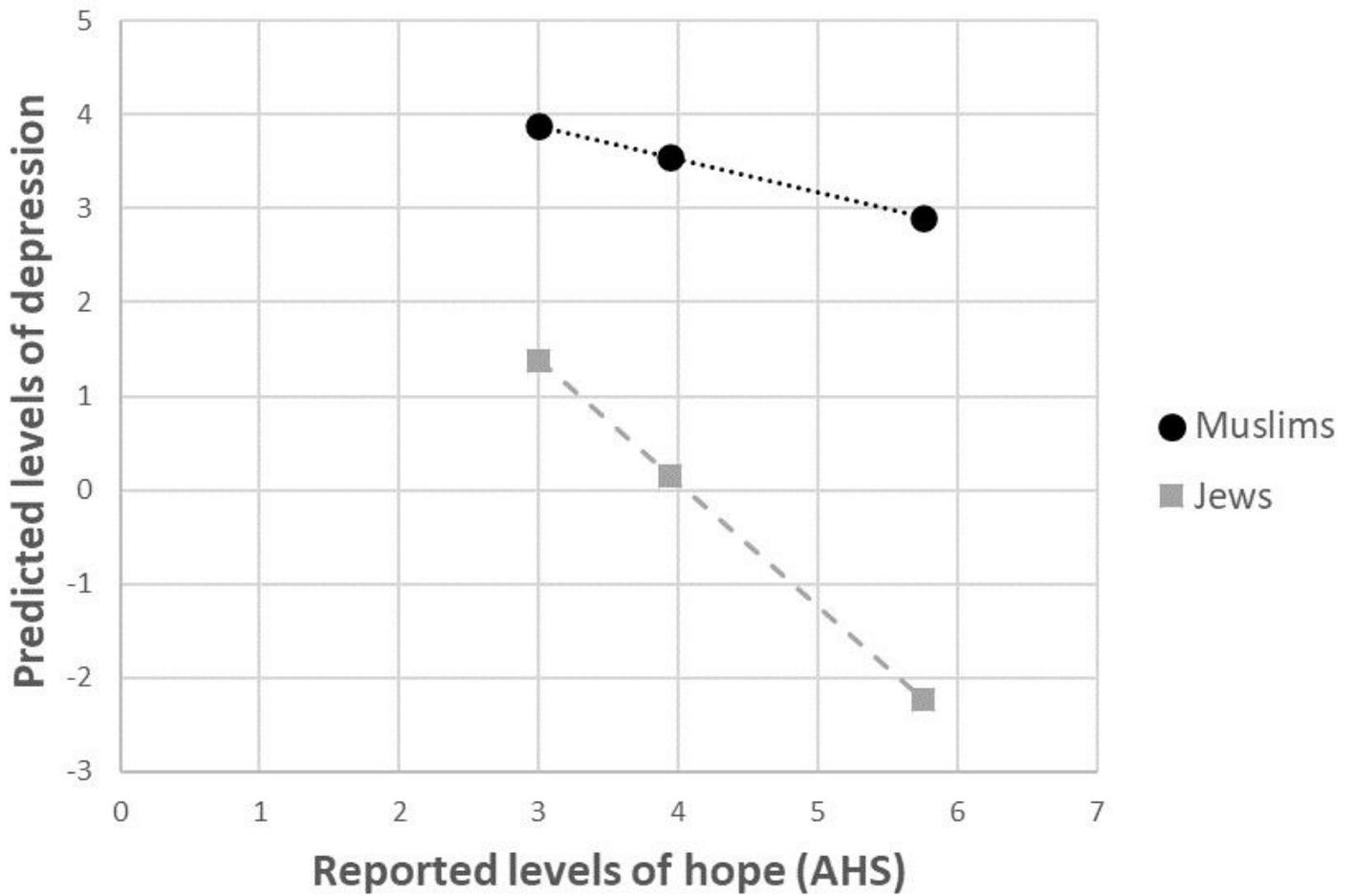


Figure 1

Relations between reported levels of hope (16th, 50th, and 84th percentiles) and predicted levels of depression by study group.