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Wpływ interwencji ekoterapeutycznych w zakresie zdrowia psychicznego (terapia leśna, ornitologia terapeutyczna i *mindfulness* oparty na naturze) na redukcję stresu i dobrostan psychiczny: analiza jakościowa

The impact of ecotherapeutic mental health interventions (forest therapy, therapeutic ornithology, and nature-based mindfulness) on stress reduction and mental wellbeing: a qualitative analysis

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Streszczenie

Wprowadzenie i cel: Natura i zdrowie psychiczne pozostają ze sobą w nierozerwalnym związku, istotnym zwłaszcza w kontekście redukcji stresu. W czasach, gdy ponad połowa ludzkości żyje w miastach, narażona na nadmiar bodźców, takich jak hałas, zanieczyszczenie światłem, presja czasu i szybkie tempo życia, relaksujący potencjał środowiska przyrodniczego wydaje się niezbędnym czynnikiem ochronnym. Terapia leśna i *mindfulness* oparty na naturze to dobrze zbadane metody ekoterapeutyczne; ornitologia terapeutyczna jest również bardzo popularną i przynoszącą wiele korzyści aktywnością. Opublikowano jednakże ograniczoną liczbę badań oceniających wpływ połączenia tych trzech różnych technik. **Materiał i metody:** Wiosną 2022 roku w ramach programu ekoterapeutycznego dla osób dorosłych w Dolinie Biebrzy przeprowadzono wyżej wymienione interwencje wspierające dobrostan psychiczny. Dwunastu polskich ochotników wzięło udział w trzydniowym programie ekoterapeutycznym zorganizowanym przez dwoje psychiatrów i ekoterapeutów. Przeprowadzono wywiady jakościowe i poddano je analizie za pomocą interpretacyjnej metody fenomenologicznej. **Wyniki:** Wyniki wykazały, że terapia leśna, *mindfulness* oparty na naturze i ornitologia terapeutyczna działają odmiennie, chociaż mają również wiele cech wspólnych i mogą stanowić skuteczną kombinację w radzeniu sobie z różnymi rodzajami stresu i objawów lękowych. Poprawiają także ogólne samopoczucie psychiczne w różnych wymiarach. **Wnioski:** Połączenie to warto rozważyć zarówno w samodzielnej praktyce dbania o dobrostan psychiczny, jak i przy projektowaniu programów ekoterapeutycznych mających na celu redukcję stresu i poprawę samopoczucia.

Słowa kluczowe: terapia leśna, ekoterapia, *mindfulness* oparty na naturze, ornitologia terapeutyczna

Abstract

Introduction and objective: Nature and mental health are in an important relationship, especially in the context of stress reduction. In the current times, when more than half of the human population lives in cities, where people are exposed to an excess of stimuli such as noise, light pollution, time pressure, and the fast pace of life, the relaxing potential of nature immersion seems to be an essential protective factor. Forest therapy and nature-based mindfulness are well-researched ecotherapeutic methods, and therapeutic ornithology is also recognised as a very popular and beneficial activity supporting mental wellbeing. However, only a limited number of studies have been carried out to explore the impact of combining these three different ecotherapeutic techniques. **Materials and methods:** During an ecotherapeutic programme for adults held in the Biebrza River Valley, Poland, in the spring of 2022, the above-mentioned nature-based interventions supporting mental wellbeing were performed. Twelve Polish volunteers participated in a three-day ecotherapeutic programme led by two psychiatrists and ecotherapists. Qualitative interviews were conducted and analysed using the interpretative phenomenological method. **Results:** The results indicated that forest therapy, nature-based mindfulness, and therapeutic ornithology worked

differently, but they also shared many common features and could be an effective combination in coping with different types of stress and anxiety symptoms. They were also found to improve the general wellbeing at different levels and dimensions. **Conclusions:** The studied combination of ecotherapeutic techniques is worth considering both in personal self-care practice and in designing ecotherapeutic programmes for stress reduction an wellbeing improvement.

Keywords: forest therapy, ecotherapy, nature-based mindfulness, therapeutic ornithology

INTRODUCTION

Ecotherapy is an umbrella term for various health-supporting activities that engage the natural environment, and are focused on stress reduction and improvement in wellbeing. There are many types of ecotherapeutic interventions and different landscape types where they can be undertaken. Some of them take place with the guidance of a therapist, while others can be self-practised. The most popular methods include forest therapy (Hansen et al., 2017), therapeutic ornithology (bird therapy) (Tryjanowski et al., 2022), and nature-based mindfulness. Even though there is ample data about their positive impact on human health separately, there is no research comparing these techniques or describing their use in combination.

Forest therapy (forest bathing) refers to slow walks through a forest landscape with mindful engaging of senses (Hansen et al., 2017). It is claimed to improve immunity, and lower cortisol and adrenaline levels (Li et al., 2010), and it helps to normalise blood pressure and heart rate (Lee and Watanuki, 2007). Reduction of stress, depression and anxiety levels, as well as improved mental well-being, are described in numerous studies (Tsunetsugu et al., 2013). Forest therapy provides health benefits regardless of gender and age (Chen et al., 2018; Li et al., 2016) and seems to be an excellent way to get well after mental exhaustion.

Therapeutic ornithology includes activities aimed at improving mental wellbeing through various forms of contact with wild bird species: field trips (Cammack et al., 2011), observations in the garden (Murawiec and Tryjanowski, 2020), feeding (Cox and Gaston, 2016; Ratcliffe et al., 2013), listening (White et al., 2018), photographing and other activities (Cox and Gaston, 2015; Tryjanowski et al., 2022). In contrast to bird walks, therapeutic ornithology does not

Fig. 1. Participants of the ecotherapeutic program in Biebrza River Valley (Poland) during their field workshop – forest therapy

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Fig. 2. Participants of the ecotherapeutic program in Biebrza River Valley (Poland) during their field workshop – therapeutic ornithology

focus on the mere recognition of bird species, but is based on mindfulness (Tryjanowski and Murawiec, 2020). Therefore, sensory perceptions, emotions, and cognitive activities accompanying observations (such as classifying, comparing) are essential. The term "bird therapy" appeared in the title of Joe Harkness's book (2020). The above approach is consistent with the one presented in the cited book. In Poland, the original monograph entitled *Therapeutic Ornithology* was published in 2020 (Tryjanowski and Murawiec, 2020) and became the basis for the development of this therapeutic method.

Mindfulness refers to the intentional regulation of attention with openness, non-judgment, curiosity, and acceptance of one's experience. Formal ways of mindfulness practice consist of mindfulness-based stress reduction (MBSR) and mindfulness-based cognitive therapy (MBCT). There are also more "informal" ways not strictly following the algorithms, but concentrating on consciously undertaking actions and being present. Nature-based mindfulness involves activities that integrate natural surroundings with contemplative techniques (Albrecht et al., 2019). A meta-analysis (Djernis et al., 2019) shows that mindfulness positively affects psychological, physical, and social areas. It can be effective in dealing with stress, anxiety, and depression (Choe et al., 2020; Huynh and Torquati, 2019), and it can improve resilience and overall psychological health in professionals with high work-related stress levels (Lücke et al., 2019), helping to cope with work-related stressors (Menardo et al., 2022).

As nature-based interventions seem to be rather easily accessible and simple in self-practice, we decided to compare the above methods.

MATERIALS AND METHODS

On 22–24 June 2022, in the Biebrza River Valley, Poland, a total of 12 adult participants (10 women, two men) took part in an ecotherapeutic programme consisting of the following activities: two forest therapy sessions, three therapeutic ornithology walks, and two nature-based mindfulness sessions. The activities were preceded by theoretical introductions. Psychiatrists, also professionally involved in ecotherapy, conducted the field activities and theoretical parts. The subjects declared that their health condition was stable and suitable enough to participate in field trips.

Forest therapy

Forest therapy took place for three hours in a mixed forest, with a predominance of conifers, with good visibility, in favourable weather conditions. The distance covered during

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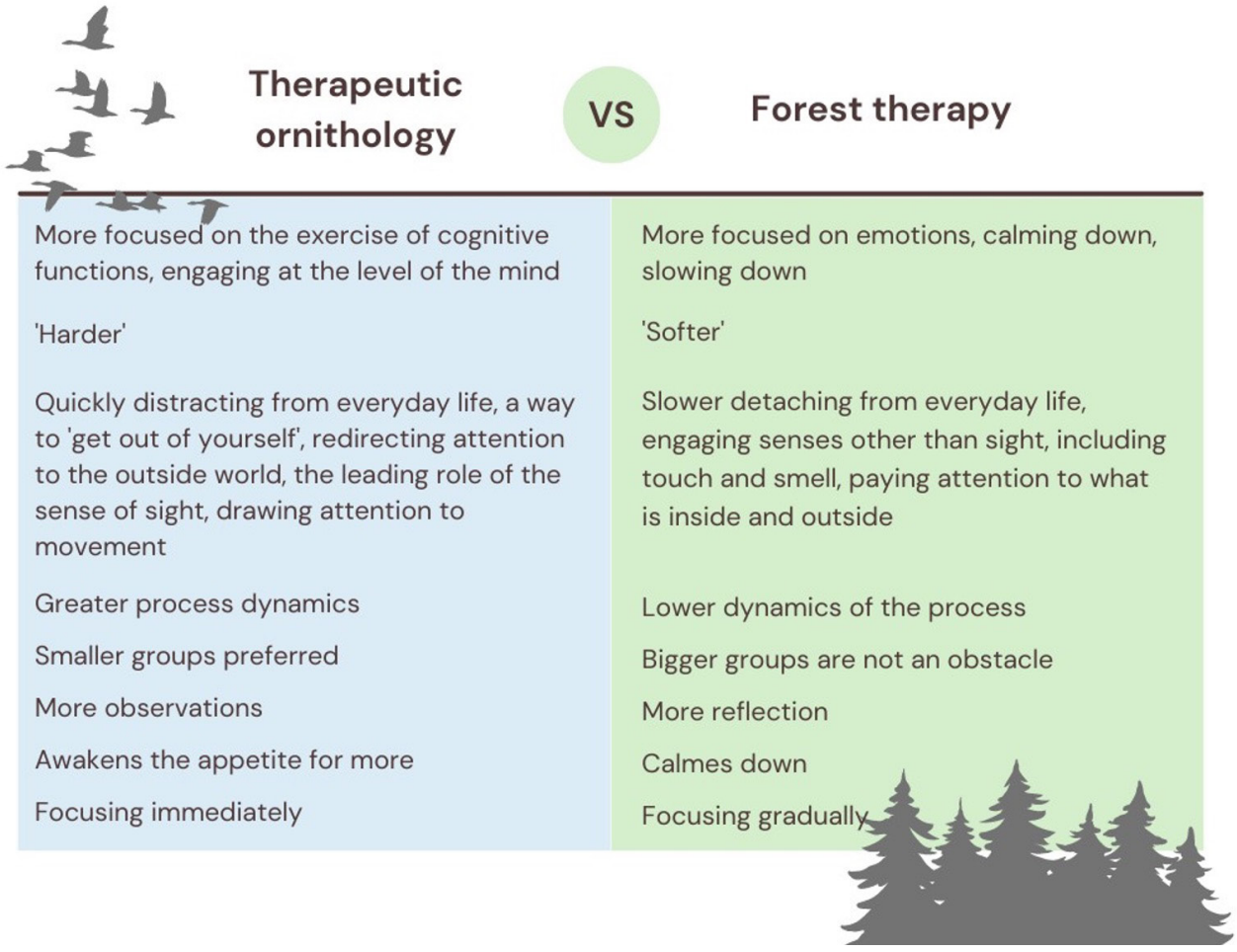

Fig. 3. Short comparison of therapeutic ornithology vs. forest therapy

the session on flat terrain was about a kilometre. The participants worked with an awareness of different senses, observed the relationships in nature, and performed exercises encouraging independent and safe exploration of the forest surroundings. Between the exercises, they had the opportunity to share their feelings – initially in a short form, followed by free statements in a group and in pairs (Fig. 1).

Therapeutic ornithology

The first walk took place between 7:30 p.m. and 9:00 p.m. along a marsh, for a total distance of 800 m in favourable weather conditions, with good visibility. The participants were equipped with binoculars (Fig. 2). They had the opportunity to observe and hear the voices of birds, including local rarities, e.g. the aquatic warbler (*Acrocephalus paludicola*) and the great snipe (*Gallinago media*). The second walk took place between 6:30 p.m. and 9:00 p.m., initially in a wooded area, for about 500 m, then in an open and marshy area, for a total of 2 km. The visibility in the area was sometimes limited. The participants could hear the voices of various songbirds. The third walk took place in an open area, a meadow, in favourable weather conditions, from 7:00 a.m. to 9:00 a.m. The participants had binoculars and books at their disposal, and they could comment freely, share their observations, seek expert advice on species identification and point out the observed details and interesting facts.

Mindfulness in nature

Evening exercises: in favourable weather conditions, along a convenient path through a raised bog, observing the sky along with changes in the dynamics of the image. The participants performed the exercise in a stationary manner, paying attention to their breathing and body sensations from contact with nature. The second activity was performed during a slow, silent walk in the same terrain for a distance of about 300 m. The participants were instructed to observe movement in nature.

Morning exercises: lying on mats near a pond in favourable weather conditions with a natural sound background (various species of frogs and birds). The participants were asked to breathe freely and concentrate their attention on the sounds coming from the surroundings and on their feelings without judging.

Data collection

After the workshops, the participants were interviewed about what they had experienced during the activities. The data material consisted of semi-structured interviews. All the study subjects agreed to participate in the interviews and consented to the publication of results. Two researchers conducted the open-ended interviews, which were designed in advance, writing down in quotations the answers provided by the participants to the following questions: "What were your feelings and impressions about and after each part?"; "Do you observe any similarities or differences between these methods?"; "How do you find the combination of these three methods?".

Data analysis

Qualitative interviews were conducted and analysed using the interpretative phenomenological method according to the procedure proposed by Smith and Osborne (2008) and Smith et al. (2009). Leading topics and issues were distinguished; related observations were categorised and grouped thematically, sometimes using quotes.

RESULTS

Upon the completion of all ecotherapeutic sessions, the participants reported increased feelings of relaxation, release of tension, increased awareness, and aroused curiosity.

Forest therapy

1. At the sensory level: more attention paid to the senses which were less used in everyday life; higher intensity of sensory experiences.
   Conscious experiencing of the forest, receiving more stimuli from the natural environment.
   Experiencing the activity of all senses at once.
   Switching to the sense of hearing from seeing, sensitising the smell, experiencing the scents of the environment, and paying attention to them.
2. At the emotional level: peace, relaxation, reduction of inner tension.
   A distraction from the inner malaise and difficult emotions experienced every day, a sense of relief.
3. At the experience level: a completely new experience, regardless of whether or not the participants previously spent a lot of time in the natural environment.
   Experiencing different aspects of the environment.
   Being in the forest alters the experience and introduces a distinct quality despite previous encounters with nature.
   A fresh experience even though you are in the forest again, you have the impression of experiencing something new, despite the repetition – as if for the first time.
   Greater stimulation of the imagination.
4. Reflections and associations: the need to reflect on internal experiences and share conclusions.
   The outside world penetrates the inner being and vice versa, some of the emotions permeate into our understanding of the environment. Integration of the external and internal reality.
   Forest as a source of change, inspiring to make decisions, reflect on important topics, activate unconscious layers, giving a new perspective.
   With the sense of rhythm, the cyclical nature of the circle of life, acceptance of changes, we are part of the world.
5. At the relations level: the participants observed that forest therapy supports interpersonal relationships and fosters more respect for nature.

Therapeutic ornithology

1. At the sensory level: expansion of the field of sensory perception by auditory sensations related to focusing attention on bird songs and distinguishing bird voices among many heard simultaneously. There was also one account of experiencing sensory synaesthesia – singing/movement.
   It was an interesting experience, capturing the characteristic elements in a symphony, an attempt to recognise specific voices.
   Listening to birds singing caused pleasant feelings in the body – relaxation, a calming effect.
2. At the emotional level: strong positive emotions while identifying bird species and watching them. The terms used: pleasure, happiness, joy, enthusiasm, positive feelings related to discovering bird species, observing their colours, behaviour, and listening to their singing.
3. At the cognitive level: aroused cognitive needs, curiosity, motivation to learn about birds, willingness to discover and explore. A fascination with birds in a person who had never paid attention to them previously.
   I feel happy as if we were children. You look at a bird, you manage to recognise it, and you want more. Children are curious, and it was similar here.
   It awakens the desire for more – when I listen to bird song, I imagine the appearance of the bird I hear. I want to know its characteristics.
   The desire to discover, the feeling of gaining subsequent degrees of initiation.
4. At the language level: discovering a new lexicon: birds, behaviours, and anatomical names.
   We don't see what we never named before. The language of the guide's story opens up a different world – more details are noticed, as you learn different terms. […] Talking about it plays an important role, but it also trains the mind to identify different sounds and to describe them.
5. At the emotional state level: a calming, relaxing effect, peace on the mental level and physical sensations (pleasure).
   Birdwatching almost immediately, or at least very quickly, "distracts" you from experiencing and focusing on yourself, as you to shift your attention to the external reality.

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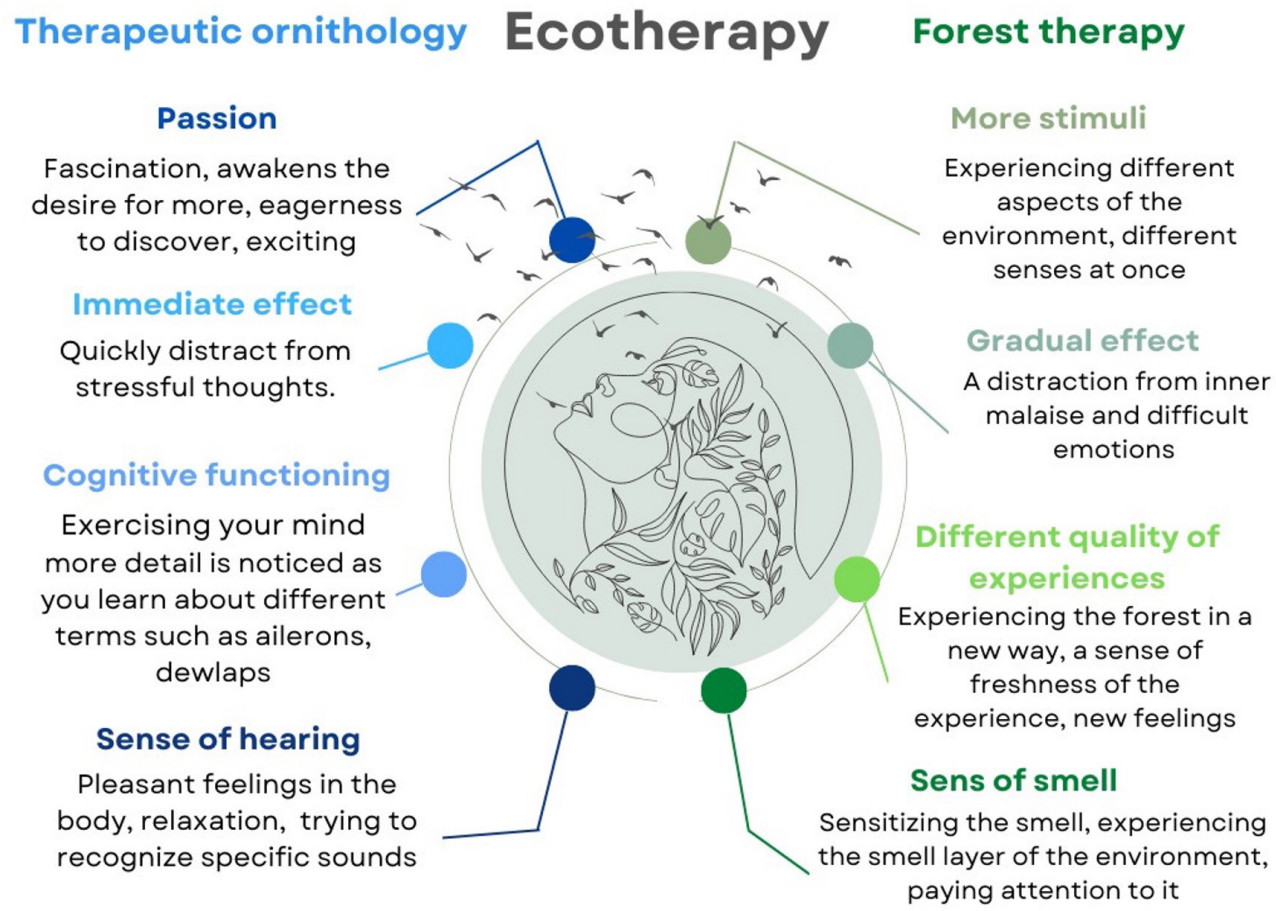

Fig. 4. Visual representation of the parallel effects of therapeutic ornithology and forest therapy

This dimension was described as detachment from internal problems by focusing on external stimuli, in the surroundings. One of the dimensions of this scope was the feeling of leaving issues behind and returning to them "with a fresh perspective".

6. In the context of memories and associations: like in childhood, enjoying the process of discovery and learning about the surrounding world, perceiving beauty.

Similarities or differences between therapeutic ornithology and forest bathing and the combination result:

- *Both activities go hand in hand and complement each other.*
- *Both increase the practice of mindfulness, help you relax, slow down, and redirect your attention from everyday problems to the pleasure of observing nature.*
- *Both help to catch a different perspective.*
- *Both sharpen the hearing and direct attention to sounds.*
- *Forest bathing – more attention inside, slower process; therapeutic ornithology – more attention outside, faster process* (Figs. 3, 4).

Nature-based mindfulness

Three of the participants reported that the activities were challenging because of mosquitos or being in a group. Most observed positive impacts including the possibility to slow down, stop, and rest. *Nature gives great opportunities to exercise mindfulness so that everyone can choose something for themselves, with which they will be able to identify and which will suit them.* The majority of the participants perceived nature-based mindfulness as a complementary method to the previous two.

DISCUSSION

The relaxing potential of nature immersion seems to be an essential protective factor. It can be effective in relieving anxiety symptoms and intrusive thoughts in people with unresolved problematic life situations (Berman et al., 2012) and chronic fatigue syndrome (Sonntag-Öström et al., 2015) as well as working people with depressive tendencies (Furuyashiki et al., 2019).

Sometimes the idea of immersing yourself in nature may seem challenging and require an additional motivation, a positive stimulus. One of such arguments is birding, the most dynamically developing outdoor hobby (Cox and Gaston, 2018) supporting people's health (Murawiec and Tryjanowski, 2020; Randler et al., 2022; Tryjanowski et al., 2022). Forest therapy and mindfulness can serve as supportive

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interventions in times of unexpected crises (Timko Olson et al., 2020). They can be used separately, but also together as an effective combination to deal with inner tension and anxiety, which could be observed in our study. They could also be included in weekly or even daily routine to uphold improved levels of stress resilience and general well-being or help in the process of regeneration (PeConga et al., 2020). City parks and nearby city forests seem to be good places for all three activities.

Several limitations in this study should be acknowledged. First, the study had a relatively small sample size and the study duration was quite short. Second, the subjects declared that their health condition was stable and good enough to participate in the program, but they had not been previously examined psychiatrically, so their actual mental state before the study was unknown. Lastly, no data on co-morbidities were obtained. Nevertheless, this area of research seems promising. Further studies on larger samples, perhaps expanded to include psychological scales and physiological measurements of stress and relaxation, are needed.

CONCLUSIONS

While the focus of forest therapy may be directed more towards the inside of the psyche, therapeutic ornithology directs attention more strongly to the outside. Both techniques are somewhat similar because they are based on mindfulness and make use of the senses, but they are distinct in their means of action, and at the same time complementary. Combining forest therapy, nature-based mindfulness, and therapeutic ornithology during the workshop offered various methods of stress reduction to a wide group of people with different needs.

Conflict of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Author contributions

Original concept of study: KS, SM. Collection, recording and/or compilation of data: KS, SM. Analysis and interpretation of data: KS, SM. Writing of manuscript: KS, SM, PT. Critical review of manuscript: KS, SM, PT. Final approval of manuscript: KS, SM, PT.

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