

From Brain Surgery to Back Pain: Exploring the Role of Probiotics in Quality of Life and Pain Relief

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INTRODUCTION & AIM

Probiotics are live microorganisms that, when administered in adequate amounts, confer a health benefit on the host. Their use has become increasingly common as they help maintain a balanced gut microbiota and support immune function.

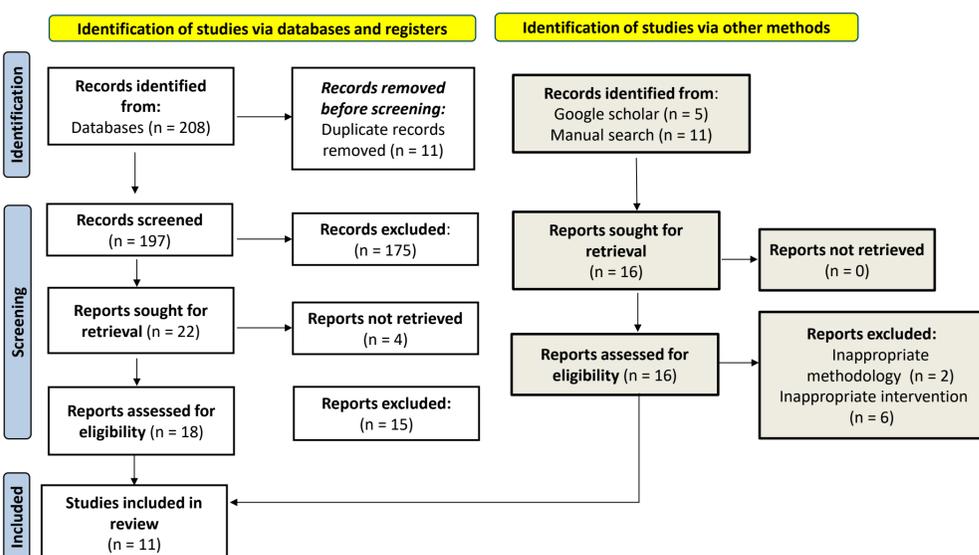
In recent years, attention has also turned to the communication pathways between the gut and the brain, which suggest that probiotics might influence not only digestion and immunity but also inflammation, pain, and recovery after neurological injury.

This review aimed to explore how probiotic supplementation affects quality of life in patients after brain surgery and whether it plays a role in reducing lower back pain.

METHOD

We searched for scientific studies in the international databases PubMed, ScienceDirect, MEDLINE (EBSCOhost), CINAHL Ultimate, and Wiley Online Library. The search and selection process was shown using a PRISMA flow diagram, and the quality of the studies was assessed according to an eight-level hierarchy of evidence. A thematic synthesis was then carried out.

Figure 1: Flow diagram of the source search process according to PRISMA guidelines (Page, et al., 2021)



CONCLUSION

In conclusion, probiotics show potential as supportive agents in improving recovery and general health, but more well-designed clinical studies with larger samples, defined strains, and standardized evaluation methods are needed to better understand their role in pain management and postoperative recovery.

RESULTS & DISCUSSION

Altogether, eleven studies met the inclusion criteria—five dealing with lower back pain and six focusing on patients after brain surgery. The results show that probiotics may have some positive effects, such as reducing inflammation and infection risk, shortening hospital stay, and helping bowel function recover faster. However, the evidence for improving overall quality of life or reducing back pain is still limited and inconsistent.

Table 1: Thematic synthesis of included studies

First Author (Year), Country	Study Design	Study Sample	Intervention	Outcome
Asaadi et al. (2024)	Systematic review of randomized clinical trials	n = 6 articles	Probiotics	↓ risk of infection and mortality
Fijan & Šmigoc (2024)	Systematic review of randomized clinical trials and case studies	n = 10 studies	Probiotics	Improved gastrointestinal motility, reduced inflammatory responses, lower infection rates
Hodzhev et al. (2024), Bulgaria	Randomized clinical trial	n = 564 adult participants	Probiotics	↓ antibiotic-associated diarrhea
Jiang et al. (2023), China	Randomized clinical trial	n = 200 patients	Probiotics	↓ time to first bowel movement and ↓ bloating
Jensen et al. (2019), Denmark	Randomized clinical trial	n = 89 patients	Probiotics	↓ pain
Rahman et al. (2023), India	Systematic review of randomized clinical trials	n = 3 randomized clinical trials	Probiotics	Unclear results
Shukla et al. (2016), India	Randomized clinical trial	n = 46 patients	Probiotics	No significant effect
Taye et al. (2020), Australia	Randomized clinical trial	n = 1 patient	Probiotics	↓ pain
Wan et al. (2019), China	Randomized clinical trial	n = 76 adults with severe TBI	Probiotics	↓ serum inflammatory markers
Yi et al. (2019), China	Systematic review and meta-analysis of randomized clinical trials	n = 18 studies	Probiotics	↓ infection risk, ↓ mortality, ↓ length of hospitalization
Zeng et al. (2022), China	Systematic review and meta-analysis of randomized clinical trials	n = 34 studies (37 articles)	Probiotics	↓ pain

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