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ARTICLE *in* JOURNAL OF RELIGION AND HEALTH · JANUARY 2016

Impact Factor: 1.02 · DOI: 10.1007/s10943-015-0172-9

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Research on Intercessory Prayer: Theoretical and Methodological Considerations

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Abstract Belief in the healing power of prayer is found in various religious traditions. Spiritually grounded clinical interventions, such as intercessory prayer (IP), need to be understood in a broader sense. This essay features the IP trials, observing the controversial relationship between inconsistent results and allegedly inadequate methods and theoretical hypothesis. A survey of the literature was conducted including publications indexed until September 2013, focusing on the trials developed in the field and on the critics about the methodological design. Recent meta-analyses and multicenter studies found inconclusive results in the investigation of IP. Clinical trials on IP present some methodological difficulties: The intervention is not fully controlled; the primary outcome is not properly defined; and the theoretical models seem inconsistent. The “non-local consciousness” model may be appropriate for studies of IP. Directions for future research: greater emphasis on the evaluation of the effectiveness of this intervention in animal models; selection of subjects and healers who have previous connection; considering the hypothesis of non-local consciousness in the study design.

Keywords Intercessory prayer · Randomized clinical trial · Distant healing

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Introduction

During the past few decades, the number of studies that suggest a positive association between religiosity/spirituality (R/S) and benefits associated with the physical and mental health has increased (Koenig et al. 2001, 2010). Current research gives broad support to a protective and preventive effect exerted by religious/spiritual practices on a variety of health conditions (Koenig et al. 2001). Psychoneuroimmunology and psychosomatic studies have advanced the knowledge on the biological, psychological, social, and behavioral mechanisms that mediate the positive correlation between R/S and health (Koenig et al. 2001).

In the last decade, particularly, different research groups have investigated the impact of R/S practices as therapeutic interventions (Koenig et al. 2001), with the implementation of clinical trials to evaluate the role of R/S practices as elements of intervention. Within this field, distant healing (DH) studies deserve special attention (Levin 2003).

In the medical context, DH studies propose that the intentions of a person can influence the health of another, distant person (Schlitz et al. 2003). In general terms, it is assumed that the intention of one or more persons can interact with psychological, biological, social, and behavioral aspects of one or more distant living organisms (Schlitz et al. 2003). The terms used to describe the different forms of distant healing include Reiki, Johrei, non-contact therapeutic touch, non-local healing, pranic healing, energy healing, and of particular interest in this essay, intercessory prayer (IP) (Schlitz et al. 2003).

The belief in the therapeutic power of prayer is recognized in various different religions (Levin 2004), being traditionally associated with well-being, health promotion, introspection, and spirituality (Guimarães and Avezum 2007). Religious belief is an important part of the cultural tradition, principles, and values used by patients to form judgments and process information (Moreira-Almeida 2007). The use of prayers for self-benefit or for others, especially in moments of vulnerability, is a widespread practice (Moreira-Almeida 2007).

According to the latest assessment of the World Values Survey (2011), 87 % of respondents in Brazil considered God as very important in their lives, and 87.4 % of them reported using prayer or meditation in some moment (World Values Survey 2011). In clinical populations, the indexes can be even higher (Flannelly et al. 2006). According to Flannelly and colleagues, patients with more intense psychiatric symptoms including anxiety, phobias, somatizations, paranoia, and obsessive–compulsive symptoms use the prayer more often as a source of comfort: the worse the symptoms, the more the patient uses the prayer (Flannelly et al. 2006).

Spiritually based clinical interventions, such as IP, are still little explored in the medical literature. However, recent meta-analyses and multicenter studies do not show significant results in this type of surveys (Benson et al. 2006; Roberts et al. 2007, 2009). Thus, the main objective of this essay was to assess IP studies, exploring specifically the controversial relationship between inconsistent results and supposedly inadequate methods and theoretical assumptions. Finally, a series of methodological suggestions, based on the studies reviewed, is presented.

Methodological Difficulties in Intercessory Prayer Studies

After more than two decades of research on IP and, more generally, on the effect of intentionality from a distance, harsh criticism has been voiced against the design used in clinical trials (Sloan and Ramakrishnan 2006; Schwartz and Dossey 2010; Andrade and

Radhakrishnan 2009). [Sloan and Ramakrishnan \(2006\)](#) critically discussed the use of conventional randomized clinical trials for the investigation of IP, claiming that this “phenomenon” presents methodological obstacles impossible to overcome with standard RCTs ([Sloan and Ramakrishnan 2006](#)). Some difficulties stressed by the authors include:

The Intervention is Not Completely Controlled

In studies of IP, the control of exposure to the intervention is limited. In these studies, friends, family, and members of religious congregations may also be praying for the patients. The “supplemental prayer” (SP) complicates the interpretation of IP studies and cannot be adequately controlled by randomization ([Sloan and Ramakrishnan 2006](#)).

Failure to Set a Primary Outcome

IP studies often have problems in setting the primary outcome, including a very large number of variables. Without the definition of a consistent theoretical model, IP studies have difficulties in specifying which variables are effectively influenced by prayer. This type of statistical treatment in which multiple concurrent analyses are performed, known as sharpshooter’s fallacy, can be responsible for positive results which actually represent type I statistical errors ([Sloan and Ramakrishnan 2006](#)).

Inconsistent Theoretical Model

What mechanisms could explain how the prayers of some individuals can influence medical outcomes in others at a great distance? Two candidate hypotheses are presented: (a) divine intervention and (b) distant effect due to some unknown mental “force” or “energy” ([Sloan and Ramakrishnan 2006](#)).

The epistemological problems in assigning a supposedly divine intervention as an explanation of the effect of IP are obvious. The existence of God is not an issue approached by scientific method, so that a positive or negative outcome cannot simply be attributed to the desire of a supposed immaterial or divine being ([Sloan and Ramakrishnan 2006](#)).

IP researchers usually propose hypotheses that originate from unorthodox philosophical currents about the nature of consciousness, often combined with principles of quantum mechanics. A common suggestion, for example, is the existence of alleged evidence of “non-local” features of consciousness, able to influence other bodies and objects at a distance, beyond the limits of space and time proposed by traditional physical laws ([Schwartz and Dossey 2010](#)).

Model of “Non-Local Consciousness” as a Theoretical Model for the IP Research

“Non-local” properties of consciousness can be defined, in a few words, as the ability of the brain to operate beyond the limitations imposed by space–time ([Tressoldi 2011](#)). Phenomena such as “remote viewing” and “telepathy” adjust to this concept, since they refer to the perception of visual information beyond local biological capabilities and the exchange of information with a distant receiver, respectively, without a known physical mediator ([Tressoldi 2011](#)).

A recent meta-analysis evaluated around 200 studies with more than 6000 participants, with three different experimental protocols, concluding that there is sufficient evidence of non-local perceptions of consciousness (Tressoldi 2011). In this context, Achterberg et al. (2005) conducted a neuroimaging study on neurofunctional changes in subjects undergoing distant intentionality. The term “distant intentionality” brings together various forms of spiritual treatments, such as prayers, energy healing, distant healing, and distant mental healing, among others—all adjusted to the concept of non-local influence, i.e., without known sensory connections between donor and receiver (Achterberg et al. 2005). In this study, the authors selected healers of different traditions and asked them to indicate a person with whom they felt strongly connected. The strategy of selecting individuals for the study was based on earlier data, which suggested a higher correlation of physiological changes among individuals affectively connected (Achterberg et al. 2005). These individuals were scanned by magnetic resonance imaging (fMRI) while the healers sent distant intentionality (Achterberg et al. 2005). The results showed a significant activation of certain brain regions (anterior and middle cingulate areas, frontal area, and precuneus), coincident with periods of distant intentionality, supporting the hypothesis that human intentionality can affect distant receivers through supposedly poorly understood mechanisms (Achterberg et al. 2005). However, the study does not allow to conclude on a causal effect between the healer and the recipient, only on a correlation of neurofunctional states (Achterberg et al. 2005).

Several studies aimed at evaluating the existence of positive physiological changes induced at a distance in humans. These studies include functional magnetic resonance imaging (Achterberg et al. 2005; Standish et al. 2003), electroencephalography (EEG) (Grinberg-Zylberbaum et al. 1994), and evaluation of electrodermal activity (Schiltz and Braud 1997). In the latter, around 19 studies replicated an apparent effect of distant interconnectivity (Schiltz and Braud 1997). The results have shown a significant correlation of electrodermal activity between isolated individuals (Schiltz and Braud 1997). In these research protocols, a subject is instructed to send random mental images of anxiety or relaxation to isolated individuals in a distant room. The results show a significant correlation, suggesting that mental images sent by individuals from a distance can influence the state of arousal of receptors (Schiltz and Braud 1997).

The Need of a New Theoretical Framework

As a whole, the more recent reviews and meta-analyses on this topic (Benson et al. 2006; Roberts et al. 2007, 2009; Grinberg-Zylberbaum et al. 1994) show the inexistence of significant results. The most recent meta-analysis recommended for no further funding for this kind of studies (Roberts et al. 2009).

Nevertheless, it is important that issues related to theoretical references and method can be examined, before the subject is completely abandoned (Chibeni and Moreira-Almeida 2007). In this context, Schwartz and Dossey (2010) described methodological flaws in studies of IP, demonstrating that they cannot match minimum criteria for the completion of randomized clinical trials. According to the authors, the IP studies are not able to control exposure to the SP, and also fail to define primary outcomes, mainly because they are not based on a consistent theoretical model (Tressoldi 2011). Considering the methodological guidelines for research on subjects related to R/S, Almeida and Lotufo Neto (2003) highlighted the rationale of a theoretical model able to guide the study design, data

collection, and interpretation of the results. In an area that can still be regarded as pre-paradigmatic (Harris et al. 1999), the authors present criteria for the choice of a good theory: simplicity, comprehensiveness, falsifiability, and heuristic potential (Almeida and Lotufo Neto 2003).

Among the explanatory theories that could offer support for the effectiveness of distant IP, the hypothesis of the “Non-Local Consciousness” was revised, with emphasis on studies investigating an association between interventions and neurofunctional changes (Standish et al. 2003; Grinberg-Zylberbaum et al. 1994; Schiltz and Braud 1997). The results of these studies, both in the field of IP and in the related areas of distant intentionality, are still at the fringe of a theoretical integration with medicine and psychology. The next step is to choose or introduce a new theoretical framework to explain the situation, since no minimally productive scientific activity can be reduced to the mere observation of the facts (Almeida and Lotufo Neto 2003).

According to Almeida and Lotufo Neto (2003), efforts to find a reasonable explanation for these new phenomena—which at present are limited to the postulation of a brain/mind with non-local properties—cannot conclude summarily that they simply are not real. The impossibility, in a certain point in time, of finding an explanation does not imply that later it will not be reached, and even if admitted that, for being absurd, the phenomenon “has no” explanation, this does not imply that the phenomenon itself does not exist (Almeida and Lotufo Neto 2003). Once certified, the phenomena should have epistemic primacy over their possible explanation (Almeida and Lotufo Neto 2003).

In addition, there are also some ethical considerations related to studies on IP. Almost all of the clinical trials have been conducted in the same manner as are studies to evaluate the safety and effectiveness of any medication. However, some of these studies—as in Harris and colleagues (Harris et al. 1999) and Cha and Wirth (Kuhn 2000)—were conducted without the observation of an essential ethical prerequisite: obtaining informed consent (IC). The approval of such studies by research ethics committees, without the consent of the patients, is based on the premise that outside the context of research, there would be no need for permission to perform a prayer in someone’s behalf (Turner 2006). Although this is true, at least two arguments favor the fact that negligence in obtaining the consent is ethically reprehensible.

First, although prayers may or may not harm the patients who receive it, to respect the different religions and philosophical positions of patients, they should have the right not to participate for personal reasons. In the study by Byrd (1988), for example, 12.7 % of the patients declined to participate. Researchers may fear that the selection of patients who agree to sign the IC can represent a bias, resulting in the selection of subjects who are more receptive to prayers (Turner 2006). However, this type of methodological difficulty cannot justify the lack of IC (Turner 2006).

Secondly, it is not possible to affirm that patients allocated in the intervention group will not suffer damaging effects. Therefore, until a body of evidence is obtained in intervention studies, the possibility of harm cannot be disregarded. It is morally wrong for clinicians to expose patients to increased risks, for research purposes, without obtaining the IC (Turner 2006).

There is not yet solid evidence of the validity or otherwise of studies on the effectiveness of distant IP (Guimarães and Avezum 2007). Current tests really evaluate, at most, the hypothesis that some more IP, performed by strangers, has a positive effect in certain medical outcomes. A curious and unlikely consequence of the initial plausibility of this hypothesis is that God might care about the amount of prayers performed (Turner 2006).

Some of the ethical and methodological problems of research on IP can be overcome with designs better adjusted to the phenomenon under study.

Conclusion

The research on intercessory prayer has occupied a relevant space, in spite of ambiguous and controversial results. However, the method best suited to this type of evaluation, and even the validity of the results or continuity of the investigation, is still unclear. Thus, new studies in this area might benefit from important methodological adaptations, such as:

- (1) Greater emphasis on the development of studies that evaluate the effectiveness of this intervention in animal models—such as pets recovering from surgery in veterinary clinics (Turner 2006). This strategy seems to overcome the difficulties imposed by SP, allowing a more effective distinction between intervention and control groups.
- (2) Selecting subjects of research and “healers” with an empathic link. The aim was to test the hypothesis that there is a brain function correlation among individuals with previous connections (Standish et al. 2003), regardless of religious denomination;
- (3) Considering the hypothesis of non-local consciousness in the study design with special care on the Effect of the Observer Expectation (Guimarães and Avezum 2007), as a confounding variable.
- (4) Clearly defining the clinical outcomes of the study Tressoldi (2011)—preferably those that can be assessed immediately after the prayer and with equipments that measure biological changes, such as EEG and fMRI

The acceptance of hypotheses as true by their creators and supporters before they undergo a thorough examination, in an attitude of haste and carelessness, not only discredits the researcher but also undermines the subsequent investigation of the hypothesis itself, which is then seen with suspicion, even when it has intrinsic value (Almeida and Lotufo Neto 2003). Thus, the research on IP needs larger and better studies, before accepting its prescription as a well-established medical intervention. This situation points to the need for, in addition to robust empirical verification, a thorough observation of best explanatory theories for this area of research.

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