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Caregivers of chronic pain patients: Their loneliness and burden

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Abstract

Caring for a chronically-ill family member is often taking its toll in increased burden, changes in daily schedule, and increased loneliness for caregivers. This study was aimed at investigating the manner to which caregivers of chronic-pain patients cope with loneliness and other care-related effects. To this end, 247 caregivers were sampled in two major chronic pain clinics in Israel. They completed the coping with loneliness, the burden assessment scale, caregiving reaction assessment, and activities of daily living questionnaires. Data were submitted to several multiple regressions, which showed that women were more likely than men to adopt the Reflection and acceptance coping style. This pattern was not evident among older caregivers. In addition, the analyses revealed that increased daily activity predicted high levels of distancing and denial, but only among caregivers with one child or none. These findings are discussed within the framework of coping with loneliness and the mediating role of caregiver's characteristics in coping.

Introduction

"Chronic pain, defined as pain experienced every day for at least three months in the preceding six months …has characteristics similar to those of chronic illness and is often co-associated with chronic illness. While pain is considered an essential process that signals injury or illness, it loses its physiological effectiveness when it progresses to become a chronic condition. In chronic situations, pain becomes a toxic influence rather than a means of raising alarm. Chronic pain impacts on every aspect of life in similar ways to that of chronic illness and leads to role change within the family" [1].

It has been reported that 70-85% of people, at least in North America, suffer from back pain at some point in their lives, and additionally there is a similar percentage who suffer from pain caused by arthritis, cancer, and related illnesses; pain that is chronic. The worldwide pain management prescription drug market totalled approximately $29 billion in 2007 [2], and certainly even more than that at present. Patients suffering chronic pain are those who endure pain which is continuous and strong enough to interfere with life activities and can significantly affect their interpersonal, and particularly marital and sexual relationships, which almost always deteriorate as a result of pain). "Chronic illnesses have either a predictable or unpredictable course. They typically result in changes not only to physical and psychological functioning, but also to occupational and social roles in work, family life, friendships, education and leisure. Long-term illness is also inextricably linked to patients' intimate sexual relationships, and to the way their partners also understand the illness and share the load" [3].

Caregivers

Rosalynn Carter suggested that "there are four types of people: those who are caregivers; those who have been caregivers; those who will be caregivers; and those who will need caregivers [4].

Novotney [5] reported that caregivers, or unpaid caretakers, number about 67 million in the U.S. We can find those caregivers tending to family members [children, spouses, ailing and old parents, and other loved ones] who may be suffering illnesses or chronic pain. Commonly, caregivers do their tending, in addition to living their lives, i.e. in addition to work, school, or other responsibilities. It is reported that they spend as many as 20 (!) weekly hours on these duties. Tending to the sick and the disabled, includes such responsibilities as making sure that their loved ones take their medicines appropriately and on time, and helping them bath and clothing them.

Caring for the ill and suffering person creates considerable strain for caregivers and may affect their working schedule, family life, and social relationships [6]. It is, consequently, of no surprise that caregivers usually complain of significant physical and psychological problems. Their distress may be in the form of depression, anxiety, anger, health problems, and loneliness [7]. Alarmingly, 14% of caregivers admitted entertaining suicidal thoughts [8]. Seeing the suffering of a loved one without being able to ease their pain may result in loneliness and

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alienation from the rest of the healthy and bustling society.

Caregiver burden is closely related to his/her depression and inversely related with patient functions [9]. Patients, many times, depend on their caregivers to help them control the pain which tortures them. Ensuring pain control becomes an important task that impacts the quality of life for both the patient and his or her informal caregiver [10]. The reciprocity of this role is influenced by the suffering endured by the patient and establishes informal caregivers as "second-order patients" with their own care needs [11]. "The more demanding the caregiver's responsibilities, the greater the amount of emotional stress and suffering the caregiver experiences. The caregiver's ability to effectively relieve symptoms with pharmacological interventions requires the successful use of skills related to teamwork, organization, symptom knowledge, medication knowledge, and personhood (understanding and responding to the patient's needs)" [12]. Anxiety, loneliness, stress and even burnout often results for informal caregivers who struggle with these skills and who observe their loved ones suffering from physical pain [10].

Loneliness

Loneliness is a universal experience that does not respect the boundaries of age, gender, race, marital or socio economic status and it may be either persistent and continuous or short lived [6,13,14]. Social alienation is, unfortunately, a common experience in the beginning of the 21st century. As Pappano [15] so clearly observed that we are losing touch, and we are oblivious to it. Stivers [16] echoed this view, and suggested that people's desire to talk to people that they hardly know, baring all on TV shows, and seeking crowds in shopping malls just so they are not alone, is a clear indication that the fear of being alone is terrifying to those who are lonely. Cacioppo et al. [17] indicated that loneliness often contributes to psychiatric and or psychosocial symptomatology, including depression, alcoholism, social anxiety, as well as obesity, elevated blood pressure and diminished immunity.

Loneliness is such a painful and profound experience that it would be unimaginable to think that it does not affect all facets of our lives. Research indicates that it affects us psychologically, emotionally, health wise, our relationships in general and intimate ones in particular as well. Since social connectedness is so central to our survival, we may expect to find that loneliness may have adverse physical, emotional, and spiritual effects on us. Theeke [18] noted that the physical correlates of loneliness include poor perceived health, physical symptomatology, hypertension, sleep disturbance, and in older people-dementia. The negative psychological correlates include depression, negative self-assessment, diminished intimacy in marriage, general psychological distress, and psychological distress socially [19]. When lonely we may suffer lower economic status, low number of friends, lack of religious affiliation, and even domestic violence [6].

Effects of caregiving on caregivers

Research on caregivers commonly described the negative effects on their physical and mental health and identified factors that were associated with greater stress. Stress and coping models have dominated the research on caregiving [20,21]. Research has found that caregiving may negatively affect the health, health behaviors, and health outcomes of family caregivers, and that applies particularly to older spousal caregivers [22]. Schulz and Beach [23] found that older spousal caregivers who experience mental and emotional strain had a much greater risk of mortality within 4 years than non-caregiving controls. That, it seems, may apply to non-elderly caregivers as well. Needless to say, research demonstrated that caregivers' characteristics and the context of the caregiving situation have also contributed to caregivers' health outcomes. Schulz and colleagues [24,25] found that the closeness of the relationship before illness or disability, the dependency level of the care recipient, and the availability of social support.

Relatives and caregivers of patients with pain often have to carry out tasks they are not used to, such as monitoring pain, getting the patient to take her medication and dealing with side effects. Thus, they often are unsure as to how successfully they perform those tasks. This, naturally, may negatively affect the caregivers, generating in them feelings of sadness, and frustration, resulting in them experiencing the burden and helplessness that may accompany caregiving [26]. Relatives who cared for patients indicated that their physical, mental, and social health deteriorated as a consequence of the attention they provided [27]. The mood of caregivers is adversely affected by pain of the person they care for, and in particular their level of depression and anxiety increase as the patient's pain increases [28]. Present results indicated that Reflection and acceptance was predicted solely by the perceived care giving burden, such that higher rates of perceived burden were associated with higher tendency to adopt Reflection and acceptance. Ekwall *et al.* [29] indicated that caregivers may be socially isolated, as they may restrict their opportunities to socialize with others outside the home.

Restriction of social contacts, which may not be voluntary, can contribute to a sense of loneliness. In light if the available research it stands to reason that being greatly burdened by caregiving, having no time for social engagement, and experiencing a cascade of feelings, from sorrow for the suffering patient to resentment and then guilt, caregivers would be more attuned to their feelings, thoughts and reflections as their perceived level of burden increased, and their ability to function independently from the patient, decreased. Research clearly demonstrated that perceived social support is an important predictor of carers' distress [30], their marital relationship satisfaction [31] and patient's and caregiver's quality of life [32]. Unfortunately, creating and maintaining a social support network may not be easily achieved, as friends and acquaintances often stop visiting or do visit but behave awkwardly due to increased severity of the patient's symptoms [6].

In this study we examined the manner in which caregivers cope with loneliness, and whether their caregiving burden is related to the coping strategy that they employed. In particular, we wished to examine the associations between coping with loneliness and different aspects of caregiving, such as change in daily schedule and activities, caregiving induced burden, financial burden, and caregiver's health. We were lead by the notion that these aspects may play different roles in predicting each coping style, yet no specific predictions were made.

Method

Participants

Two hundred and forty seven caregivers (age range 18-89, M=51.78, SD=17.69; 56% female), that accompanied patients who attended the Pain Clinics in two major hospitals in Israel have volunteered to anonymously answer the questionnaires while waiting to be seen by the clinic's physician or nurse. Participants were those who could read and write Hebrew. Those that did not, were not invited to partake in the study. Those who were interested to receive the analyzed results were invited to provide their names and e-mail addresses.

Procedure

After receiving clearance from the hospitals' and from the university Institutional Review Boards, research assistants approached caregivers of patients suffering from chronic pain and caregivers who accompanied them to the doctors' appointment, read to them the informed consent, and asked for their cooperation in responding to the questionnaires, anonymously. Each set of questionnaires took about 30 minutes to complete. Participants were made aware that they could provide their names and e-mail addresses and receive the results when those will be available. No one requested it.

Measures

Four self-report instruments were employed to assess the loneliness, and the reaction and burden of caregivers.

- Coping with loneliness: All items for the questionnaire were written by the author and were based on Rokach's previous research on loneliness [33]. The questionnaire is composed of six factors, each being a subscale. Factor 1, Refection and acceptance (accounted for 14% of the variance) described being by one's self to become acquainted with one's fears, wishes and needs; and consequently, accepting one's loneliness and its resultant pain; Factor 2, Self-development and understanding (5%)-the increased self-intimacy, renewal, and growth which are often the results of active participation in organized focused groups or of receiving professional help and support; Factor 3, Social support network (4%)-the re-establishing of social support network which can help one feel connected to and valued by others; Factor 4, Distancing and denial (3%)-denial of the experience and pain of loneliness by alcoholism, drug abuse, and other deviant behaviors; Factor 5, Religion and faith (3%)-the need to connect to and worship a divine entity. Through affiliation with a religious group and practicing its faith one can gain strength, inner peace, and a sense of community and belonging; and Factor 6, Increased activity (3%)-active pursuit of daily responsibilities as well as fun-filled solitary or group activities, thus maximizing one's social contacts. Each of the six factors comprised a subscale and participants' scores are the sum of items which they endorsed in each subscale. Kuder Richardson Internal reliabilities were calculated and yielded the following alpha values: Reflection and acceptance=0.76; Self-development and understanding=0.53; Social support network=0.58; Distancing and denial=0.37; Religion and faith=0.62; Increased activity=0.66; and the total questionnaire=0.80 [6,33].

- Burden Assessment Scale [BAS]: The Burden Assessment Scale (BAS), consists of 19 items, and is reported by its developers to have excellent reliability. The scale captures both objective and subjective consequences of caregiving. Examining the scale's composition, it is reported that ten items assess the extent to which primary caregivers experience objective burden because of their caregiving responsibilities. Objective burden is described as the observable behavioral consequences of caregiving, such as financial problems, limitation on caregiver's personal activities, various household and social interaction disruptions. Additional nine items measure what the authors referred to as subjective burden including feelings [such as shame or guilt], attitudes and emotions expressed about caregiving [such as resentment, grief]. Burden scores were obtained by respondents indicating, on a 4-point Likert scale the extent to which they had experienced burden in each of the 19 areas covered by the scale. Analyses conducted by the authors yielded five factors, the first one was Disrupted Activities which covered disruptions of plans, household routines and reduced time for self and others; the second factor was termed Personal Distress which may have resulted from frictions with people outside of the household, being embarrassed by disruptive behaviors, or feeling trapped and resentful; the third factor was entitled Time Perspective which addressed family caregivers' upset at lost possibilities for the ill relative and problems in future plans; factor four addressed Guilt that caregivers may feel for 'not doing enough' for their ill relative; and the fifth factor was Basic Social Functioning which described significant alterations in the spheres of work or family life. The scale developers reported high validity measures. and reliability coefficients calculated on the present sample are shown in Table 1 [34].

- The Caregiving Reaction Assessment {CRA] [35] questionnaire aims at providing an assessment of caregivers' reactions to caring for a chronically sick person. The scale is composed of 24 items that form five subscales: (a) caregiver esteem-which measure the extent to which caregiving affects one's self-esteem. (b) lack of family support-assesses the extent to which family supports and works together with the caregiver, vs. him or her feeling "dumped on". (c) impact on finances-assesses the adequacy, difficulty and the resultant strain of the financial situation on the caregiver and the patient's family. (d) impact on schedule-assesses the degree to which caregiving disrupts the usual daily activities of the caregiving, interfering with that person's ability to rest and relax, and (e) impact on health-simply assesses the impact that caregiving has on the caregiver's health and general physical condition. The sum of items in each subscale was that subscale's score. These components accounted for 65.1% of the variance. A good Construct validity was established, and reliability coefficients calculated on the present sample are shown in Table 1.

- This Activities of Daily Living Questionnaire [ADLQ] [36]

Table 1. Descriptive statistics.

	N	Mean (SD)	Min-Max	Skewness	Skew SE	Cronbach's Alpha
Reflection and Acceptance	247	0.16 (0.25)	0-1	1.71	0.15	0.764
Self-development and Understanding	247	0.06 (0.14)	0-1	3.06	0.15	0.476
Social Support	247	0.13 (0.19)	0-0.83	1.53	0.15	0.585
Distancing and Denial	247	0.04 (0.13)	0-0.67	3.43	0.15	0.332
Religion and Faith	247	0.07 (0.18)	0-1	3.01	0.15	0.647
Increased Activity	247	0.11 (0.18)	0-1	1.9	0.15	0.606
Daily activity	175	2.38 (1.40)	0-6	0.31	0.18	0.889
Schedule	165	2.52 (0.99)	0.6-5	0.28	0.19	0.742
Self esteem	168	3.93 (0.70)	0-5	-0.89	0.19	0.686
Lack of support	165	2.03 (0.86)	0-4.4	0.45	0.19	0.69
Health	165	1.96 (0.90)	0-5	0.89	0.19	0.746
Finance	165	2.43 (1.07)	1-5	0.52	0.19	0.738
Burden	171	2.01 (0.63)	1-4	0.61	0.19	0.912

assesses the daily living activities that the caregiver is providing on behalf of the sick person. The questionnaire taps two main types of activities: the basic activities of daily living such as those performed daily and habitually such as dressing, bathing and assistance with eating; and instrumental activities which require planning and organization such as shopping, using transportation, handling finance, and keeping the house. The scale includes 22 items, and is divided into six sections addressing different areas of activity, and each section has from three to six items. Each of the items is rated on a 4-point scale from 0 (no problem) to 3 (no longer capable of performing the activity). The total score can range between 0 to 100, with 0-33 meaning minimum to no functional impairment, 34-66 is moderate and 67-100 severe. The authors reported good validity scores, and reliability coefficients calculated on the present sample are shown in Table 1.

Data preparation and preliminary analysis

Mean total scores were calculated for the six subscales of coping with loneliness (Reflection and acceptance, Self-development and understanding, Social support, Distancing and denial, Religion and faith, and Increased activity) and for the subscales of the burden assessment scale (daily activity, schedule, self-esteem, lack of support, health, finance, and burden). Descriptive statistics for these subscales is presented in Table 1.

Results

Data preparation and preliminary analysis

Mean total scores were calculated for the six subscales of coping with loneliness (Reflection and acceptance, Self-development and understanding, Social support, Distancing and denial, Religion and faith, and Increased activity), for the subscales of the caregiver reaction assessment subscales (CRA); impact on schedule, caregiver's esteem, lack of support, impact on health, and impact on finance), for the daily activity questionnaire, and for the burden assessment scale. Descriptive statistics for these scales is presented in Table 1.

Gender, age, and coping style

First, we examined the role of gender, age, and the interaction between them, in predicting the extent to which the different coping styles were used, to this end, the six coping styles, gender, age, number of children, and years of education were z-transformed. Then, the z transformations of age and gender were multiplied in order to assess the interaction between these variables. Finally, six hierarchical regression analyses were conducted, with gender, age, number of children, and education as the predictors and the six coping styles as the predicted variables. Regression coefficients are presented in Table 2.

Table 2 reveals that gender predicted Reflection and acceptance, Self-development and understanding, and Social support, such that women received higher scores in these coping styles than men. Furthermore, age negatively predicted Reflection and acceptance and Social support, such that older caregivers were more likely to adopt these coping styles than younger caregivers. Finally, gender and age interacted in their association with reflection and acceptance. Post hoc analyses of this interaction (with alpha per comparison=0.017) revealed that women were more likely than men to adopt the reflection and acceptance coping style, but only among younger caregivers (p=0.008). No difference between men and women were found among older or mean aged caregivers ($p > 0.1$).

Burden and coping with loneliness

Next, we examined the extent to which the burden assessment subscales predicted loneliness. We therefore conducted six multiple regression analyses, with the burden subscales as predictors and coping as the predicted variables. Sex, age, education, and number of children were entered the analyses as background variables. Regression coefficients are presented in Table 3.

Table 3 reveals that Reflection and acceptance was predicted solely by the burden assessment scale, such that higher rates of perceived burden were associated with higher tendency to adopt Reflection and acceptance. Self-development and understanding was predicted by caregiver's esteem and impact on finance, such that higher caregiver's esteem and on stronger impact on caregiver's financial status, were associated with more Self-development and understanding. Social support was negatively predicted by the number of children, such that caregiver with more children reported on less social support. In contrast, higher burden was associated with more social support. Distancing and denial was predicted by Increased daily activity and by lower caregiver's esteem. Finally, Increased activity was predicted by stronger impact on caregiver's schedule.

We noticed that the association between daily activity and distancing and denial was not significant until number of children was entered into the model (β=0.20, p=0.073), a pattern that may imply on statistical suppression by number of children, or on a moderation effect with number of children moderating the association between daily activity and distancing and denial. We examined the suppression possibility by conducting a mediation analysis, with number of children as the mediator/suppressor. Sobel test indicated that no suppression was evident, Z=−0.76, p=0.45. A moderation analyses revealed that number of children indeed interacted with daily activity, ΔR^2=0.06, B=-0.03, p=0.016. Post hoc analyses of this interaction (with alpha per comparison=0.017) revealed that increased daily activity predicted high levels of distancing and denial only among caregivers with one

Table 2. Standardized regression coefficients of education, number of children, gender, age, and gender X age as predictors and coping factors as predicted variables.

	Predicted variables					
	Reflection and Acceptance	**Self-development and Understanding**	**Social Support**	**Distancing and Denial**	**Religion and Faith**	**Increased Activity**
Education	-0.010	-0.069	0.034	-0.066	-0.143	0.038
Number of children	0.162	0.119	-0.151	0.060	0.238**	0.100
Gender	0.192*	0.244**	0.214*	0.131	-0.006	0.053
Age	-0.224**	-0.009	-0.233**	-0.014	-0.144	-0.123
Gender X Age	-0.241**	-0.054	-0.115	0.042	-0.055	-0.062
Total model R^2	0.11	0.07	0.15	0.04	0.09	0.02
F	3.32	2.20	5.11	1.02	2.64	0.69
p	0.007	0.058	0.000	0.408	0.026	0.630

Note: *p < .05, **p < .01

Table 3. Standardized regression coefficients of burden assessment subscales and background variables as predictors and coping factors as predicted variables.

	Predicted variables					
	Reflection and Acceptance	**Self-development and Understanding**	**Social Support**	**Distancing and Denial**	**Religion and Faith**	**Increased Activity**
Gender	0.132	0.215	0.164	0.138	-0.078	-0.041
Age	-0.066	0.101	-0.174	-0.131	-0.027	0.099
Education	-0.021	-0.141	0.047	-0.092	-0.086	0.081
Number of children	0.203	0.035	-0.224[a]	0.118	.343**	0.079
Daily activity	0.203	0.036	0.098	0.246*	0.171	0.136
Schedule	0.001	-0.021	0.066	-0.152	0.216	0.317*
Self esteem	0.027	0.282*	-0.162	-0.278*	0.011	-0.085
Lack of support	0.055	-0.088	0.148	0.052	0.091	0.000
Health	-0.278	-0.048	-0.107	0.142	-0.195	-0.200
Finance	0.177	0.293*	0.015	-0.042	-0.124	0.004
Burden	0.404**	-0.002	0.235a	0.139	0.089	0.024
Total model R^2	0.29	0.19	0.29	0.24	0.22	0.11
F	2.66	1.51	2.64	2.04	1.82	0.83
p	0.007	0.147	0.007	0.037	0.067	0.614

Note: *p<0.05, **p<0.01, [a]p<0 .06

child or none (B=0.053, p=0.001), but not among caregivers with 2-4 children (B=0.021, p=0.075), or among caregivers with 5 or more children (B=-0.011, p=0.568).

Discussion

In this study we examined the effects of coping with loneliness, age and gender on the burden that caregivers to chronic pain patients report. Results indicated that gender predicted Reflection and acceptance, Self-development and understanding, and Social support, such that women received higher scores in these coping styles than men. Furthermore, age negatively predicted Reflection and acceptance and Social support, such that older caregivers were more likely to adopt these coping styles than younger caregivers. Finally, gender and age interacted in their association with Reflection and acceptance. Post hoc analyses of this interaction revealed that women were more likely than men to adopt the Reflection and acceptance coping style, but only among younger caregivers. No difference between men and women were found among older or mean-aged caregivers. It was also found that Reflection and acceptance was predicted solely by the perceived care giving burden, such that higher rates of perceived burden were associated with higher tendency to adopt Reflection and acceptance. Self-development and understanding was predicted by care giver's self-esteem and finance, such that higher caregiver's self-esteem and impact on financial status, was associated with more self-development and understanding. Social support was negatively predicted by the number of children, such that caregiver with more children scored less on Social support. In contrast, higher burden was associated with more social support. Distancing and denial was predicted by increased daily activity and by reduced negative impact of care giving on self-esteem. Finally, Increased activity was predicted by changes in personal schedule due to care giving.

Coping with loneliness

Gallo and Mathews [37] observed that a large body of research demonstrated that negative emotions and attitudes predict health outcomes. They added that the evidence is strongest for the effects of hopelessness, hostility, anxiety and depression. Loneliness, it is therefore suggested, may similarly be affected by negative emotions that may be related to caregivers' burden. In the present research we, thus, explored how caregivers, who are burdened by their responsibilities in caring for patients, cope with loneliness. As Zell, Krizan and Teeter's [38] metasynthesis indicated, people and scientists assume that males and females differ psychologically related to cultural stereotypes which indicate that females are socialized to reflect, analyze and ponder to a larger extent that males do [6], while men are more of the 'doers' variety. Consequently, it is not surprising that the present results indicated that females scored higher on the Reflection and acceptance subscale.

Research [39] indicates that women, more than men, aim to reduce conflict through nonviolent means, including befriending, communication and relying on their social support system. The socialization process that women go through emphasises closeness to others and open communication, which is found to a lesser extent in men's behavior. The present results seem to highlight that gender difference and explains the higher subscales scores that women received on the socially related subscales, namely self-development and understanding, which may include participation in therapy, in support groups, task oriented groups, and skill acquisition activities all of which are commonly done with others. Additionally, women's social support network has been shown to be more developed and closely knit than men's [6,39] and it stands to reason that women caregivers would utilize those social connections to ease their burden and loneliness. It is widely accepted by laymen and researchers alike that rebuilding one's social network and establishing close relationships are among the most effective ways of coping with loneliness. Blieszner [40] observed that having a support network, which may be constituted in a variety of ways from attending impersonal social events to being involved in deeply personal relationships, provides the feeling that one belongs and is loved and valued. Results of the present study are in line with those theoretical formulations, in that women, more than men cope with loneliness and caregivers burden by utilizing their social support networks.

Our results further indicated that age negatively predicted Reflection and acceptance and Social support, such that older caregivers were more likely to adopt these coping styles than younger caregivers. That, we suggest, may be explained by the increase in the older people's maturity, as well as the time they have to reflect on their lives as well as on their loneliness, while the younger generation is busy getting settled in their romantic relationships and careers [41]. At younger ages, females, while still more involved with planning and investing in their

future, are more inclined to self-reflect than men are, and thus benefit from it by employing it as a strategy to cope with loneliness.

Our results indicated that Reflection and acceptance was predicted solely by the burden assessment scale, such that higher rates of perceived burden were associated with higher tendency to adopt reflection and acceptance. One way to explain these results is that both scales actually require the same activity: reflection on one's situation, and identifying the degree in which one is involved, or is discomforted, by it. And thus, the positive correlation between the two scores, for if one can reflect on one's burden, one can also do it on loneliness. In addition, it is possible that participants who reflected on their pain, feelings of guilt and anxiety, viewed them as related to their caregiving situation, and thus, marked them in both questionnaires. It stands to reason that both measure not identical, but somewhat similar attitudes, feelings and even cognitions.

We found the Distancing and denial subscale score was predicted by increased daily activity and lower caregiver's esteem, as described by the CRA. As Rokach and Sha'ked [6] indicated, Distancing and denial are employed, by some lonely people, in order to not feel the searing pain of loneliness [42]. Partly, those people then may engage in substance abuse, alcoholism, workaholism, or other activities that will afford them the opportunity not to feel their pain. Increased daily activity, 'doing' for and servicing the patient, may be the right activity which will serve their need to not feel the pain. As Given *et al.* [35] pointed out, esteem issues in caregivers are related to their self-reproach for not doing enough for the patient, not fulfilling their role appropriately, and here as well-the more the caregiver feels that s/he is not doing enough, the more s/he will do for the patient. The coping with loneliness subscale of Increased activity, examines the hectic schedule that one employs in order to avoid feeling the pain of loneliness [6]. That will naturally also involve a more hectic daily schedule, and thus the shown connection between these two concepts that were measured here. It was interesting to find that increased daily activity predicted high levels of Distancing and denial only among caregivers with one child or none, but not among caregivers with 2-4 children, or among caregivers with 5 or more children. It is suggested that those caregivers who had no or only one child were required, in their caregiving ritual, to perform more activities and fulfill more functions for the patient, than those who may have had several children who helped them, and thus-increased daily activity, which as we suggested is related to Distancing and denial, was evident more in those caregivers who had no children [or only one] to help them carry the load. On the other hand, the Social support score was negatively predicted by the number of children, such that caregiver with more children reported on less social support. Again, it is intuitively clear that those who were burdened by a larger number of children to care for, in addition to their caregiving responsibilities, may not have had time to develop and maintain a well-knit social support network which could assist and strengthened them. However, it is also possible that their children, should they be adults already, offered support and encouragement to them in their struggle with loneliness, but the caregivers may have perceived it as a natural and expected task of offspring, and may not have 'counted' it as social support which friends and the community commonly offer [43-45].

Limitations and direction for future research

The present study examined the coping strategies of caregivers and their connection to the burden often experienced by caregivers. While we examined the population of chronic pain sufferers and their caregivers, who sought relief with the help of pain clinics, it is possible that many other sufferers do not get to those clinics, and thus were not represented in the present sample, which may affect its generalizability. We also grouped all pain sufferers together, when actually it is a pretty heterogeneous group that needs to be examined according to its illnesses, social support, and caregiving support and assistance. Caregivers of various pain sufferers may exhibit dissimilar behaviors, simply because they are dealing with different conditions, patients, and illnesses. And lastly, the present study was carried out in Israel. It would strengthen the found relationship between the two constructs, if further research would address chronic pain sufferers and their caregivers in other countries and cultures. Similarly, the degree of closeness between the patient and his caregivers may play a role in the caregiver's burden and burnout, and is worth considering in future research. Additionally, while we examined the population of chronic pain sufferers who sought relief with the help of pain clinics, it is possible that many other sufferers do not get to those clinics, and thus were not represented in the present sample, which may affect its generalizability. We also grouped all pain sufferers together, when actually it is a pretty heterogeneous group that needs to be examined according to its illnesses, social support, and caregiving support and assistance. And lastly, the present study was carried out in Israel. It would strengthen the found relationship between the three constructs, if further research would address chronic pain sufferers in other countries and cultures.

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