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IMPRESSIONISTIC REPORTING

A Rejoinder to Otaiku: Religiosity and Risk of Parkinson's Disease in England and the USA—The Health Determinants of Spirituality, Religiosity and the Need for State of the Art Research

Piret Paal[1] · Sabela Avión Martínez[2] · Stefan Lorenzl[1] · Gil Goldzweig[3]

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Abstract
This rejoinder refers to the research of Otaiku (J Religion Health 1–17, 2022), which concluded that low religiosity in adulthood is associated with an increased risk of developing Parkinson's disease. Although Otaiku points to a number of limitations of their own research and thus clearly qualifies that further work is needed to verify the findings, a number of concerns still need to be raised about this research. Five points are highlighted in this article, namely (1) it is not clear why and how the variables of religiosity and spirituality were combined; (2) it is not reported whether other variables were tested; (3) they refer to the four different groups of how religiosity plays a role, which include extremely small samples of 11, 16, 25, 22 participants, (4) the final conclusion is based only on the two extreme groups with Parkinson's disease, (5) it remains unclear whether all patients had Parkinson's disease. Consequently, we are of opinion that Otaiku's findings and conclusions are questionable, but agree that future studies are warranted that require state-of-the-art research. [*Note:* A detailed response to this rejoinder has been provided in a subsequent commentary; Koenig (Journal Religion Health 62, 2023)].

Keywords Spirituality · Religiosity · Parkinson's disease · Health determinants · Prevention

Introduction

This rejoinder challenges a paper by Otaiku (2022), which concluded that low religiosity in adulthood is associated with an increased risk of developing Parkinson's disease. This association was tested using data from the English

✉ Piret Paal
piret.paal@pmu.ac.at

Extended author information available on the last page of the article

Longitudinal Study of Ageing (ELSA) and Midlife in the United States (MIDUS) study. This is a population-based prospective cohort study with 9796 participants, 74 (0.8%) of whom self-reported having Parkinson's disease during a median follow-up of 8.1 years. The article claims that participants who rated religion as "very important" in their lives at baseline had a tenfold higher risk of developing Parkinson's disease during the follow-up period (OR, 9.99; 95% CI 3.28–30.36). Consequently, the study claims to provide "evidence for the first time that low religiosity in adulthood may be associated with an increased risk of developing Parkinson's disease, particularly in individuals who have a spiritual but not religious outlook on life".

Data Management and Analysis

As far as data management and analysis are concerned, it is noteworthy that in ELSA the question of spirituality was not considered. The author refers to a sensitivity analysis in which participants were re-categorized based on a combination of religiosity and spirituality. It is not clear why the variables were combined or how they were combined. The author refers to the possible categories: (a) "Religion very important", (b) "Spirituality very important but not religion", and (c) "Neither spirituality nor religion very important". Thus, it is not clear how the missing data were re-categorized, and finally, the author does not give a rationale for the combination of variables, but uses the main effects and the interaction of variables as predictors. They refer to the four different groups of how religiosity matters, which include extremely small samples of 11, 16, 25, 22 participants. The final conclusion is based only on the two extreme groups with Parkinson's disease, one with 11 participants and one with 22 participants (out of a total of 2500 participants in each group). Considering the minuscule sample, lack of consistency, and that the logistic regression overestimates odds ratios increasing the probability of a type one error (Nemes et al., 2009), the conclusion bears limited relation to the results. In the rest of this rejoinder, we set out our more general concerns.

Spirituality and Religiosity as Health Determinants

Any research referring to spirituality and religiosity as health determinants should seriously and with rigor relate to the frame of reference, definitions, health context, differences. It has been argued that adequate reflection is needed for a true neuroscience of spirituality, especially in terms of defining the object of experimentation and, even more, for interpreting the results (Jastrzebski, 2018).

Spirituality, religiosity and the practice of spirituality or religion are not identical concepts. To recap, at the 37th World Health Assembly in 1984, the spiritual dimension was included in the World Health Organization Member States' strategies for health. According to WHO, the spiritual dimension is understood to be:

> a phenomenon that is not material in nature, but belongs to the realm of ideas, beliefs, values and ethics that have arisen in the minds and conscience of human beings, particularly ennobling ideas. Ennobling ideas have given rise to health ideals, which have led to a practical strategy for Health for All that aims at attaining a goal that has both a material and non-material component. If the material component of the strategy can be provided to people, the non-material or spiritual one is something that has to arise within people and communities in keeping with their social and cultural patterns. The spiritual dimension plays a great role in motivating people's achievement in all aspects of life. (WHO 1991).

So the working hypothesis is that no human being can be non-spiritual. But most people are not familiar with the concept of health and its relation to the spiritual dimension, which is why they perceive themselves as not spiritual.

In health research, spirituality is seen as a theoretical concept whose meaning lies in making sense of, seeking and finding explanations for life issues. Such meaning-making, according to the French philosopher Paul Ricoeur, is always a mediation between man and the world (referentiality), between man and man (communicability) and between man and himself (self-understanding) (Ricoeur 1991, 27–28). Spiritual experiences can occur while reading or meditating, but also in nature and in encounters with other people. If you ask people directly, they may not recognize their spiritual needs, because a spiritual need can be the need for security or care in a friendly environment or the longing for solitude.

For many people around the world, religion is the source of ideas, beliefs and values that they experience as a particular state of mind or experience within their social and cultural patterns. The term religion is used to describe a variety of different cultural phenomena that have a normative influence on human behavior, thinking and values. There is no single scientific definition of the term, nor is it considered desirable by scholars because of the problem of judgement. Religiosity can be a source of joy and hope, but it can also be a source of great suffering. Qualitative research has shown that a 'no' answer from patients when asked if they are religious can be a very powerful message to healthcare providers, as it reveals vulnerability and a sense of not being seen and heard (Paal et al., 2017).

When we talk about the importance of practicing spirituality or religiosity, the emphasis is on the word practice (self-understanding). The idea that someone is practicing, can lead to the misleading idea that any practice is an achievement and improvement. In reality, practicing means that every time you practice you take the beginner's position, you learn that some days you lack concentration, some weeks you do not practice, some days you practice and instead feel emotions like anger or sadness. So practicing is something you do, you learn to accept and endure it, but it is not mastering something.

In terms of 'referentiality', then, it is problematic to categorize people on the basis of their self-perceived level of religiosity because, like spirituality, religion is a non-material phenomenon and an idea whose meaning in people's lives becomes evident in their engagement with the question of meaning and active sense-making based on our perceptions of the environment and other people. From global perspective, it

is worthless and even hurtful to divide people into categories, such as (1) Christian religion, (2) non-Christian religion and (3) no religion. The idea that practicing as a form of self-care automatically increases our well-being and that more spiritual and religious practices are a guarantee of health needs to be critically questioned.

Exposing Parkinson's Community

We are of opinion that the conclusions of Otaiku's article could cause anguish and spiritual suffering to many people. Indeed, the paper has caused much controversy and anger in the Parkinson's community since its publication. Sabela Avión Martínez, a member of the Parkinson's community is concerned:

> As a person living with Parkinson's disease—a woman and younger than 50—I think a study based on 74 out of 10 k in a condition like Parkinson's disease borders on absurdity.
> The author did not give participants a definition or framework of what religiosity and spirituality are; this does not make much sense from a research perspective. Even within a Christian and white context the perceptions of religiosity will vary—it cannot be left to interpretation. Not to mention that ethnicity should also be taken into account.
> The concept of religiosity of a white, Catholic Hispanic person may be very different from that of a person of Mexican origin living in the United States. Indeed, many studies from Parkinson's disease specifically refer to ethnicity and culture. Without a clear framework and definition, the results and conclusions have no meaning.
> We know that there are no reliable registers or censuses, but I certainly know more than 74 people with Parkinson's disease who would be willing to participate in a survey or study—provided it is properly designed.

People with Parkinson's disease, Neuroscience of Spirituality and Religiosity as well as Spirituality and Religiosity as health determinants deserve state of art research.

State of the Art Research

Modern neuroscience of spirituality has shown that changes in the brain have an impact on the beliefs and values of people with Parkinson's disease. It is therefore important to consider spirituality and religious beliefs when caring for this population (Paal et al., 2020). At the same time, a close look at medications is essential when studying Parkinson's disease, as they can influence spirituality and religious beliefs. Large European cohort studies, such as the CLaSP study (Balzer-Geldsetzer et al., 2018) and the PD_Pal study (Meinders et al., 2021) funded by the European Commission, have shown that Parkinson's disease is often misdiagnosed. It is, therefore, unclear whether all patients really had Parkinson's disease, as the study did not rely on medical reports from Parkinson's disease specialists.

In a previous article, "Patients with Parkinson's disease need spiritual care", we briefly discussed that there seems to be disagreement in the conduct of studies between researchers who call for hypothesis-driven outcome research based on the use of validated instruments and the assessment of potential confounders. At the same time, other researchers studying spirituality believe that simply measuring health-related factors such as spirituality, religion and religious/spiritual practices may not fully capture the impact of creative, narrative or ritual work that is essential to individual meaning-making as well as forms of spiritual care (Paal & Lorenzl, 2020).

It has been argued that if the neuroscience of spirituality is to be developed and properly utilized, it is necessary to use well-established theories of brain function to interpret experiments rather than to develop new, controversial hypotheses that introduce mechanisms supposedly unique to religious experience. Contrary to the ambitious plans of some scientists, the neuroscience of spirituality should be seen as a promising interdisciplinary research program that will be realized in the coming decades. It has potential, but is still in its infancy and needs to develop to the point where it is a sound scientific discipline that presents solid conclusions (Jastrzebski, 2018).

Conclusion

Just as dealing with Parkinson's disease is a challenge for people in Parkinson's community, dealing with spirituality in patients with chronic neurological diseases remains a challenge for clinicians and researchers. Therefore, we believe that people with Parkinson's disease, neuroscience of spirituality and religiosity, as well as spirituality and religiosity as relevant determinants of health, deserve scrupulous state of the art research.

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Declarations

Conflict of interest The authors declare that this response has been written in the context of the financial relationships indicated in the Funding section. Authors are members of the PD Research Community.

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Authors and Affiliations

Piret Paal[1] · Sabela Avión Martínez[2] · Stefan Lorenzl[1] · Gil Goldzweig[3]

Sabela Avión Martínez
sabela@pdeparkinson.com

Stefan Lorenzl
stefan.lorenzl@pmu.ac.at

Gil Goldzweig
giligold@mta.ac.il

[1] Institute of Palliative Care, Paracelsus Medical University, Salzburg, Austria

[2] United Nations, New York, USA

[3] School of Behavioral Sciences, The Academic College of Tel-Aviv Yaffo, Tel-Aviv Yaffo, Israel