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

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

As discussed in the introduction to this series,5 R/S encompasses a diverse set of beliefs, feelings, and practices. As a result, these meta-analyses were aimed at identifying the degree of association between measures of R/S and patient-reported health outcomes in 3 separate areas (mental, physical, and social) and, furthermore, at comparing the strengths of different R/S dimensions (cognitive, affective, behavioral, and ‘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 3 different health domains and compare and contrast the results. We then discuss caveats in interpreting this set of analyses, provide directions for future research, and make tentative suggestions for clinical applications.

OVERVIEW OF FINDINGS ACROSS 3 META-ANALYSES
This series of meta-analyses encompassed 1341 effects drawn from more than 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 al5 in this series for a fuller description of how the R/S dimensions were conceptualized and coded in this project). The results suggest that each of the evaluated patient-reported health domains was significantly but modestly related to overall R/S (aggregated across dimensions).

The largest effect size across all 3 health domains was for the affective dimension of R/S. Effects for affective R/S, though only moderate in size, were larger than those for the ‘other’ dimensions of R/S; this link appeared to be strongest between affective R/S and mental health outcomes, but it was also notable for physical and social health. Both the cognitive dimension and ‘other’ dimension of R/S were consistently related to the 3 domains of health at a modest strength (range, 0.07-0.13). 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 jar-
ring circumstances. Similarly, feelings of R/S reverence,
empowerment, or identity may help bolster patients dur-
ing 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, and symptom tolerance), especially
if R/S pursuits play a central orienting role in a person’s
daily life. On a methodological note, however, some affec-
tive R/S dimensions (eg, spiritual well-being and spiritual
distress) overlap conceptually with the outcomes of many
studies and particularly mental health endpoints (eg, emo-
tional well-being and distress).8,9 Thus, the magnitude of
some of these associations appears to have been spuriously
inflated because one type of well-being (R/S) was con-
flated 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 the removal of 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 (eg, toxicities, treatment adherence, and deci-
sions 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,
and so forth) was significantly related to each health do-
main 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 Spec-
cific R/S beliefs or worldviews may enhance adaptation to
cancer for some patients. For example, in the current se-
ries of meta-analyses, there was evidence that more benev-
olent 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 (eg, a conviction that God is re-
ponsible for one’s health, a perceived importance of spiri-
tuality, and 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 stud-
ies 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 con-
tent of R/S beliefs (eg, specific theodicies) and the struc-
ture of these beliefs (eg, complexity and tolerance for
ambiguity) may be especially helpful.12,13

The ‘other’ dimension of R/S was significantly asso-
ciated 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 associ-
ated with favorable adjustment. Perhaps patients with
broad R/S experiences (encompassing multiple dimen-
sions of belief, feeling, and behavior) are more apt to

<table>
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<tr>
<th>R/S Dimension</th>
<th>Physical Health</th>
<th>Mental Health</th>
<th>Social Health</th>
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<tbody>
<tr>
<td></td>
<td>Estimate (SE)</td>
<td>Studies</td>
<td>Effect Sizes</td>
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<tr>
<td>Overall R/S</td>
<td>0.15 (0.02)</td>
<td>101</td>
<td>497</td>
</tr>
<tr>
<td>Affective</td>
<td>0.26 (0.03)</td>
<td>55</td>
<td>223</td>
</tr>
<tr>
<td>Behavioral</td>
<td>0.01 (0.02)</td>
<td>29</td>
<td>98</td>
</tr>
<tr>
<td>Cognitive</td>
<td>0.07 (0.02)</td>
<td>22</td>
<td>90</td>
</tr>
<tr>
<td>Other</td>
<td>0.08 (0.03)</td>
<td>23</td>
<td>88</td>
</tr>
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Abbreviations: R/S, religion/spirituality; SE, standard error.
A positive relation between R/S and health outcomes reflects more R/S and better health. Estimates are z-scale effect sizes.

P < .001.

After the exclusion of spiritual well-being and on the basis of 108 studies and 433 effect sizes, the estimated association between overall R/S and mental health was 0.09 (0.01).

After the exclusion of spiritual well-being and on the basis of 20 studies and 50 effect sizes, the estimated association between affective R/S and mental health was 0.29 (0.06).

P < .05.

P < .01.
derive health benefits than those with narrower R/S experiences to the extent that these commitments embody adaptive self-regulatory or relation patterns.

Finally, the behavioral dimension of R/S (which included private R/S practices, public practices, coping efforts, and so forth) was barely associated with the health domains that we evaluated. The modest links between R/S behavior and social health may be explained by those aspects of R/S behavior that are social in nature, such as service attendance and 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 (eg, 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). Most of the subdimensions of behavioral R/S could not be tested within each health domain because of the limited number of available studies; however, we found little evidence for the effects of private R/S activities (eg, prayer and 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 (eg, diagnosis, recurrence, transition off treatment, and 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 relations 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 was designed 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 (eg, concordance between spiritual growth or spiritual well-being and mental health indices).

Variable Quality of the 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 relations were derived from tertiary analyses. This strategy helped to ensure a more comprehensive review that 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

Because of 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 relations 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 have complex reciprocal relations over time, so some facets of RS may affect aspects of a person’s cancer experience (eg, impeding or facilitating screening; early treatment, treatment decisions, or coping), whereas aspects of the cancer experience may influence RS as well (eg, intensifying religious coping or prayer or evoking a spiritual crisis). Some of these processes may occur over long periods of time (eg, perceptions of positive spiritual change) and cannot be captured in cross-sectional research. Additional longitudinal investigations 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, and both make it difficult to interpret data aggregated across studies. Most samples were composed of white Christian older adults in the United States, and this raises questions regarding the generalizability of the findings. On the other hand, as we noted elsewhere, there is likely great withingroup 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 (see Lazenby et al.\(^{21}\)). Because very few studies included in the meta-analyses provided detailed information on the homogeneity of their samples for key R/S variables, we were unable to explore these intriguing issues.

**Confounding Factors**
The effects included in these meta-analyses were based on bivariate relations, 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 is 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 previously, the relations 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 (eg, references 10, 11, and 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) and illness-specific variables (which reflect particular responses to cancer) and between descriptive aspects of R/S (eg, frequency of prayer) and functional aspects (eg, 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, and social health). By necessity, however, many variables within these health domains could not be included because of space constraints or an insufficient number of available studies (eg, aspects of mental health such as psychiatric diagnoses and perceived positive life changes, objective indices of physical health such as infectious complications and duration of hospitalizations, and facets of social health such as disclosure of one’s illness to others and communication with the medical team). Other salient outcomes were excluded because they fell outside the 3 targeted health domains (eg, screening or surveillance practices, treatment adherence, participation in clinical trials, and 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 the greater use of longitudinal designs, the selection of more medically homogeneous samples, the specification of primary endpoints, and the 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 (eg, mental health referrals, duration of admissions, interruptions of chemotherapy, and number of visits from one’s support network).

**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 relations might vary as a function of sex, 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 able to examine moderation only with study-level aggregate information. This may have concealed variation at the patient level and, in turn, reduced sensitivity with respect to tests based on patient-level characteristics. In addition, an array of relevant
moderators have not yet been studied sufficiently for inclusion in meta-analyses (eg, 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, results from the current meta-analysis suggest that R/S dimensions are also tied to important patient-reported health outcomes, although causal inferences are not possible. In agreement with the growing focus in oncology on treating the whole patient, a variety of resources have been developed for screening R/S concerns in the clinical setting and for referring patients for appropriate R/S support. For example, National Comprehensive Cancer Network guidelines recommend that patients periodically be screened for distress with the Distress Thermometer, a brief tool that includes a checklist of problems, including R/S concerns. The National Comprehensive Cancer Network 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 for Quality Palliative Care recommends spiritual screening at the initial palliative care assessment and periodically thereafter by a nurse or social worker. For patients with spiritual distress, the National Consensus Project recommends a formal, in-depth spiritual assessment conducted by a board-certified chaplain who is integrated with the treatment team. Several other resources are available to help clinicians sensitively inquire about R/S issues, appropriate inquiries are generally well received by patients.

In addition, some researchers have been developing psychosocial interventions that involve a substantial R/S component or even focus on patients’ spiritual issues. Although 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, and 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. Furthermore, what constitutes 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 3 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 relations, the results confirm 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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REFERENCES
Commentary