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Review Article

From Tradition to Science: Unravelling the Mysteries of Wet Cupping Therapy for Modern Healthcare

Ismail Dergaa, Ph.D [1,2,3,*], **Helmi Ben Saad, M.D, Ph.D** [4,5,6]

[1] Primary Health Care Corporation (PHCC), Doha, Qatar
[2] Research Unit Physical Activity, Sport, and Health, UR18JS01, National Observatory of Sport, Tunis 1003, Tunisia
[3] High Institute of Sport and Physical Education, University of Sfax, Sfax, Tunisia
[4] University of Sousse, Farhat HACHED Hospital, Service of Physiology and Functional Explorations, Sousse, Tunisia
[5] University of Sousse, Farhat HACHED Hospital, Research Laboratory LR12SP09 «Heart Failure», Sousse, Tunisia
[6] University of Sousse, Faculty of Medicine of Sousse, laboratory of Physiology, Sousse, Tunisia

*** Corresponding Author:** Dr. Ismail Dergaa, Ph.D., M.Sc., Primary Health Care Corporation (PHCC), Doha, P.O. Box 26555, Qatar. Email: Phd.dergaa@gmail.com; idergaa@phcc.gov.qa

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Background: Wet cupping therapy (WCT) is an ancient therapeutic practice involving suction cups and controlled incisions. It is widely used in traditional and complementary medicine systems for treating diverse conditions. This narrative review aimed to summarize the current evidence on the effects of WCT and provide an overview of its therapeutic potential.
Methods: A comprehensive literature search was conducted using PubMed, Embase, and Scopus databases to identify studies published from January 2000 to March 2023, evaluating the therapeutic effects of WCT in various health conditions. The retrieved studies were critically reviewed and analysed to identify key findings.
Results: The findings suggest that WCT has potential therapeutic effects across different health conditions. It has been reported to alleviate pain, reduce inflammation, modulate the immune response, improve blood circulation, and enhance overall well-being. Efficacy of WCT has been demonstrated in managing musculoskeletal disorders (e.g., low back pain, rheumatoid arthritis), respiratory conditions (e.g., asthma, chronic obstructive pulmonary disease), and mental health issues (e.g., anxiety, sleep quality). Additionally, WCT has shown promise as a complementary therapy for metabolic disorders, cardiovascular diseases, and infertility.
Conclusion: WCT exhibits potential benefits as a traditional therapeutic modality. Accumulated evidence suggests it can provide symptomatic relief, improve quality of life, and complement conventional treatments. However, it is important to acknowledge the limitations of the reviewed studies. The absence of a standardized cup placement protocol hinders determining optimal placement for specific health conditions. Further investigation considering anatomical descriptions and individual variations is necessary to enhance treatment effectiveness. Moreover, the underlying mechanisms of WCT's therapeutic effects are still hypothetical, warranting more direct and accurate evidence. Future research should focus on elucidating these mechanisms to establish a comprehensive understanding of WCT's effects.
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INTRODUCTION,

Wet cupping therapy (WCT), also known as "*Al-hijamah*" in Islamic medicine, is an ancient therapeutic technique that has gained widespread recognition and utilization across different cultures and regions (1). With its roots in traditional and prophetic medicine, WCT involves the application of partial vacuum cups on specific areas of the body, followed by inquisition on the skin with a blade and subsequent suction with the cup again (1). This therapeutic modality has attracted attention due to its potential health benefits and its integration into contemporary healthcare practices. The practice of WCT has been utilized for centuries to manage various health conditions, highlighting its multifaceted effects on the body. Among its notable benefits, WCT has demonstrated efficacy in alleviating chronic pain, including musculoskeletal pain, lower back pain, and arthritis (2). This therapy has been reported to reduce pain severity, improve joint mobility, and enhance the overall quality of life (QoL) for individuals suffering from these conditions (2, 3). In addition to pain management, WCT has shown promising effects in addressing inflammatory disorders. Studies have highlighted its effectiveness in reducing inflammation and modulating inflammatory markers in patients with

conditions such as rheumatoid arthritis (4, 5), carpal tunnel syndrome (6, 7), and cellulitis (8). The sequential process of WCT, involving suction, inquisition, and subsequent suction, facilitates the excretion of inflammatory mediators, leading to reduced tissue inflammation and enhanced healing (5, 9). Furthermore, WCT has been explored as a complementary therapy for cardiovascular health. Research has indicated its potential in managing arterial hypertension by regulating blood pressure and improving blood circulation (5, 10). The unique process of WCT, incorporating the use of suction cups and inquisition on the skin, may enhance the filtration process, facilitating the excretion of causative pathological substances associated with arterial hypertension (10-13). Additionally, WCT has demonstrated a favourable impact on lipid profiles, particularly in reducing total cholesterol levels, thereby promoting cardiovascular well-being (14, 15). Other noteworthy effects of WCT include its potential in managing neurological conditions, such as migraine and vertigo. Clinical studies have shown significant reductions in the frequency and intensity of migraine attacks following WCT (16-18). The sequential steps involved in WCT are believed to regulate blood flow, reduce inflammation, and promote healing, contributing to its effectiveness in managing these conditions (5, 10). Furthermore, WCT has been reported to improve symptoms of vertigo (19) and enhance balance, possibly through the promotion of blood circulation (5).

Despite these promising findings, a comprehensive understanding of the mechanisms underlying the therapeutic effects of WCT is still evolving. The current body of evidence encompasses a combination of clinical studies, case reports, and traditional knowledge. Further research, including rigorous clinical trials and systematic reviews, is warranted to investigate the efficacy, safety, and optimal application of WCT across various health conditions.

Thus, the aim of this study was to provide a comprehensive overview of the current scientific understanding of WCT, including its historical background, potential mechanisms of action, and clinical applications. Through a thorough narrative review of the available literature, we will discuss the findings from relevant studies, focusing on the therapeutic effects of WCT for various health conditions. By consolidating the existing evidence, this study aimed to contribute to the growing body of knowledge on WCT and stimulate further research in this field.

METHODS

This narrative review methodology involved a comprehensive search of scientific articles, case reports, and clinical studies on WCT and its therapeutic effects. The search was conducted in multiple electronic databases, limited to English articles published between 2000 and 2023. The findings were synthesized and presented in a narrative format, highlighting key findings and discussing the strengths and limitations of the evidence.

RESULTS AND DISCUSSION

Through a comprehensive review of the existing literature, we aimed to shed light on the diverse benefits of WCT in managing various health conditions. Specifically, we will explore its effectiveness in pain management, addressing inflammatory disorders, promoting cardiovascular health, managing neurological conditions, improving sleep quality, enhancing fertility, and influencing certain blood parameters. Table 1 summarizes the effects of WCT on various health conditions. Table 2 summarizes the WCT mechanisms of action of and their related benefits.

Pain Management

Pain management is one of the key areas where WCT has shown promising results. Several studies have demonstrated the effectiveness of WCT in reducing pain severity and improving the overall well-being of individuals suffering from various types of pain, including musculoskeletal pain, lower back pain (3, 20), and arthritis (21).

The potential mechanisms by which WCT influences pain management are multifaceted. First, the application of suction cups on specific areas of the body creates a negative pressure that stimulates blood flow to the affected region. This increased blood circulation helps to alleviate pain by promoting tissue oxygenation, reducing muscle tension, and facilitating the removal of metabolic waste products (22). The improved blood flow also aids in the delivery of essential nutrients and anti-inflammatory factors, which contribute to the healing process and provide pain relief.

Additionally, WCT involves the inquisition on the skin with a blade, followed by subsequent suction with the cup. This process is believed to trigger a localized inflammatory response, leading to the release of endogenous analgesic substances. These substances, such as endorphins and enkephalins, act on the body's opioid receptors to produce analgesic effects and reduce pain perception (22, 23).

Moreover, WCT exerts its pain-relieving effects through the modulation of the autonomic nervous system. The suction and inquisition actions on the skin stimulate sensory receptors, which in turn activate the parasympathetic nervous system. This activation promotes relaxation, reduces stress levels, and induces a state of calmness, which can alleviate pain and enhance overall well-being (23).

Table 1. Summary of the Effects of Wet Cupping therapy (WCT) on Various Health Conditions

Health condition	Effects of WCT
Pain management	Reduces pain severity in musculoskeletal pain, lower back pain, and arthritis Stimulates blood flow to promote tissue oxygenation and nutrient delivery Releases endogenous analgesic substances Modulates the autonomic nervous system for relaxation and stress reduction Exhibits anti-inflammatory properties
Inflammatory disorders	Reduces inflammation by promoting excretion of inflammatory mediators Modulates immune response and enhances immune function Improves blood circulation and facilitates removal of inflammatory byproducts Exhibits antioxidant properties
Cardiovascular health	Regulates blood pressure by enhancing blood circulation and vasodilation Promotes excretion of causative substances for hypertension Improves lipid profiles by reducing total cholesterol levels Enhances endothelial function and vascular health
Neurological conditions	Alleviates migraine symptoms by improving blood flow to the brain and reducing neurogenic inflammation Potentially reduces vertigo symptoms through modulation of blood flow and pressure within the inner ear
Sleep and Psychological Well-being	Improves sleep quality and parameters, leading to better overall well-being Alleviates pain and enhances quality of life in migraine patients
Impact on Fertility	Preliminary evidence suggests potential effects on fertility, particularly in women with premature ovarian failure Increased pregnancy rates observed after WCT treatment May influence reproductive hormonal regulation and balance

Table 2. Mechanisms of action of wet cupping therapy (WCT) and their related benefits.

Mechanism	Benefits
Improved blood circulation	The suction stimulates blood vessels, leading to vasodilation and improved blood flow to the area This increased circulation can help deliver more oxygen and nutrients to the tissues, promoting their overall health and function
Regulation of energy flow	In traditional Chinese medicine: WCT is often associated with the concept of "qi" or vital energy The therapy is believed to influence the body's energy flow through the following 2 mechanisms: *Acupuncture points stimulation*: Cupping is thought to stimulate specific acupuncture points on the body. These points are believed to be connected to energy pathways or meridians. By stimulating these points, cupping is believed to help balance the flow of energy and restore harmony within the body. *Meridian activation*: According to traditional Chinese medicine, meridians are channels through which vital energy flows. Cupping is believed to activate these meridians, helping to regulate energy flow and alleviate imbalances or blockages that may contribute to various health conditions
Removal of waste products,	By increasing blood flow, WCT may facilitate the removal of waste products, such as metabolic by products and toxins, from the tissues. The enhanced circulation can help flush out these substances, promoting detoxification
Removal of toxins	Advocates of WCT suggest that the procedure aids in the elimination of toxins from the body The process involves 2 steps: *Bloodletting*: During the therapy, small incisions or pricks are made on the skin. This allows for the controlled release of a small amount of blood. This helps to remove stagnant blood, which may contain toxins or impurities *Suction-induced drainage*: The cups create a vacuum effect on the skin, drawing out blood and other fluids, such as lymphatic fluid, from the incisions. This process assists in removing toxins or harmful substances from the body

Furthermore, WCT has been shown to have anti-inflammatory properties. Inflammation plays a crucial role in pain generation and propagation, particularly in conditions such as arthritis. WCT may help to reduce inflammation by promoting the excretion of inflammatory mediators and facilitating tissue healing (23, 24). By reducing inflammation, WCT can help alleviate pain and improve joint mobility in individuals with inflammatory conditions.

Inflammatory Disorders

WCT has been investigated as a potential complementary treatment for various inflammatory disorders, including rheumatoid arthritis (4, 5), carpal tunnel syndrome (6, 7), and cellulitis (8). The application of WCT in these conditions aims to reduce inflammation, alleviate symptoms, and improve overall disease management.

One of the primary mechanisms through which WCT may exert its anti-inflammatory effects is by promoting the excretion of inflammatory mediators. The process of wet cupping, which involves suction and subsequent inquisition on the skin, stimulates the excretion of substances that contribute to inflammation. These substances include pro-inflammatory cytokines, immune complexes, and toxic cellular products (9). By removing these inflammatory mediators from the body, WCT helps to reduce tissue inflammation and promote healing.

Furthermore, WCT may modulate the immune response in inflammatory disorders. Studies have shown that WCT can influence immune function by enhancing the activity of immune cells and regulating the production of cytokines (5, 21, 25). By modulating the immune system, WCT may help restore immune balance and mitigate the excessive immune response seen in inflammatory conditions.

The therapeutic effects of WCT on inflammatory disorders may also be attributed to its impact on blood circulation. The application of suction cups on specific areas of the body promotes blood flow to the affected regions, increasing oxygen and nutrient supply to the tissues. This enhanced circulation can facilitate the removal of inflammatory by products and metabolic waste, supporting the resolution of inflammation and reducing tissue damage (26, 27).

Additionally, WCT has been shown to have antioxidant properties, which can further contribute to its anti-inflammatory effects. Oxidative stress and the production of reactive oxygen species play a significant role in the development and progression of inflammatory disorders. WCT has been found to reduce oxidative stress markers and enhance antioxidant capacity in various studies (28, 29). By reducing oxidative stress, WCT may help to alleviate inflammation and protect tissues from further damage.

Cardiovascular Health

WCT has been explored as a potential adjunctive treatment for cardiovascular conditions, particularly arterial hypertension. Arterial hypertension, or high blood pressure, is a prevalent condition that significantly increases the risk of cardiovascular events such as heart attacks and strokes (29). Studies have suggested that WCT may help regulate blood pressure and improve cardiovascular health.

One of the proposed mechanisms through which WCT may influence blood pressure is by enhancing blood circulation. The suction applied during wet cupping stimulates blood flow to the targeted areas, promoting vasodilation and improving microcirculation (14, 15, 29). This enhanced circulation can help optimize the delivery of oxygen and nutrients to vital organs, including the heart and kidneys, which play crucial roles in blood pressure regulation.

Furthermore, WCT may facilitate the excretion of causative pathological substances that contribute to arterial hypertension. These substances include disease-causing agents, inflammatory mediators, and toxic cellular products (28-30). By promoting their excretion, WCT may help restore the balance of blood supply to organs and reduce the pathological state of hypertension (31).

In addition to blood pressure regulation, WCT has been associated with improvements in lipid profiles, particularly in reducing total cholesterol levels (30). High cholesterol levels are a risk factor for cardiovascular disease, and interventions that can effectively lower cholesterol levels can have significant cardiovascular benefits. WCT may help regulate lipid metabolism and promote the excretion of cholesterol, leading to improved lipid profiles and reduced cardiovascular risk.

Moreover, WCT has been found to enhance endothelial function and promote vascular health. Endothelial dysfunction, characterized by impaired blood vessel function, is a key contributor to the development of cardiovascular diseases. WCT, through its effects on blood circulation and the removal of toxic substances, may improve endothelial function and promote the dilation and relaxation of blood vessels (31). This, in turn, can enhance overall cardiovascular health and reduce the risk of cardiovascular events.

Neurological Conditions

Studies have indicated the efficacy of WCT in managing neurological conditions such as migraine (19) and vertigo (16, 18). Migraine is a common neurological disorder characterized by recurrent episodes of severe headaches, often accompanied by nausea, sensitivity to light and sound, and visual disturbances and vertigo is a symptom characterized by a spinning sensation or dizziness. WCT has been investigated as a potential adjunctive treatment for migraine, and studies have reported positive outcomes.

The mechanism through which WCT may alleviate migraine symptoms is multifactorial. First, the suction applied during wet cupping stimulates blood circulation and enhances the flow of oxygen and nutrients to the brain, which may help alleviate the vasospasms and ischemia believed to be involved in migraine

pathophysiology. By improving blood flow to the brain, WCT may reduce the frequency and intensity of migraine attacks. Furthermore, WCT may have anti-inflammatory effects, which can be beneficial for individuals with migraines. Migraine attacks are associated with neurogenic inflammation and the release of pro-inflammatory mediators in the trigeminal system. The inquisition and suction steps of WCT can promote the excretion of inflammatory substances, potentially reducing neurogenic inflammation and alleviating migraine symptoms. The mechanisms underlying the effect of WCT on vertigo are not yet fully understood, but it may be due to the modulation of blood flow and pressure within the inner ear. The inquisition and suction steps of WCT may help alleviate the pressure on the inner ear and improve blood circulation, leading to a reduction in vertigo symptoms.

Sleep and Psychological Well-being

Sleep plays a crucial role in maintaining overall health and well-being. Disruptions in sleep patterns can have a significant impact on psychological well-being, including mood, cognitive function, and QoL. WCT has been explored as a potential intervention for improving sleep quality (32, 33) and enhancing psychological well-being (34).

WCT not only has the potential to alleviate pain but may also have positive effects on sleep and overall well-being. Sleep quality plays a crucial role in maintaining optimal physical and psychological health, and disruptions in sleep can significantly influence an individual's well-being. Cikar et al. (32) conducted a study to investigate the efficacy of WCT on sleep quality parameters in a healthy population. The results demonstrated that all sleep quality parameters were positively affected after WCT in the healthy subjects. This suggests that WCT may contribute to improved sleep quality, which is essential for overall well-being and functioning. Indeed, this effect may be due to the sequential steps involved in wet cupping, including the inquisition on the skin and subsequent suction, are believed to promote relaxation and improve blood circulation, which may contribute to better sleep quality (32). Additionally, the release of endorphins during WCT may have a calming effect, leading to improved sleep (32, 35).

Furthermore, WCT has been investigated in the context of specific health conditions, such as migraines, which can have a significant impact on individuals' QoL. Kaki et al. (36) conducted a prospective observational study to assess the benefits of wet cupping on pain and health-related QoL (HRQoL) in adult patients with migraine headaches. The results showed a significant reduction in migraine headache pain after WCT, with the visual analogue scale score decreasing from an average of 7 before the procedure to 3 during rest and activity. Moreover, there was a significant improvement in the QoL of patients (36). Their findings suggest that WCT can be considered as a complementary treatment for relieving migraine headache pain and improving the overall QoL of patients.

Impact on Fertility

Limited evidence suggests that WCT may have potential effects on fertility. Although further research is needed, a study demonstrated improvements in fertility-related parameters in women with premature ovarian failure following wet cupping treatment (37). The therapeutic effects of WCT extend beyond pain management and inflammatory disorders. In recent years, there has been growing interest in exploring the potential of WCT in addressing female factor infertility. A pilot study by Abduljabbar et al. (37) aimed to assess the effectiveness of WCT as a treatment for female infertility and its impact on pregnancy rates and the reproductive hormonal profile. The primary outcome measured was pregnancy rates, while the secondary outcome focused on changes in the reproductive hormonal profile. Results indicated that 20.3% of patients became pregnant after WCT treatment, demonstrating a positive effect on achieving pregnancy. Furthermore, the study identified several factors associated with the pregnancy rate. Patients with no dysmenorrhea, a secondary infertility diagnosis, and a history of oral contraceptive pill use showed a higher likelihood of achieving pregnancy after WCT. These findings suggest that WCT may have a beneficial impact on female fertility, particularly in specific subgroups of patients. In addition to the pregnancy rates, the study also observed significant changes in the reproductive hormonal profile before and after WCT therapy. While specific details of these changes were not provided in the study, the findings imply that WCT may influence hormonal regulation and balance, potentially contributing to improved fertility outcomes.

Limitations

This study has some limitations that should be considered when interpreting the results. These limitations can be classified into different categories. First, it is important to recognize that WCT raises ethical concerns among traditional scientists, making it challenging to obtain institutional review board approvals. This limited access to scientific research on

the topic contributes to the scarcity of published studies. In fact, our search on PubMed using the keyword "Wet cupping therapy" on June 12, 2023, yielded only 103 articles. In addition, there are broader limitations associated with cupping therapy manuscripts in general. These include the absence of standardized cup placement protocols, reliance on subjective outcome measures, and limited understanding of the underlying mechanisms. Addressing these limitations can be achieved through larger multi-center studies with standardized protocols, incorporation of objective outcome measures, and further investigation into the mechanisms of action. These efforts would enhance the scientific validity and comprehensiveness of future research in this field. Furthermore, it is worth noting that there is currently no internationally recognized diploma or certification for WCT practitioners. As a result, practitioners often rely on information obtained from medical journals or internet sources without undergoing supervised practice or formal examinations to demonstrate their competence. This lack of standardized training and regulation introduces a potential source of bias in the performance of wet cupping therapy. To overcome these limitations, further investigation is needed, along with the implementation of international guidelines and standards for WCT. Establishing a comprehensive framework that includes educational requirements, practical training, and competency assessments would enhance the quality and safety of wet cupping practice. Additionally, fostering international collaboration and dialogue among experts in the field can contribute to the development of evidence-based guidelines and promote standardized practices. Two specific limitations within the scope of WCT research are the lack of a standardized cup placement protocol and the hypothetical mechanisms of action. The absence of consensus on optimal cup placement locations for specific health conditions hinders progress in this area. Further investigation should focus on identifying precise anatomical sites, taking into account individual variations and considering anatomical descriptions to optimize treatment effectiveness. Moreover, the scientific understanding of the mechanisms underlying the therapeutic effects of WCT is still in its early stages, and there is a lack of direct and conclusive evidence. The proposed mechanisms, such as the removal of stagnated blood, improvement of blood circulation, and modulation of the nervous system, remain largely theoretical. Further research is needed to establish a more accurate understanding of how WCT exerts its effects. By acknowledging and addressing these limitations, we can gain a more comprehensive understanding of the current state of knowledge in WCT. This recognition will guide future research and development efforts, leading to the advancement of WCT as a safe and effective complementary therapeutic modality.

CONCLUSION

This comprehensive exploration of WCT has provided valuable insights into its therapeutic effects across various health conditions. Through a review of the available literature, we have discussed its potential impact on pain management, inflammatory disorders, cardiovascular health, neurological conditions, sleep, fertility, and certain blood parameters. By synthesizing the existing evidence, we have enhanced our understanding of WCT and its potential as a complementary therapeutic modality.

The findings of this study have several practical implications. WCT shows promise as a non-pharmacological approach for pain management, offering potential relief and improved QoL for individuals with chronic pain. It also demonstrates potential in managing inflammatory disorders, with the ability to reduce inflammation markers and alleviate symptoms, providing an additional treatment option for patients with conditions such as arthritis and dermatological disorders. Furthermore, WCT may play a role in regulating blood pressure, improving lipid profiles, and enhancing endothelial function, supporting its integration into cardiovascular care. Additionally, WCT shows promise in addressing certain neurological conditions, particularly migraines, with its potential to reduce pain severity and improve HRQoL. The therapy's impact on sleep and psychological well-being should not be overlooked, as it offers a non-pharmacological option for managing sleep disturbances and promoting mental health. Moreover, preliminary findings suggest that WCT may have a positive impact on fertility in women experiencing infertility, warranting further investigation. However, it is important to acknowledge the limitations of this study, including ethical concerns, limited access to scientific research, small sample sizes, absence of standardized protocols, and the need for further investigation into the mechanisms of action. Overcoming these limitations and expanding the body of scientific research will provide a clearer understanding of WCT and its therapeutic effects. Addressing these limitations and advancing our knowledge of WCT will have practical implications for healthcare professionals and patients. It will inform treatment decisions, offering

evidence-based options for managing various health conditions. Additionally, a deeper understanding of wet cupping therapy's mechanisms of action will allow for targeted and personalized treatment approaches, optimizing its effectiveness and reliability as a complementary therapeutic modality. By investing in further research, overcoming limitations, and fostering international collaboration, we can unlock the full potential of WCT. This will ensure its safe and effective use, provide healthcare professionals with valuable treatment options, and improve patient outcomes. WCT holds promise as a valuable addition to the field of complementary medicine, and continued exploration will contribute to its integration into evidence-based practice.

Declaration of Interest. The authors declare no relevant affiliations or financial involvement with any organization or entity that could influence or be perceived to have a financial interest or conflict of interest regarding the subject matter or materials discussed in this manuscript. This includes employment, consultancies, honoraria, stock ownership or options, expert testimony, grants or patents received or pending, or royalties. Additionally, in accordance with the guidelines of the N Asian J Med (38), we disclose the use of AI assistance during the writing process of this manuscript. ChatGPT, an AI language model developed by OpenAI, was employed to enhance the academic English and improve the clarity and coherence of certain sentences in the text (39). The primary objective of utilizing AI assistance was to ensure a high standard of language proficiency in the manuscript.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Not applicable

AVAILABILITY OF DATA AND MATERIALS

Not applicable

COMPETING INTERESTS

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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AUTHORS' CONTRIBUTIONS

I.D: conception and design.

I.D and H.B.S: analysis and interpretation of the data.

I.D and H.B.S: drafting of the paper.

I.D and H.B.S: revising it critically for intellectual content.

All authors gave their final approval to the version that will be published.

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DECLARATION

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