

APITHERAPY AS AN INNOVATIVE ELEMENT IN RECREATIONAL TOURISM DEVELOPMENT

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Abstract

Modern tourism trends emphasize integrating innovative and nature-based experiences to enhance regional tourism and attract visitors interested in wellness and sustainable recreation. This study examines the attitudes of 122 respondents who participated in apitherapy in 19 apiary houses across 18 towns and villages in Slovakia. Data collection focused on subjective experiences and perceived benefits in the context of recreation and relaxation. Statistical analysis showed no significant gender differences in apitherapy perception. Respondents reported a highly significant improvement in physical and mental well-being, as well as increased relaxation and comfort before, during, and after therapy. Distance to the apiary houses had no impact on participation, suggesting that apitherapy attracts visitors regardless of location. Health benefits were a stronger motivation than curiosity, though this factor was on the edge of statistical significance. Over 90% of participants expressed willingness to return or recommend apitherapy to others. The findings highlight apitherapy's potential to enrich recreational tourism and promote sustainable land use by offering unique health-focused experiences. This study underscores the need to increase awareness of apitherapy as an alternative recreational activity, complementing traditional forms of nature-based tourism.

Key words: apitherapy, recreational tourism, wellness tourism, sustainable land use, alternative therapeutic experiences

Introduction

Experiential and sustainable forms of travel have become increasingly important in the structure of contemporary tourism. One of its key branches is rural tourism, which integrates elements of regional development, environmental protection, and support for local economies (Demircioğlu, 1993; Beigi, 2018). A subcategory of rural tourism is agritourism, which has seen the emergence of apitourism—a specialized form of tourism that combines beekeeping-related experiences with environmental education, relaxation, and health-oriented activities (Suna, 2020). Apitourism represents a dynamically expanding segment that allows visitors not only to explore the life of bees but also to engage in beekeeping practices and discover the therapeutic potential of bee products and apitherapy itself (Aliyeva et al., 2019). A defining feature of apitourism is the intersection of sustainable beekeeping, cultural heritage, and complementary medicine, offering economic opportunities for beekeepers (Wos, 2014; Beigi, 2018; Tišler & Šuligoj, 2020). In countries such as Romania, Slovenia, Hungary, Indonesia, and Chile, apitourism has evolved into a diverse set of experiences—from visits to beekeeping museums and educational workshops to overnight stays in apiary houses and the practical use of apitherapeutic methods (Gandhy et al., 2019; Šuligoj, 2021). Despite these encouraging examples, apitourism remains in a developing stage in several regions, including Slovakia. As suggested by research conducted in Turkey, this area has significant potential, though it still requires targeted support and improved awareness of the opportunities to integrate apitherapy into recreational tourism (Arih & Korošec, 2015). Although apitherapy, as part of nature-based wellness practices, offers diverse possibilities for recreational tourism, public awareness of its specific modalities—particularly beehive air therapy, which involves time spent in apiary houses and inhalation of hive air—remains relatively low. As noted by Maennle et al. (2020) and Kopala et al. (2019), apitherapy is typically associated with traditional bee products such as honey or propolis, whereas its lesser-known therapeutic applications are still underrecognized within tourism and recreation contexts.

Material and methods

The empirical part of the research was conducted during the summer season in 19 apiary houses and one apiary pyramid located across various regions of the Slovak Republic. The choice of this period corresponded with the active season of bees, typically lasting from May to September, when the effectiveness of apitherapy is considered to be optimal due to increased hive activity. The research focused on visitors to apiary houses who underwent beehive air therapy. Data collection was anonymous and voluntary, carried out through a questionnaire survey. The questionnaires were distributed either in printed or electronic form, depending on the technical capabilities of each facility and the preferences of its operator. In total, 122 respondents participated in the study. According to Bartlett et al. (2001), this sample size is sufficient to identify differences between the variables under examination. The printed version of the questionnaire was distributed in the localities of Radimov, Klokočov, Radôstka, Gbeľany, Lietava, Povina, Štiavnické Bane, Prievidza, Banská Bystrica, Bratislava, Levice, and Nitra, representing approximately 80% of the total sample (97 completed questionnaires). The electronic version was administered in Dubová pri Modre, Ratka, Tuhár, Richvald, Kamenica, and Skalica, with 25 completed responses (20% of the sample). In terms of regional distribution, the research covered seven administrative regions in Slovakia: the Bratislava Region (Bratislava, Dubová pri Modre), Trnava Region (Skalica, Radimov), Nitra Region (Nitra, Levice), Trenčín Region (Prievidza), Žilina Region (Radôstka, Klokočov, Povina, Lietava, Gbeľany), Banská Bystrica Region (Banská Bystrica, Ratka, Tuhár, Štiavnické Bane), and Prešov Region (Richvald, Kamenica) (Fig. 1). The questionnaire used was semi-structured and specifically designed for the purpose of this study. Its development was informed by previous studies on apitherapy (Gökkaya et al., 2025; Trumbeckaite et al., 2015; Münstedt et al., 2019). It included questions related to the sociodemographic characteristics of respondents, frequency of visits to apiary houses, reasons for participation in the therapy, therapy duration, and subjectively perceived effects of beehive air therapy on psychological and physical well-being. Additional questions focused on evaluating the feeling of relaxation and comfort before and after therapy. The collected data were recoded and analyzed using statistical methods in the Statistica software environment (StatSoft Inc., 2011). The normality of data distribution was tested using the Shapiro–Wilk test, which confirmed a significant deviation from normality, and thus non-parametric tests were applied. To test relationships between variables such as gender, distance, reason for visit, and willingness to recommend therapy, the Wald–Wolfowitz Runs Test was used. Changes in psychological and physical well-being, relaxation, and the feeling of comfort before, during, and after the therapy were assessed using Friedman ANOVA in combination with Kendall's coefficient of concordance.

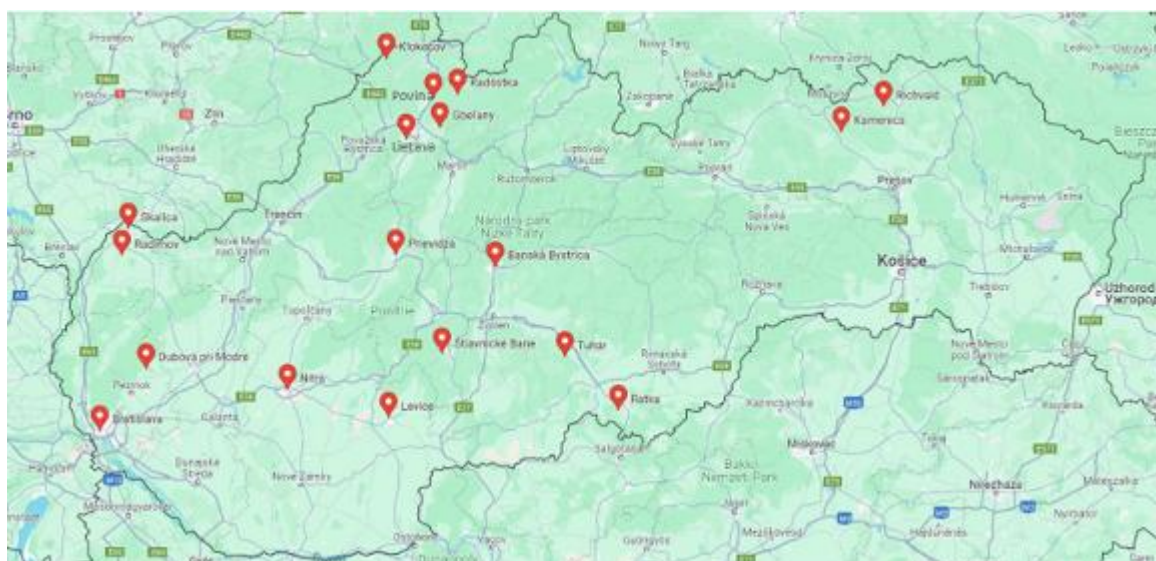


Fig. 1: Map of data collection sites from respondents

Results

The statistical analysis did not confirm any effect of gender on the perception of beehive air therapy. Gender differences were examined using several statistical tests. Wilks' lambda indicated no statistically significant interaction between gender and the observed variables ($p \geq 0.05$), suggesting that gender should not be considered a significant factor influencing the overall perception of apitherapy (Fig. 2). These findings were further supported by the Wald-Wolfowitz Runs Test, which also failed to demonstrate significant differences between male and female respondents in terms of their subjective experiences during the therapy ($p \geq 0.05$).

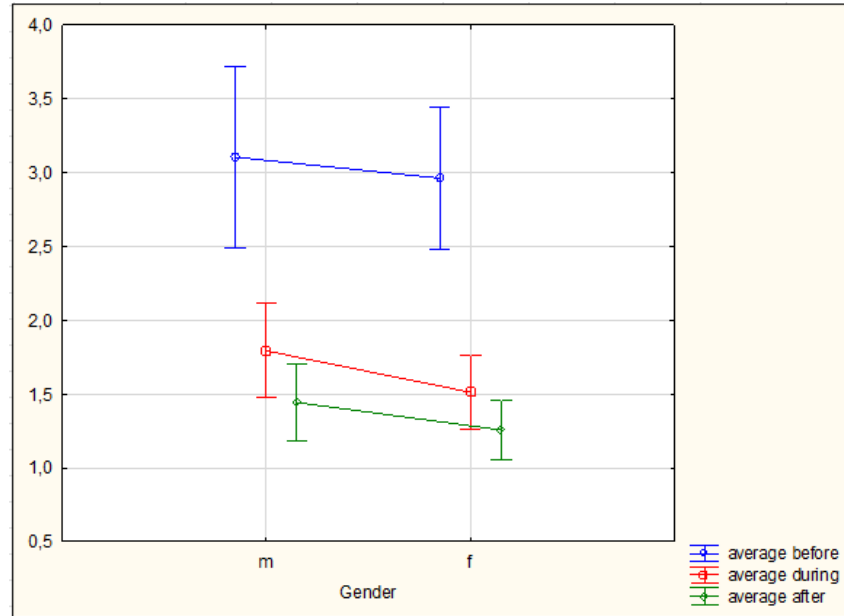


Fig. 2: The effect of gender on the course of beehive air therapy

Another factor examined was the distance between the respondent's residence and the apiary house, and its potential impact on the subjective perception of apitherapy effects. The results of the statistical analysis did not show a significant difference between the evaluations of participants who traveled a shorter (up to 50 km) or longer (51–100 km) distance ($p \geq 0.05$). This suggests that the distance to the therapy site is not a determining factor in apitherapy participation. We further focused on the reason for visiting the apiary house. For analytical purposes, respondents were divided into two main categories: those who came out of curiosity, and those who participated with the intention of improving their health. A greater inclination was observed among respondents motivated by health reasons, with results approaching the threshold of statistical significance ($p = 0.08$). Although this outcome did not reach the standard level of statistical significance, it indicates a trend that may hold practical importance and should be verified with a larger sample. The analysis of the average subjective feeling from the therapy revealed a highly statistically significant difference between the state before and after therapy ($p \leq 0.01$). A similarly strong effect was found in the change of psychological and physical well-being during the observed phases (before, during, and after the therapy), where the values significantly improved toward the end of the therapy (Fig. 3).

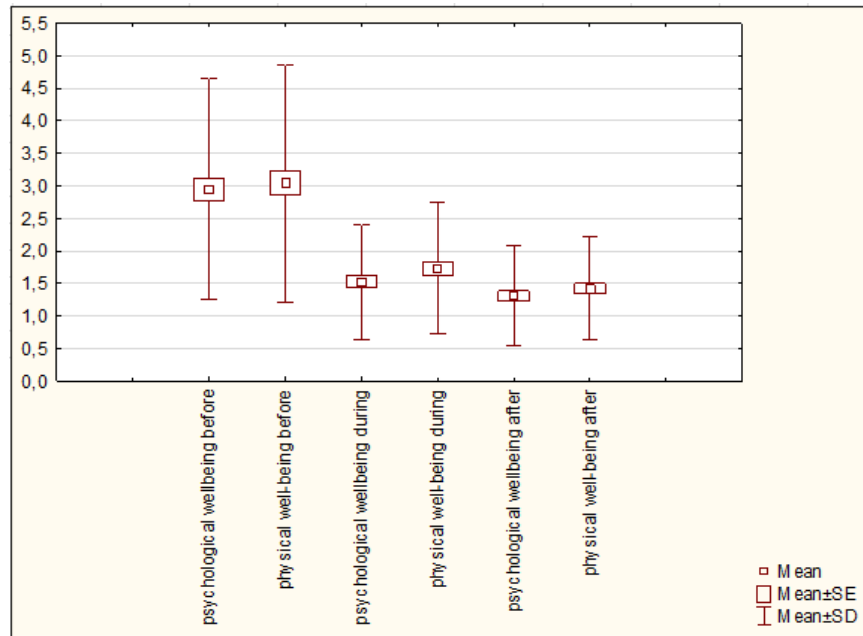


Fig. 3: Psychological and physical well-being during the course of beehive air therapy

The analysis of perceived comfort and relaxation confirmed that the change between individual phases (before, during, and after therapy) was highly statistically significant ($p < 0.01$). The data revealed a trend similar to that observed in psychological and physical well-being, with both comfort and relaxation improving progressively toward the end of the therapy (Fig. 4).

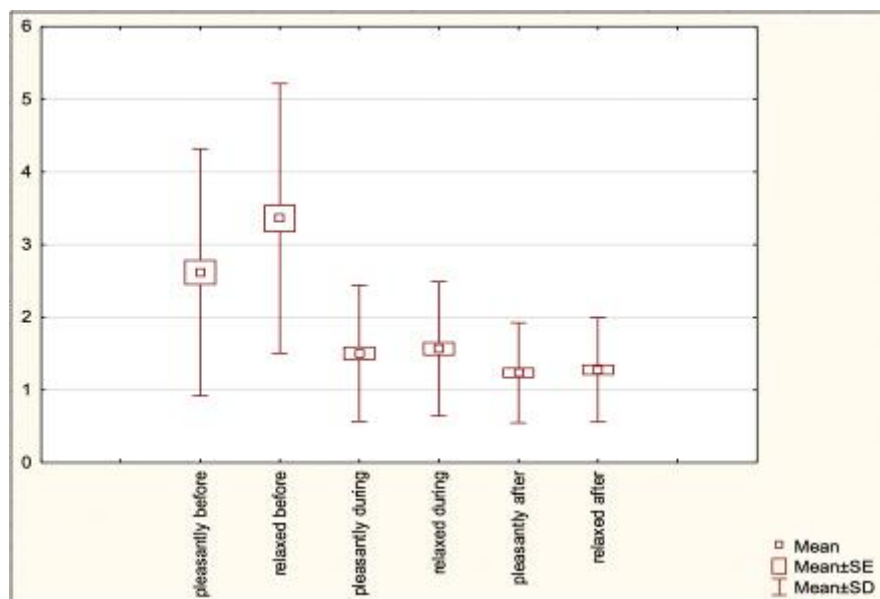


Fig. 4: Feelings of comfort and relaxation during the course of beehive air therapy

The final factor examined was the respondents' willingness to undergo beehive air therapy again. As many as 99% of participants indicated that they would be willing to participate in beehive air therapy again.

Discussion:

The results of this study suggest that beehive air therapy had a positive effect on both the psychological and physical well-being of visitors to apiary houses, as well as on their subjective feelings of relaxation and comfort. Across the analyzed phases (before, during, and after therapy), a statistically significant positive shift was observed toward the end of the therapy, with

the most notable improvement occurring after its completion. This conclusion aligns with the findings of Gökkaya et al. (2025), Trumbeckaite et al. (2015), and Münstedt et al. (2019), who report increasing awareness and a positive attitude toward apitherapeutic interventions from both patients and professionals. These findings are also consistent with the growing demand for nature-based and experience-oriented therapies within rural tourism (Gandhy et al., 2019). Similar observations are presented by Topal et al. (2021), who note that apitourism can serve as a means of connecting the natural potential of regions with traditional beekeeping practices and cultural heritage. In countries such as Slovenia, Romania, and Hungary, activities such as beehive air therapy, visits to beekeeping museums, and educational programs are already established components of well-developed apitourism (Tišler & Šuligoj, 2020; Gandhi et al., 2019; Šuligoj, 2021). This study provides valuable insights into the subjective effects of apitherapy in the context of recreational tourism; however, several limitations should be acknowledged. First, while the sample size (122 respondents) was sufficient for basic comparisons, it may not fully reflect the diversity of attitudes across different demographic or cultural groups. Furthermore, the data were collected through self-reported assessments, which are inherently subjective and may be influenced by expectations or social desirability bias. The study also focused primarily on short-term perceptions—before, during, and immediately after the therapy—without tracking longer-term effects or behavioral changes. Future research should aim to include larger and more diverse samples across various regions and seasons, ideally employing a longitudinal design that would allow for the monitoring of sustained effects of apitherapy on health and well-being. It would also be beneficial to complement quantitative data with qualitative methods, such as interviews or open-ended questions, to gain deeper insights into personal motivations and experiences. Further studies could explore the potential of apitherapy within specific populations, such as vulnerable or health-conscious individuals, and assess the feasibility of establishing apitherapy as a recognized component of wellness tourism offerings.

Conclusion

The results of the conducted research confirm the positive effects of beehive air therapy on the psychological and physical well-being of respondents, as well as on their subjective experiences of relaxation and comfort during the therapy. The analysis showed that gender, distance to the apiary house, and motivation for the visit had no statistically significant influence on the perception of apitherapy. This suggests a broad level of acceptance of this alternative form of recreation across diverse respondent groups. The findings further indicate that apitherapy represents an attractive complement to recreational tourism offerings, with the potential to develop in line with the principles of sustainable development. Given the growing demand for nature-based and experience-driven activities, apitherapy may be considered an innovative tool for regional development, particularly in rural areas. The results of the study also emphasize the need for further research and for raising awareness about the possibilities of integrating apitherapy into tourism, which could support its more effective utilization and stronger incorporation into tourism infrastructure.

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Conflict of Interest

The author(s) declare that there are no conflicts of interest associated with this research. This study was carried out independently, without any commercial or financial ties that could be interpreted as a potential conflict of interest.

Souhrn

Výsledky realizovaného výzkumu potvrzují pozitivní účinek úlové terapie na psychickou i fyzickou pohodu respondentů, stejně jako na jejich subjektivní prožívání odpočinku a příjemnosti v průběhu terapie. Analýza ukázala, že pohlaví, vzdálenost bydliště od apidomku ani motivace k účasti neměly statisticky významný vliv na vnímání apiterapie, což naznačuje její široké přijetí napříč různorodými skupinami návštěvníků. Zjištění poukazují na to, že apiterapie představuje atraktivní doplněk nabídky rekreačního turismu, který má potenciál rozvíjet se v souladu s principy udržitelného rozvoje. Vzhledem k rostoucí poptávce po přírodně orientovaných a zážitkových aktivitách lze apiterapii považovat za inovativní nástroj regionálního rozvoje, zejména ve venkovských oblastech. Výsledky studie zároveň zdůrazňují potřebu dalšího výzkumu a zvyšování povědomí o možnostech využití apiterapie v rámci cestovního ruchu, což by mohlo přispět k jejímu efektivnějšímu začlenění do turistické infrastruktury.

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