Prayer as medicine: how much have we learned?

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ABSTRACT

- Many people use prayer, and some studies have shown a positive association between prayer and improved health outcomes. This article explores four possible mechanisms by which prayer may lead to improved health.
- While acknowledging the efficacy of prayer and recognising the needs of patients, prayer, being a personal spiritual practice, cannot be prescribed, nor should it be used in place of medical care.

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The spiritual search for meaning and hope in life is integral to human existence. This is particularly evident during times of personal stress and crisis. Recent census findings indicate that 74% of Australians and 96% of Americans believe in a higher power, and similar percentages claim some form of religious affiliation.[1,2] Evidence also suggests that certain spiritual beliefs and the practice of prayer are associated with improved coping and better health outcomes.[3-6] Although North Americans have been the predominant participants in most of the research available, the findings are relevant to the Australian experience, as they reflect a basic human desire for supernatural involvement in matters of health and wellbeing.

Forms of prayer

The National Center for Complementary and Alternative Medicine (NCCAM) in the United States has defined prayer as an active process of communicating with and appealing to a higher spiritual power.[7] In every culture and tradition there appears to be a spiritual practice that focuses on some form of deeper interaction with a higher entity. Although our discussion reflects mainly a Christian perspective, many of the issues raised here are common to other spiritual and religious traditions.

In the Christian tradition, prayer can take many different forms, including:

- conversational prayer, in which a person engages in an informal conversation with God about day-to-day matters, seeking guidance and counsel, or expressing gratitude for life and wellbeing;
- meditative prayer, in which a person contemplates spiritual themes and the relationship of the divine to mankind;
- ritual prayer, which takes the form of reciting or reading well known prayers such as the Lord's Prayer; or
- intercessory prayer, characterised by petitions on behalf of others for their health and wellbeing.

These forms of prayer are not mutually exclusive, and the type of prayer practised will depend on the needs and circumstances of each individual.[4]

News headlines in recent years have also highlighted the importance of prayer as a coping mechanism. After the 11 September 2001 tragedy in the US, prayer was used by many as a coping mechanism.[8] News telecasts reported a similar response to the 7 July 2005 subway bombings in London.

Prevalence of prayer

The NCCAM examined the use of complementary and alternative medicine (CAM) in a population sample of 31 000 people in the US.[9] The data showed that 36% of people use CAM. When prayer was included in the definition of CAM, the statistic increased to 62%. Almost half of the respondents used prayer for their own health (43%), some sought the prayer of others (24%), and a smaller number participated in prayer groups that focused specifically on personal health issues (10%). Compared with other practices such as transcendental meditation, yoga, tai chi, qigong and reiki, prayer was by far the most popular alternative form of therapy.

Similar findings emerged from a Harvard Medical School study, which showed that a third of adults used prayer in addition to conventional medical care for specific health-related problems.[10] Of the 35% of respondents who used prayer for health concerns, 75% prayed for wellness and 22% prayed for specific health conditions. Of those who prayed, 70% reported prayer to be very helpful. The authors of the study noted that, while prayer for health concerns was a highly prevalent practice, patients rarely discussed the use of prayer with their doctors.

Bias in current research on prayer

Scientific validation of the efficacy of prayer in relation to health remains in its infancy. Many of the early studies reflect a positive bias in research design in which the efficacy of prayer was often judged only on the basis of predefined positive outcomes, with no provision made for negative ones.[11] Such bias may reflect a cultural belief in a benevolent God, but limits outcomes to those that appear to be humanly desirable. One recent study using rigorous methodology reported negative findings on the therapeutic effects of intercessory prayer and illustrates the need for non-biased experimental designs.[12]

Several theological criticisms of positive research bias have also been put forward. It has been argued that limiting the prayer outcomes to only an affirmative "yes" does not allow an omniscient God any discretion in terms of a "no" answer, or "not now" or "at a later time". It also presents God as an impersonal, mechanistic figure, subject to experimental control.[13] According to the Christian understanding of prayer, an answer to prayer is dependent on the power and will of God, not that of the petitioners. God is not swayed by the number of prayers or by geographic distances, but responds at various times and in ways that are not always anticipated by the person praying. An answer to prayer may come in the form of increased ability to deal with illness and tragedy and not necessarily in acts of miraculous intervention or healing.[14]

Plausible mechanisms by which prayer delivers health benefits

One common criticism of prayer research is that prayer has become a popular therapeutic method for which there is no known plausible mechanism.[11] A review of the literature has identified at least four possible mechanisms by which prayer may exert its influence on the health and wellbeing of the individual.

Prayer as a relaxation response

One of the earliest propositions was that the benefits of prayer are derived by means of the "relaxation response".[15] From this perspective, prayer was considered to be a Western form of transcendental meditation. Meditation is known to produce desirable physiological changes, such as slowed breathing, reduction in heart rate, a drop in blood pressure, peripheral warming, slower brain wave activity (marked by an increase in alpha and theta activity), and a hypometabolic state. People practising meditation, irrespective of their religious persuasion, report feeling more spiritual and experiencing an enhanced sense of psychological and physiological wellbeing, peace and tranquillity. The question that immediately arises is whether there are specific physiological markers that differentiate prayer from non-spiritual meditation and relaxation.

Some differences between prayer, meditation and the relaxation response have been documented. Prayer, silent or spoken, is associated with increased cortical activity, exemplified by higher beta frequencies, as seen in alert and attentive communication.[4] To gain a clearer understanding of why people derive health benefits from prayer, future research needs to further explore the differences between prayer and non-spiritual relaxation techniques.[16]

Prayer as a placebo

Critics of prayer research have proposed that the benefits of prayer may be the result of a placebo effect. The placebo effect has been shown to account for 50%–70% of the therapeutic benefit derived from certain pharmaceutical and even surgical procedures.[17] Can the benefits of prayer be equated with placing one's faith in an inert substance like a sugar pill?

The only accepted method for putting such questions to the test is to conduct prospective, randomised, double-blind trials, in which neither the patient nor the treating physician is aware of the experimental design. Several prayer studies using this approach have produced inconsistent results.[18] The first of such studies was conducted by Byrd, a cardiologist, on intercessory prayer.[19] Byrd randomly allocated 393 coronary care patients to either a prayed-for group or a control group. The prayed-for group showed six significantly better health outcomes, including lower incidence of congestive heart failure, cardiopulmonary arrest, pneumonia and intubation, and reduced use of diuretics and antibiotics. Fourteen other measures appeared to favour the prayed-for group, but showed no statistically significant difference. Nine measures, including mortality rate and duration of hospital stay (two of the prayed-for outcomes), showed no difference or favoured the control group. A more recent and rigorous study on the therapeutic effects of intercessory prayer on cardiac bypass patients found prayer to be associated with a higher incidence of complications.[12] The authors point out that the rigorous methodology may have had an impact on the quality of the prayer itself.

In another study, researchers investigated the impact of intercessory prayer offered by Christian prayer groups in the US, Canada and Australia on outcomes of in-vitro fertilisation-embryo transfer at Cha Hospital in Seoul, Korea.[20] The pregnancy rate in the prayed-for group (50%) was significantly higher than that in the control group (26%) ($P = 0.0013$).

One of the scientific and theological anomalies of double-blind studies on the effects of prayer is that they are seeking to quantify supernatural phenomena. In attempting to do so, it may be difficult to control for the qualitative and quantitative strengths of different prayers offered, making it impossible to test for a placebo effect through double-blind studies.

Prayer as an expression of positive emotions

A third mechanism by which prayer is seen as exerting its positive impact on wellbeing is by means of the positive emotions it engenders. In a review of prayer research, Levin expressed the view that "the health benefits of worship and prayer are due to the health-promoting effects of the positive emotions that they engender".[4] McCullough agrees that prayer improves mood and leads to a state of calm that extends to other areas of the life of the person praying.[21]

Pert is well recognised for her work on neuropeptides in mind–body communication. In her renowned book, *Molecules of emotion: the science behind mind–body medicine*,[22] she states, "It is the emotions, I have come to see, that link mind and body". The hypothalamic–pituitary system in the brain is the primary communication channel linking thoughts and emotions with messenger molecules that are released into the cerebrospinal fluid and through the blood system into the whole body. It is at this level that positive emotions generate physiological changes that have far-reaching consequences on our health and wellbeing.

The positive emotions of peace, joy, hope, faith, trust and love, associated with prayer, can lead to physiological changes affecting a person's state of wellbeing.[4] However, it is unclear from current research whether the immediate beneficiaries of prayer are those who engage in prayer or those for whom prayers are offered, or both.[23]

Prayer as a channel for supernatural intervention

A fourth mechanism discussed in the literature by which prayer affects health focuses on supernatural intervention. Critics of prayer research say that discussing mechanisms beyond "naturalistic" explanations and focusing on a belief in "supernatural" intervention goes beyond the reach of science. Yet, irrespective of whether scientists seek to attribute the benefits of prayer to the relaxation response, placebo or positive emotions, the most common reason why people turn to prayer is their belief in a divine being that transcends the natural universe and hears and responds to prayer.

A medical case study of an 83-year-old woman with chronic illness illustrates this belief in supernatural intervention.[24] The woman suffered from a rare pain condition, thought to be polymotor and sensory neuropathy, most likely secondary to diabetes. Her condition had been resistant to all pain management measures, including lumbar epidural steroid injections. With no improvement resulting from conventional medical treatment, prayer was her primary source of relief. She explains:

> Some people are sick and have pain and it gets the best of them. Not me. Praying eases pain, takes it away. Sometimes I pray when I am in deep, serious pain. I pray, and all at once the pain gets easy . . . I believe in God. He's my guide and my protector.

For people practising prayer, one of the central tenets is faith in an infinite, caring, personal and supernatural being.

Levin, in his review of epidemiological studies on the role of prayer,[4] states that

> [S]uch a perspective is a cornerstone of many of the world's faith traditions. Indeed, the possibility that there is a Creator-God who volitionally chooses to answer or not answer petitionary prayers by means which entirely transcend any naturalistic mechanism

may be the most commonly held belief of people who use prayer or spiritual interventions for friends or loved ones who are ill.

Faith in the supernatural may be a key factor in understanding the mechanisms of prayer. Faith is a difficult concept to define and even more challenging to measure empirically.

In the Christian tradition, several references are commonly cited in relation to prayer, health and healing. (Quotations given here are from the New International Version of the Bible.) One of the most common is found in the New Testament, in the book of James (5:15): "prayer offered in faith will make the sick person well". Among the various biblical accounts, the New Testament physician Luke provides extensive reports linking faith in God with healing, especially in his accounts of the ministry of the historical Jesus. As a popular healer, Jesus was known for his own personal practice of prayer and for his miraculous healings. People brought to him "all who were ill with various diseases, those suffering severe pain, the demon-possessed, those having seizures, and the paralyzed, and he healed them" (Matthew 4:24). Some healings were the direct result of faith and prayer, while others were acts of mercy. However, none of the accounts leave any room for speculation or discussion as to whether the health benefits were due to a placebo effect, relaxation, or the impact of positive emotions. All were examples of healing by supernatural means.

Prayer and the patient

The knowledge that spirituality has an impact on the health and wellbeing of individuals needs to be reflected in patient care. Australian research by D'Souza shows that patients consider prayer and spiritual issues to be important and express the conviction that carers should be aware of their beliefs.[25] Open dialogue with patients may encourage disclosure of important spiritual beliefs and practices that ought to be documented in clinical notes. Such information may be relevant to understanding the patient's resources for coping with illness.

Professionally, chaplains and pastoral counsellors are well qualified to address patients' spiritual concerns. Other professionals, including doctors and nurses, should also be willing to listen and make appropriate decisions on how these can be best addressed. However, because of the very personal nature of spiritual beliefs and practices, prayer is not a practice that can be prescribed, nor should it take the place of medical care. Patients' requests for prayer need to be addressed in the context of the wishes of the individual, the beliefs of health professionals, and the practice guidelines of a given institution.

Conclusion

Throughout history, people have used prayer in relation to their own health and the health of others. While prayer continues to be a prevalent practice, scientific research on the health benefits of prayer is still in its infancy. To gain a clearer understanding of why people derive health benefits from prayer, future studies need to identify the unique markers that differentiate prayer from other non-spiritual practices. Researchers must also accept that some aspects of prayer may not be transparent to scientific investigation and may go beyond the reach of science. In the clinical context, prayer should not be specifically prescribed or seen as a substitute for medical treatment, but should be recognised as an important resource for coping with pain and illness and improving health and general wellbeing.

Competing interests

None identified.

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