The influence of demographic and clinical variables on perceived social support in cancer patients

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Abstract: The purpose of this study was to evaluate how socio-demographic and clinical variables were related to the different dimensions of perceived social support in cancer patients receiving oncology treatment. The sample included 740 cancer out-patients. Socio-demographic and clinical predictors showed lower levels of variance in each dimension of social support. Patients reported less perceived instrumental support at a longer duration since diagnosis. Women perceived less instrumental support than men ($p < 0.01$). Also, significant group differences were observed for patients who were married compared with non partnered. Patients with personal psychiatric antecedents compared with non psychiatric antecedent, perceived significantly less Emotional/Informational ($p < 0.01$) and Affective support ($p < 0.01$), in addition to lower scores in overall index of social support ($p < 0.01$). The findings point out that assessing socio-demographic and illness-related characteristics of cancer patients can lead to a better understanding of the differences in perceived social support.

Key words: Emotional/informational support; affective support; instrumental support; gender; time since diagnosis; partner status; psychiatric antecedent; cancer.

Influencia de las características demográficas y variables clínicas en la percepción de apoyo social en pacientes con cáncer

Resumen: El objetivo de este estudio fue evaluar cómo las características socio-demográficas y clínicas, estaban relacionadas con diferentes dimensiones de apoyo social percibido en pacientes con cáncer durante el tratamiento oncológico. Formaban la muestra 740 pacientes con cáncer. Las características socio-demográficas y clínicas eran poco predictoras de la varianza en cada dimensión de apoyo social. Los pacientes informaban menor percepción de apoyo instrumental a mayor tiempo transcurrido del diagnostico. Las mujeres percibían menos apoyo instrumental que los hombres ($p < 0.01$). Con diferencias significativa entre pacientes casados y aquellos sin pareja. Los pacientes con antecedentes psiquiátricos percibían menos apoyo Emocional/Informacional ($p < 0.01$) y Afectivo ($p < 0.01$), además de bajas puntuaciones en el índice general de apoyo social ($p < 0.01$). Los resultados señalan que, la valoración socio-demográfica y de variables relacionadas con la enfermedad en pacientes con cáncer puede ayudar a un mejor entendimiento de las diferencias en apoyo social percibido.

Palabras clave: Apoyo Emocional/Informacional, apoyo Afectivo, apoyo Instrumental, género, tiempo desde el diagnóstico, estado marital, antecedentes psiquiátricos, cáncer.

Introduction

Social support is considered a multidimensional concept, which may affect the general well-being of patients living with chronic and life-threatening health conditions. Regarding that, social support can help patients to cope or make a better cognitive appraisal of their cancer experience, and can have a positive impact on cancer adjustment (Helgeson & Cohen, 1996; Helgeson, Snyder & Seltman, 2004; Lehto, Ojanen & Kellokumpu-lehtin-

en, 2005; Rodón y Lugli, 2013). According to the *Stress-Buffering hypothesis*, the provision of emotional, informational or instrumental resources from others, may facilitate active coping response and could be protective to ameliorate the pathogenic effects of stressful events (Kim, Han, Shaw, McTavish & Gustafson, 2010). Social support can influence cancer patients' efforts to manage their physical as well as emotional conditions increasing patient's self-esteem as well as the sense of control over their situations (Edo y Ballester, 2006; Grassi, Rosti, Lasalvia & Marangolo, 1993). Social support functions include benefits that can include taking better care of health behaviors, such as to reduce risk behavior, enhance health promotion behavior and seek treatment for symptoms that can have a positive impact on the survivor's health (Helgeson & McUmber, 2010; Bloom, 1990; Kroenke, Kubzansky, Schernhammer, Holmes & Kawachi, 2006).

With reference to the types of supportive social interaction, structural support refers to the number of people, or the amount of contact that a person has within their social environment. While functional support reflects the type of support within the social network provided. The dimensions of functional support can provide instrumental or practical assistance; informative support with provision of advice or guidance on managing the illness, as well as emotional support being available to enable the patient's understanding of cancer and empathy communication; or affective support involving expressions of affection, caring and love (Helgeson & Cohen, 1996; Sherbourne & Stewart, 1991).

Previous findings suggest influential evidence of lower perceived social support and subsequently higher levels of psychological distress in cancer (Akechi, Okamura, Yamawaki & Uchitomi, 1998; Bloom, Stewart, Johston, Banks & Fobair, 2001; Helgeson et al., 2004; Goldzweig et al., 2009). Emotional support specifically was a significant predictor of mental well-being and improved physical health (Bloom, 1990; Helgeson & Cohen, 1996). Moreover, adequate social support at diagnosis had a positive impact on health related quality of life in cancer survivors (Howren, Christensen, Karnell, Van Liew & Funk, 2013).

Few studies had examined the impact of perceived support on health behaviors (Helgeson & McUmber, 2010) and even less is reported about the differences in the perceived social support dimensions related to the variety of demographic and clinical factors involved. Early studies found socio-demographic differences in the perceived social support in patients with chronic diseases; that is, the level of support was perceived higher in men, as well as in married patients but rarer in older

patients (Sherbourne & Stewart, 1991). Nowadays, gender contributed to predict higher life satisfaction in a model explained by high social support and low presence of depressive symptoms on stable heart failure outpatients (Pérez-García, Oliván y Bover, 2013). Furthermore, gender differences were shown in the adjustment to cancer, that is, social support and coping strategies appeared to affect these differences mainly due to the fact that women were more likely to seek support than men (Fife, Kennedy & Robinson, 1994). Also in the marital partner, social support received was reported higher for men (Goldzweig et al., 2009). With regard to age, older people had a higher risk of social isolation thereby indicating poorer social support received in elderly patients (Grassi et al., 1993; Lehto et al., 2005). It was found that the extent of social support was also related to the number of children, that is, women with lower social networks had fewer children (Bloom et al., 2001; Kroenke et al., 2006). Given illness related character.stics, social support may operate differently depending on tumor site and cancer stage (Ell, Nishimoto, Mediansky, Mantell & Hamovitch, 1992). In performance status, greater impairment has been associated with passive coping response (helplessness and fatalism), related to psychological distress in cancer patients (Grassi et al., 1993), that is, poorer mental and physical well-being used more instrumental support, considering that this is the functional aspects of social support more related to performance status (Bloom et al., 2001). As shown in these few studies, there are many factors that can be considered in the assessment of perceived support in cancer patients.

The objective of this study was to assess whether demographic and clinical related variables within cancer outpatients, were associated with the differing structural and functional dimensions of perceived social support, during oncology treatment. Previous studies showed differences in perceived social support according to socio-demographic and clinical variables.

Method

Participants

The data presented in this study were collected as part of a project using a cross-sectional design to assess psychological morbidity in cancer patients. The study was conducted at the Duran i Reynals hospital, Barcelona (Spain). The inclusion criteria were a cancer diagnosis, outpatients who were currently receiving chemotherapy and radiotherapy or other oncology treatment, and were aged between 18 and 80 years old. Patients with a

low performance status (Karnofsky < 40%), psychotic illness or significant cognitive impairment were excluded. The study was approved by the Institutional research board and obtained Hospital Ethics Committee Review.

The interviewer originally approached 799 patients to participate in this study, but a total of 740 (92.6%) patients finally completed the questionnaire and the socio-demographic interview. The main reasons for not completing questionnaires were; lack of time (n = 31), withdrew without explanation (n = 12), a disinterest in the study (n = 8) or not feeling well (n = 8).

In the sample, the median was 55 years of age, there were 379 women (51.2%) and there was a median of two children per family. The majority of the patients were married or in a committed relationship (75.6%). Most of the participants were currently retired (74.8%). The mean time since diagnosis was 147 days, with an average of 406.74 days (SD : 704.26). The sample represented many different types of cancer; the most prevalent being breast (22.5%), gastrointestinal (21.4%) and respiratory tumor (19.6%). At the time of the study, 648 patients (88%) were undergoing chemotherapy alone or combined with other oncology treatment. The summary of clinical and socio-demographic characteristics can be found in Table 1.

Measures

A structured interview schedule was used to obtain patient's data. Information provided included age, marital/relationship status, number of children, employment status, completed formal education, family history of cancer, or personal psychiatric antecedents. Disease-related information was verified from the clinical records, data collected included tumor site and stage, Karnofsky index, type of treatment received and time elapsed since diagnosis.

The Karnofsky Performance Scale (Karnofsky, Albelman, Craver & Burchenal, 1948) is a widely accepted index of physical disability developed for the evaluation of the functional status of oncology patients. Patients are rated from 0 to 100 in intervals of 10, with low scores reflecting high impairment in normal activity, work and self-care.

Social support was assessed with *Medical Outcomes Study Social Support Survey* (MOS-SSS; Sherbourne & Stewart, 1991). This questionnaire measures five functional aspects of the perceived availability of social support (Emotional, Informational, Instrumental, Affective support, and positive interaction). For each item, the respondent was asked to indicate how often each support was available to them if needed. All but one item (i.e.

Table 1. Clinical and demographic data (*n* = 740)

Mean Age (*SD*)		53.5 (11.6)
Mode		59
Gender	*n*	*%*
Men	361	48.8
Women	379	51.2
Partner situation		
Married/partnered	559	75.6
Single	78	10.6
Divorced /Separated	55	7.4
Widowed	47	6.4
Education level		
Primary	404	54.7
High school	289	39.1
University	46	6.2
Employment status		
Retired	553	74.8
Housewife	99	13.4
Employed	65	8.8
Unemployed/other	22	3
Personal Psychiatric Antecedent	172	23.3
Number of children		
None	116	15.7
One	100	13.5
Two	352	47.6
Three or more	171	23.1
Family history of cancer	434	58.7
Family dead by cancer	333	45
Karnofsky index		
Normal activity (100-90)	201	27.2
Hardly any symptoms of impairment (80)	337	45.5
Some symptoms of impairment (70-50)	197	26.6
Time since diagnosis (months)		
1-3	317	43
4-7	163	22.1
8-11	56	7.5
12 or more	202	27.4
Tumour stage		
Localized	216	29.3
Regional	240	32.6
Metastasis	164	22.3
Not solid tumour	116	15.8
Tumour site		
Breast	166	22.5
Gastrointestinal	158	21.4
Respiratory	145	19.6
Genitourinary	107	14.5
Not solid tumours	117	15.8
Other solid tumours	46	6.2
Oncology Treatment		
Surgery	412	57.3
Adjuvant Chemotherapy	648	88
Adjuvant Radiotherapy	239	32.8
Hormonal Treatment	40	5.5
Other	20	2.8

number of close friends or relatives) are scored on a 5-point Likert scale ranging from 1 (*none of the time*) to 5 (*all of the time*). For each subscale, simple algebraic sums were computed, with a higher score indicating a better perception of social support. Additionally, the first item of the questionnaire measured structural support, the number of close friends and close relatives by support received. The overall index combining functional items could be used as an overall support measure (Sherbourne & Stewart, 1991). Adequate psychometric properties of the MOS-SSS have been established with Spanish validity, Cronbach's alpha coefficient an overall support measure was 0.94 (Costa-Requena, Salamero y Gil, 2007). By using a factor analysis in Spanish oncology patients, three subscales of functional social support were distinguished, emotional/informational support with Cronbach's alpha of .94, affective support with 0.75 Cronbach's alpha coefficient and 0.83 Cronbach's alpha for instrumental support (Costa-Requena et al., 2007).

Procedure

The sample was successively selected from patients who had undergone oncology treatment. Participants were recruited in the hospital ward while they were waiting for medical examination or chemotherapy treatment. Data collection was conducted in a private area adjacent to the hospital ward. The patients were first assessed in a structured interview by a clinical psychologist to obtain socio-demographic data, Karnofsky functional index and patient's medical characteristics, that were also available from the patient's clinical record. After this, patients were asked to complete the social support instrument, MOS-SSS. All patients were informed of the objective of this study before they were asked to fill out the socio-demographic interview, and when they signed the consent form to participate in it. Participants were asked to fill out the questionnaire themselves with an interviewer available for questions at all times. The assessment protocol lasted 20 to 40 minutes.

Statistical Analysis

Demographic and clinical related characteristics of the sample were examined using descriptive statistics. Variables of the sample that were included as a continuous variable were age and the time since diagnosis. Others were coded as categorical variables such as gender (men, women), partner situation (married/partnered, or without committed relationship), education level (primary, high school, university), number of children (none, one, two, three or more), psychiatric antecedent (considered dichotomous variable: yes or none), family history of cancer (considered dichotomous variable: yes or none), Karnofsky index (normal activity, minor symptoms or some symptoms of impairment), tumor stage (localized, regional, metastasis, not solid tumor), tumor site (breast, gastrointestinal, respiratory, genitourinary, not solid tumor, other solid tumors: head and neck, unknown,...). It was verified that variables were normally distributed. In continuous variables, Pearson's correlation coefficient was employed, whereas variables with ordered categories were analyzed with non parametric correlations, Spearman's rho coefficient. Those variables that in bivariate analyses resulted significantly modified associated with each social support dimension were included as independent variables in a multiple regression analysis, to examine the direct effects of various factors on the social support dimensions included as dependent variable. Five standard regression analyses were performed to explore what demographic and clinical variables were predicted for each social support dimension. Multicollinearity was assessed by calculating the variation inflation factor (VIF) for each factor in the regression analyses. Estimates of effect size was calculated for each independent variable using eta squared (η^2). Finally, means compare were utilized to explore whether significant differences existed between socio-demographic and clinical variables in the different dimensions of social support. When there are great unequal numbers of observations across factor-level combinations a non-parametric test was calculated, Mann-Whitney U. A p value < 0.05 was considered to be significant. Analyses were carried out using the Statistical Package for Social Sciences (SPSS version 15.0).

Results

Correlations between perceived social support and socio-demographic and clinical variables

Examination of the correlations between socio-demographic and clinical variables in each perceived social support dimension indicated that Structural support was significantly associated with gender, partner situation and tumor stage. In Functional dimensions of social support, Affective support was significantly related to partner situation, number of children in the family, psychiatric antecedents and a family antecedent of cancer. Whereas Instrumental support correlated significantly with gender, partner situation, number of children in the family, psychiatric antecedent and time since cancer diagnosis. However, only gender, partner situation and psychiatric antecedent were found to have a significant

Table 2. Correlations between demographic and clinical variables, and dimensions of perceived social support

Variable	Overall Global Index	Emotional/ Informational Support	Affective Support	Instrumental Support	Structural Support
Age	-0.03	-0.05	-0.04	0.02	-0.02
Gender	-0.14**	-0.10**	-0.05	-0.21**	-0.09**
Partner situation[a]	-.21**	-0.20**	-0.29**	-0.16**	-0.11**
Education level	0.02	0.02	0.00	0.04	-0.02
Psychiatric Antecedent	0.18**	0.17**	0.11**	0.13**	0.00
Nº children	0.06	0.05	0.08*	0.07*	0.06
Family history of cancer	0.05	0.05	0.07*	0.03	-0.03
Karnofsky index	0.07	0.07	0.05	0.06	0.01
Time since diagnosis	-0.08*	-0.06	-0.05	-0.10**	0.05
Tumour stage	0.02	0.01	0.03	0.05	0.10**
Tumour site	-0.02	-0.02	-0.04	0.00	-0.01

[a] Partner situation was coded as categorical variables such as, married/partnered or without committed relationship. *$p < 0.05$; **$p < 0.01$

correlation with Emotional/Informational support. The global index of social support was significantly associated with gender, partner situation, psychiatric antecedent and time since diagnosis. Contrary to expectations, functional status measured with Karnofsky index was not significantly correlated with any social support dimension, not even it was significantly related to Emotional/Informational support ($p = 0.05$), and the global index of social support ($p = 0.05$). Variables such as tumor site, education level and age, were not significantly related to any functional dimensions or perceived structural social support. Coefficients are displayed in Table 2.

Predictors of perceived social support with socio-demographic and clinical variables

A multiple regression analysis was performed for each dimension of perceived social support to examine whether socio-demographic and clinical variables, with significant correlations, predicted each functional and structural dimension of social support. In the colinearity diagnostics, the VIF to predictors ranged from 1.00 to 1.05, indicating multicollinearity was not an issue. Table 3 listed standardized beta coefficients, t value, and significant levels of the independent variables in each dimension of perceived social support. In the global index of social support (adjusted $R^2 = 0.08$) only partner situation and psychiatric antecedents were significant predictors. Not one socio-demographic or clinical variable were significantly correlated in the first analyses for predictors of Structural support (adjusted $R^2 = 0.01$). Affective support (adjusted $R^2 = 0.12$) was revealingly predicted by partner situation and psychiatric antecedents.

Table 3. Standard multiple regression analysis, demographic and clinical predictors of perceived social support's dimensions

	R^2	β	t	η^2
Emotional/ Informational Support	0.07**			
Gender		-0.04	-1.24	0.01
Partner Situation[a]		-0.20	-5.83**	0.05
Psychiatric Antecedent		0.15	4.33**	0.03
Affective Support	0.12**			
Partner Situation[a]		-0.32	-9.07**	0.11
Psychiatric Antecedent		0.10	3.04**	0.01
NºChildren		0.01	0.34	0.01
Family history of cancer		0.02	0.60	0.00
Instrumental Support	0.06**			
Gender		-0.11	-3.17**	0.02
Partner Situation[a]		-0.16	-4.26**	0.03
Psychiatric Antecedent		0.04	1.32	0.00
NºChildren		0.03	0.86	0.01
Time since diagnosis		-0.08	-2.43**	0.66
Structural Support	0.01			
Gender		-0.05	-1.50	0.00
Partner Situation[a]		-0.05	-1.47	0.00
Tumor stage		0.05	1.33	0.00
Overall Global Index	0.08**			
Gender		-0.06	-1.74	0.01
Partner Situation[a]		-0.22	-6.26**	0.06
Psychiatric Antecedent		0.13	3.71***	0.02
Time since diagnosis		-0.05	-1.46	0.64

[a]Partner situation was coded as categorical variables with married/partnered, or without committed relationship.
**$p < 0.01$; ***$p < 0.001$.

Whereas gender, partner situation and time since diagnosis were associated with Instrumental support (adjusted $R^2 = 0.05$). Finally, Emotional/Informational support

(adjusted $R^2 = 0.07$) was significantly demonstrated by partner situation and psychiatric antecedent. Results indicated lower levels of variance accounted for each dimension of social support, when considering the different combinations of socio-demographic and clinical predictors.

Comparison groups

As expected, considering the inverse association between instrumental support and time since diagnosis, patients reported less perceived instrumental support at longer periods since diagnosis. In gender, women perceived less instrumental support than men (17.79 vs 18.66; $t = -4.04$; $p < 0.01$). Also, significant group differences were observed for partner situation, patients who were married or in a committed relationship reported more perceived social support in Emotional/ Informational dimension (53.40 vs 48.48; $Z = -5.63$, p < 0,01), Affective support (14.36 vs 12.83; $Z = -8.13$, $p < 0.01$), Instrumental support (18,53 vs 17,21; $Z= -4,43$, $p < 0,01$), and overall index of social support (81.50 vs 74.37; $Z = -5.83$, $p < 0.01$). Patients with a personal psychiatric antecedent compared unfavorably with a non previous antecedent, perceiving significantly less Emotional/ Informational support (49.16 vs 53.12; $Z = -4.87$, $p < 0.01$), Affective support (13.53 vs 14.12; $Z= -3.22$, $p < 0.01$), and moreover, had lower scores in their overall index of social support (75.93 vs 80.93; $Z = -4.91$, $p < 0.01$).

Discussion

This study examined the role of socio-demographic and clinical variables on different types of perceived social support during oncology treatment. Considering perceived social support in Spanish cancer patients, it was higher than patients of other chronic diseases, such us AIDS (Edo y Ballester, 2006). A more careful explanation of the processes underpinning perceived social support was found in previous studies, which highlighted that coping responses may promote cognitive processes thereby leading to perceived social support and a better understanding of adjustment to cancer (Akechi et al., 1998; Grassi et al., 1993; Kim, et al., 2010). In this line, social support is considered a relevant resource to facilitate cognitive processing of the cancer experience to develop psychological adjustment to cancer (Devine, Parker, Fouladi & Cohen, 2003).

The current findings showed that socio-demographic and clinical variables made minor contributions to prediction of perceived social support in cancer patients. In others studies about breast cancer screening, also the demographics variables were not significant effects on psychological distress of women attending breast cancer screening (Sandin, Chorot, Lostao, Valiente & Santed, 2001). Contrary to what was expected, some socio-demographic and illness related variables analyzed in the current study, such as; age, education level, number of children, functional status, family history of cancer, tumor site or cancer stage, did not affect the patients' perceived social support. However, time elapsed since diagnosis and gender were significant factors on perceived instrumental support. That is to say, a longer time since diagnosis and the progress of cancer treatment with a better physical outcome can reduce the perceived need for instrumental support. Of particular interest was how different effects of physical symptoms or side effects of treatment, mainly mediated by psychological distress, increased the need for and use of instrumental support (Bloom et al., 2001). Also in functional support, women perceived that they received less instrumental support than men. Different sources of social support vary by gender and so could explain these results; previous findings indicated that family support contributed more to the adjustment of women, whereas health professionals' support highly contributed to the adjustment of men. The significance of family support for women could be congruent with their coping strategies being more directed to emotional response than tangible assistance (Fife et al., 1994). Furthermore, emotional support was identified most often with family and friends sources, while informational support involved health care professionals (Helgeson & Cohen, 1996). These could be some of the reasons why women perceived receiving less instrumental support.

In the current data, structural support was not determined by any socio-demographic or clinical variables analyzed in this study. Additionally, previous findings noticed that an increase in the number of support providers was not associated with more support received (Lehto et al., 2004). Also in the current study, evidence was found that patients with a personal psychiatric antecedent reported that they perceived receiving less support in affective and emotional dimensions, besides an overall global index of social support. Noteworthy, these dimensions of social support more related to psychological distress or better adjustment to cancer (Helgeson & Cohen, 1996; Kroenke et al., 2006). Another socio-demographic variable with significant impact on social support was marital status. Partner status was an outstanding variable to determine perceived social support in the overall index and functional dimensions of social support. The significant relationship between partner situa-

tion and perceived social support was consistent with data in the literature about evidence for the protective effect of a spouse or partner as a source of support to promote healthy behavior, preventing physical deterioration and even psychological symptomology (Helgeson et al, 2004; Helgeson & McUmber, 2010; Sherbourne & Stewart, 1991). Being uninvolved romantically and lacking close relatives creates an elevated risk of mortality for cancer survivors (Kroenke et al., 2006).

Both socio-demographic variables that were most notable when analyzing the perception of social support were personal psychiatric antecedent and marital status. By increasing the amount of support in patients with risky socio-demographic and clinical variables, psychological or group interventions may help patients' adjustment to cancer (Kroenke et al., 2006). Of interest could be couple-focused interventions where the partner is included as an active participant. Within the different modalities of intervention, greater levels of perceived support were found to be associated with better adjustment to cancer (Helgeson & Cohen, 1996). Support from health care professionals can be a significant source of help during oncology treatment; in fact, support from physicians was one of the sources of social support that assisted more in adjustment to cancer (Akechi et al., 1998); considering that period of cancer treatment was the time preferred for the patients to receive emotional and informational supportive intervention (Pauwels, Charlier, De Bourdeaudhuij, Lechner & Van Hoof, 2011). The major strengths of our study were examining the influence of the different socio-demographic and clinical variables in distinct types of social support. However, there are several limitations that must be acknowledged. Firstly, the sample was taken from patients enrolled in only one hospital; this therefore reduces the possibility of making generalizations about the data. Secondly, for future studies it would be interesting to explore longitudinal assessment. As this is a cross-sectional study, information is unavailable about pre-treatment or post-treatment, psychological adjustment and social support to determine specifically the adequate perceived social support need over time. Thirdly, the variables of this study accounted for lower levels of variance in perceived social support, suggesting that some factors outside the scope of the study may better explain perceived social support, such us cognitive processing variables that were unable to be analyzed in this study. Fourth, cultural issues could be considered when evaluating psychosocial aspects of cancer, about paternalistic attitudes of family support, doctor-patient communication, or variables related to religious beliefs in Mediterranean cultural setting were not taken into consideration in this study and should be explored in future studies. Finally, the questionnaire used to assess social support impedes drawing conclusions about the source of support. Future studies should perhaps try to incorporate these other factors as well.

Social support should be considered an important factor in adjustment to cancer within social-cognitive adjustment to cancer (Brennan, 2001). Furthermore, benefits can be seen of social support enhanced health care behaviors or decreased health risk behavior. Although in this study, socio-demographic and clinical factors had a lower than expected contribution on perceived social support in cancer patients, health care professionals can play a central role in assessing a patient's social networks in order to provide appropriate forms of social support which help cancer patients with their adjustment to cancer.

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