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Religion/Spirituality and Health in the Context of Cancer: Cross-Domain Integration, Unresolved Issues, and Future Directions

Crystal L. Park, PhD[1], **Allen C. Sherman, PhD**[2], **Heather S. Jim, PhD**[3], and **John M. Salsman, PhD**[4]

[1]Department of Psychology, University of Connecticut, Storrs, CT, USA

[2]Behavioral Medicine, Winthrop P. Rockefeller Cancer Institute, University of Arkansas for Medical Sciences, Little Rock, AR, USA

[3]Moffitt Cancer Center, University of South Florida, Tampa, FL, USA

[4]Department of Medical Social Sciences, The Robert H. Lurie Comprehensive Cancer Center, Northwestern University Feinberg School of Medicine, Chicago, IL, USA

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Religion/spirituality (R/S) historically was considered outside the purview of modern medical science. Nevertheless, the past three decades have seen a surge of interest in the sociocultural contributors of disease as well as an awareness of the importance of R/S to patients. Consequently, a large and heterogeneous literature has emerged examining relationships among R/S and patient-reported health among individuals with cancer. Although components of this literature have been described in some review papers,[1–3] there have been few attempts to quantitatively synthesize findings in order to examine whether R/S relates to cancer patients' or survivors' health, and if so, how. The previous articles in this issue of *Cancer* described results of our efforts to address these questions using a meta-analytic approach.[4–7]

As discussed in the Introduction to this series (Salsman et al.), R/S encompasses a diverse set of beliefs, feelings, and practices. As a result, these meta-analyses aimed to identify the degree of association between measures of R/S and patient-reported health outcomes in three separate areas (mental, physical, social) and, further, to compare the strength of different R/S dimensions (cognitive, affective, behavioral, 'other') within each of those health domains. The analyses sought evidence of both positive and negative effects. In this final article, we summarize the findings across these three different health domains, comparing and contrasting the results. We then discuss caveats in interpreting this set of

Corresponding Author: Crystal L. Park, Ph.D., University of Connecticut, Department of Psychology, 406 Babbidge Road, Unit 1020, Storrs, CT 06269-1020, Office: (860) 486-3520, crystal.park@uconn.edu.

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analyses, provide directions for future research, and make tentative suggestions for clinical applications.

Overview of Findings across Three Meta-Analyses

This series of meta-analyses encompassed 1,341 effects drawn from over 44,000 patients. It represents the most comprehensive quantitative review of R/S variables in the oncology setting. The effect sizes and the number of studies on which they are based are shown in Table 1 (please see Salsman et al.[5] in this series for a fuller description of how the R/S dimensions were conceptualized and coded in this project). Results suggest that each of the patient-reported heath domains evaluated was significantly but modestly related to overall R/S (aggregated across dimensions).

The largest effect size across all three health domains was for the affective dimension of R/S. Effects for affective R/S, while only moderate in size, were larger than for the other dimensions of R/S; this link appeared to be strongest between affective R/S and mental health outcomes, but was also notable for physical and social health. Both the cognitive and 'other' dimensions of R/S were consistently related to the three domains of health at a modest strength (ranging from .07 to .13). Behavioral dimensions of R/S demonstrated a small association with the social health domain and were virtually unrelated to patient-reported physical or mental health.

What might account for these differences in the associations? Affective dimensions of R/S may be particularly associated with well-being in the context of cancer. These emotional experiences encompass a sense of equanimity, peacefulness, and comfort, which may help sustain patients during jarring circumstances. Similarly, feelings of R/S reverence, empowerment, or identity may help bolster patients during the challenges of diagnosis and disease progression or long-term recovery. Spiritual distress, on the other hand, may disrupt other domains of functioning (emotional well-being, social ties, symptom tolerance), especially if R/S pursuits played a central orienting role in one's daily life. On a methodological note, however, some affective R/S dimensions (e.g., spiritual well-being, spiritual distress) overlap conceptually with the outcomes of many studies, particularly the mental health endpoints (e.g., emotional well-being and distress).[8, 9] Thus, the magnitude of some of these associations appears to have been spuriously inflated, due to conflating one type of well-being (R/S) with another (mental). Notably, the link between affective R/S and mental health outcomes was attenuated but remained statistically significant and moderate in magnitude after removing the spiritual well-being subdimension from the analyses.[6] Nonetheless, future studies of spiritual well-being may be more compelling if investigators select health endpoints with which it is less confounded (e.g., toxicities, treatment adherence, decisions about care) or construe it as an outcome in its own right.

The cognitive dimension of R/S (which included specific R/S beliefs, causal attributions, images of God, etc.) was significantly related to each health domain as well, although more modestly. R/S has often been viewed as an important source of meaning, particularly during times of personal threat or uncertainty.[10, 11] Specific R/S beliefs or worldviews may enhance adaptation to cancer for some patients. For example, in the current series of meta-analyses,

there was evidence that more benevolent images of God and stronger R/S beliefs were associated with improved social health,[7] and perceptions of spiritual growth in response to cancer were associated with improved mental and physical health.[4, 6] However, the cognitive dimension of R/S included a wide array of beliefs and perceptions (e.g., convictions that God is responsible for one's health, perceived importance of spirituality, diverse images of the divine), which may differ in their associations with health outcomes. Effects of some of these specific variables may have been obscured by their inclusion in a broader category. Insufficient studies were available to examine the independent effects of most of these subdimensions, and further investigations are needed to clarify which particular variables within the cognitive dimension of R/S may be most strongly related to particular health domains. Research regarding the content of R/S beliefs (e.g., specific theodicies) and the structure of these beliefs (e.g., complexity, tolerance for ambiguity) may be especially helpful.[12, 13]

The 'other' dimension of R/S was significantly associated with mental, physical, and social health as well. 'Other' R/S was used to categorize measures that did not fit well into one of the other dimensions--most of these were composite indices that assessed R/S broadly. The consistency of findings for this 'other' R/S dimension across health domains indicates that it may tap into a sort of underlying general R/S factor that is modestly associated with favorable adjustment. Perhaps patients with broad R/S experiences (encompassing multiple dimensions of belief, feeling, and behavior) are more apt to derive health benefits than those with narrower R/S experiences, to the extent that these commitments embody adaptive self-regulatory or relationship patterns.

Finally, the behavioral dimension of R/S (which included private R/S practices, public practices, coping efforts, etc.) was barely associated with the health domains we evaluated. The modest links between R/S behavior and social health may be accounted for by those aspects of R/S behavior that are social in nature, such as service attendance or consultation with clergy. R/S behavior may have negligible associations with patient-reported mental or physical health domains among cancer patients. It is also possible that the effects of specific R/S behaviors were masked by their inclusion in a broader category (e.g., positive associations may have been partially "washed out" by negative associations, which may reflect a mobilization or intensification of R/S behaviors in response to the stress of illness).[14] Most of the subdimensions of behavioral R/S could not be tested within each health domain due to the limited number of available studies; however, we found little evidence for the effects of private R/S activities (e.g., prayer, meditation) or R/S coping (drawing on R/S resources to manage the demands of illness). Further research that examines changes in R/S behavior during and after nodal events along the illness continuum (e.g., diagnosis, recurrence, transition off-treatment, follow-up scans) might lead to more definitive conclusions about the health correlates of specific R/S behaviors.

Caveats in Interpreting the Meta-Analyses

This series of meta-analyses identified some important limitations in the existing literature, and highlighted areas in need of greater attention. Conclusions about relationships between

R/S dimensions and patient-reported health outcomes are qualified by a number of methodological and conceptual concerns:

Use of Problematic R/S Measures

Because this project aimed to include all of the available oncology literature on links between R/S and selected health domains, there was variability in the quality of R/S measures. A few were poorly conceptualized or insufficiently validated. Others had adequate psychometric properties but raised questions about potential overlap with some of the health outcomes examined (e.g., concordance between spiritual growth or spiritual well-being and mental health indices).[9, 15]

Variable quality of included studies

Ideally, in well-developed areas of research, meta-analyses focus specifically on rigorous studies in which the constructs of interest were the primary endpoints; in contrast, the current project included some methodologically limited studies, and many others in which R/S-health relationships were derived from tertiary analyses. This strategy helped ensure a more comprehensive review, which was representative of the available studies in this area. That approach seems appropriate at this stage of research, but findings may be affected by the variable quality of the literature, and future reviews may be able to focus on more refined investigations as the field matures.

Limitations of cross-sectional research

Given the developing stage of this area of inquiry, the present meta-analyses predominantly included studies employing cross-sectional research designs. Such research is useful for establishing associations among variables, as the large set of studies in the meta-analyses did. However, because these analyses reflect relationships at a single time point, they cannot provide an indication of the sequence of events — whether R/S variables, or changes in R/S variables, predict changes in health outcomes over time-- and thus they provide no basis for causal or temporal inferences. It is quite possible that RS and health may have complex reciprocal relationships over time, such that some facets of RS may affect aspects of a person's cancer experience (e.g., impeding or facilitating screening, early treatment, treatment decisions, or coping) while aspects of the cancer experience may influence RS as well (e.g., intensifying religious coping or prayer, evoking a spiritual crisis). Some of these processes may occur over long periods of time (e.g., perceptions of positive spiritual change) and cannot be captured in cross-sectional research. Additional longitudinal investigations[16–20] are among the priorities for future work in this area.

Homogeneity of samples/Heterogeneity within samples

We were unable to delve into the complex issues of sample composition and diversity across samples, both of which make it difficult to interpret data aggregated across studies. Most samples were comprised of White Christian older adults in the United States, raising questions regarding the generalizability of the findings. On the other hand, as we noted elsewhere,[6] there is likely great within-group variability. One question seldom-addressed is whether different religious or cultural groups understand and respond to R/S measures in

different ways, or whether various types of faith experiences have diverse meanings for members of different groups (c.f., Lazenby et al. 2013).[21] Because very few studies included in the meta-analyses provided detailed information on the homogeneity of their samples on key R/S variables, we were unable to explore these intriguing issues.

Confounds

The effects included in these meta-analyses were based on bivariate relationships, which do not take third variables into account. Much of this research may be affected by unmeasured or otherwise excluded third variables, which may account for some of the correlation between RS and health. In particular, socioeconomic status is strongly related to some aspects of RS in the United States and also related to cancer morbidity.[22]

Recommendations for future research

A number of consistent recommendations emerged from these systematic reviews of the literature:

Identify processes and mechanisms

As noted above, the relationships between R/S and health in the context of cancer are likely to reflect a complex and interactive process that varies somewhat across health domains. The ways that various dimensions of R/S may influence well-being (and may be influenced by well-being as well) are poorly understood, although many theoretical pathways have been advanced (e.g.[10, 11, 23–25]). Much more research attention to these mechanisms is needed.

Address conceptual concerns

For many of the studies included, R/S was just one of a multitude of psychosocial variables measured and was sometimes only incidentally included. Going forward, researchers should be thoughtful in conceptualizing the hypothesized roles of specific dimensions of R/S in the health of cancer patients and survivors and in employing psychometrically solid measures that tap into those specific dimensions of R/S. The field would be advanced by greater efforts to avoid confounding of R/S predictors with health outcomes. Moreover, it would be useful to address basic theoretical distinctions more clearly, including those between general R/S variables (which are part of the fabric of ordinary life) vs. illness-specific variables (which reflect particular responses to cancer) and between descriptive aspects of R/S (e.g., frequency of prayer) vs. functional aspects (e.g., purposes of prayer).

The types of health outcomes that are targeted in future R/S research warrant further attention as well. The current series of meta-analyses focused on a range of important patient-reported outcomes (mental health, physical health, social health). By necessity however, many variables within these health domains could not be included due to space constraints or an insufficient number of available studies (e.g., aspects of mental health such as psychiatric diagnoses or perceived positive life changes; objective indices of physical health such as infectious complications or duration of hospitalizations; facets of social health such as disclosure of one’s illness to others or communication with the medical team). Other salient outcomes were excluded because they fell outside the three targeted health domains

(e.g., screening or surveillance practices, treatment adherence, participation in clinical trials, end-of-life decisions). R/S involvement may have implications for many of these endpoints, and additional theoretically coherent investigations in these areas would be useful.

Use more sophisticated research designs

Future research might also bolster trends toward stronger methodology, including greater use of longitudinal designs, selection of more medically homogeneous samples, specification of primary endpoints, and reporting of and adjustment for basic clinical characteristics. The current meta-analyses evaluated patient-reported outcomes, which generally included well-validated, clinically relevant indices; however, additional attempts to encompass objective outcomes would be helpful as well (e.g., mental health referrals, duration of admissions, interruptions of chemotherapy, number of visits from one's support network, etc.)

Identify moderating variables

One of the goals of these meta-analyses was to identify the conditions under which the relations between R/S and health were strengthened or attenuated. We anticipated that these relationships might vary as a function of gender, age, race, cancer type, stage, and phase of treatment or survivorship. Although our analyses failed to find evidence of moderation for any of the health outcomes, this does not preclude the possibility of differential effects of R/S for specific health outcomes among demographic, cultural, or clinical subgroups. We were only able to examine moderation using study-level aggregate information. This may have concealed variation at the patient level and, in turn, reduced sensitivity relative to tests based on patient-level characteristics. In addition, an array of relevant moderators has not yet been studied sufficiently for inclusion in meta-analyses (e.g., personality, cultural, and treatment-related factors).

Clinical Applications

A number of studies have demonstrated that R/S concerns are central to many cancer patients and survivors[26–30]; results from the current meta-analysis suggest that R/S dimensions also are tied to important patient-reported health outcomes, though causal inferences are not possible. Consistent with the growing focus in oncology on treating the whole patient,[31] a variety of resources have been developed for screening R/S concerns in the clinical setting and referring patients for appropriate R/S support. For example, National Comprehensive Cancer Network (NCCN) guidelines[32] recommend that patients periodically be screened for distress using the Distress Thermometer, a brief tool that includes a checklist of problems including R/S concerns. NCCN recommends that patients reporting R/S concerns be referred to chaplaincy services for spiritual assessment, support, and possible further referral to a mental health counselor. Similarly, the National Consensus Project (NCP) for Quality Palliative Care[33] recommends spiritual screening at the initial palliative care assessment and periodically thereafter by a nurse or social worker. For patients with spiritual distress, the NCP recommends a formal, in-depth spiritual assessment conducted by a board-certified chaplain who is integrated with the treatment team.[34] Several other

resources are available to help clinicians sensitively inquire about R/S issues[35–38]; appropriate inquiries are generally well received by patients.[39]

In addition, some researchers have been developing psychosocial interventions that involve a substantial R/S component or even focus on patients' spiritual issues.[40–42] While evidence regarding interventions with this focus remains thin, research in this area is evolving. Such interventions may be particularly appropriate for particular subgroups who express needs or interests in this area, such as racial and ethnic minorities, older adults, or those who are particularly religious.

However, it is important to note that there is no consensus on the appropriateness of offering R/S-based interventions; it may be one thing to inquire about patients' R/S concerns and help them access available resources, yet quite another to actually promote R/S activities.[43] Further, what comprises helpful experience and expression of R/S may vary tremendously across individuals and cultures; participants should be invited to draw upon their own faith traditions in dealing with their cancer diagnosis or treatment. Such expressions of faith may take on different characteristics across individuals and underscore the importance of tailoring interventions for optimal patient-centered care.

Conclusions

By taking stock of the existing literature, the three meta-analyses presented in the current issue of *Cancer* represent a useful step forward in the study of R/S and health among cancer patients. Although much work remains to be done to understand these relationships, results affirm that R/S is significantly though modestly associated with patient-reported mental, physical, and social health. Some aspects of R/S involvement were tied to more favorable outcomes, whereas others were related to poorer outcomes. These comprehensive findings offer an important foundation for the next generation of research on R/S and health, which may have significant implications for patient-centered care.

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Table 1

Estimated Associations between Religion/Spirituality and Health

Religion/ Spirituality Dimension	Physical Health			Mental Health			Social Health		
	Est (SE)	Studies	Effect sizes	Est (SE)	Studies	Effect sizes	Est (SE)	Studies	Effect sizes
Overall R/S	.15 (.02)***	101	497	.19 (.02)***,*a*	148	617	.20 (.02)***	78	227
Affective	.26 (.02)***	55	223	.38 (.03)***,*b*	68	234	.32 (.03)***	39	112
Behavioral	.01 (.02)	29	96	.03 (.03)	43	133	.08 (.03)*	17	38
Cognitive	.07 (.02)***	22	90	.10 (.02)***	41	160	.10 (.03)**	18	45
'Other'	.08 (.03)*	23	88	.08 (.02)**	43	90	.13 (.03)***	22	32

Note: A positive relationship between an R/S and health outcome reflects more R/S and better health. Estimates are z-scale effect sizes. SE = standard error.

a After excluding spiritual well-being and based on 108 studies and 433 effect sizes, the estimated association between overall R/S and mental health is .09 (.01)***.

b After excluding spiritual well-being and based on 20 studies and 50 effect sizes, the estimated association between affective R/S and mental health is .29 (.06)***.

* p<.05,

** p<.01,

*** p<.001