

Concussion treatment through *baria zasal*: An exploration of Traditional Mongolian Medicine

Orgilbayar Ganbat ^{1,2}, Oyuntugs Byambasukh ³, Tserendagva Dalkh ¹ and Byambasuren Dagvajantsan ^{4*}

¹ International School of Mongolian Medicine, Mongolian National University of Medical Sciences, Ulaanbaatar, Mongolia.

² School of Nursing, Mongolian National University of Medical Sciences, Ulaanbaatar 13270, Mongolia.

³ Graduate School, Mongolian National University of Medical Sciences, Ulaanbaatar 14210, Mongolia.

⁴ Department of Neurology, School of Medicine, Mongolian National University of Medical Sciences, Ulaanbaatar 13270, Mongolia.

* Correspondence: byambasuren@mnums.edu.mn; Tel.: +976 99011455

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ABSTRACT: There is no specific treatment for concussion in modern medicine; existing treatments are limited to resting and restoring cognition. For Mongolians, seeking concussion treatment from a *bariachi*, an advanced practitioner of the *baria zasal* traditional massage therapy, is very common. The *baria zasal* technique has been passed down the generations for millions of years, keeping with the Mongolian nomadic culture and way of life. However, this Mongolian treatment is little known or researched internationally. Due to the lack of literature on this subject, conducting a meta-analysis or systematic review was impossible. We reviewed the literature published in Mongolian about this technique. We also searched articles published from 1 January 1921 to 20 June 2021 in PubMed using "concussion", "baria zasal", and "Bariachi" keywords. Although informal observation indicates this is a commonly sought treatment among patients, there are very few published scientific articles about the practice outside the realm of cultural anthropology. This may be due to a few reasons: the informal, semi-religious setting in which the treatment takes place makes it difficult to conduct scientific field research; concussion is a mild traumatic brain injury, making it impossible to identify changes in the brain as a result of the treatment using imaging methods and therefore difficult to verify; and lastly, *baria zasal* is generally uncontested as a treatment even by Mongolian medical professionals, therefore it has not been the subject of empirical debate. Moreover, it is not classified under a specific system, each *bariachi* having its technique. As *bariachis* do not receive formal training, their treatments often depend on instincts, natural talents, and personal abilities. Therefore, it is recommended to study the techniques of *baria zasal* of concussion to explain its enduring popularity in Mongolia and to ascertain how it interacts with standard western medical treatment.

Keywords: concussion; *bariachi*; *baria zasal*; Traditional Mongolian Medicine;

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1.0 INTRODUCTION

A concussion is a mild traumatic brain injury. It is impossible to diagnose by imaging diagnostic tools. At the cellular level, it induces diffuse axonal damage and the development of nerve fibre oedema ([Li et al., 2010](#); [Rose et al., 2015](#)) although the symptoms of the concussion usually disappear in a few days ([Eisenberg et al., 2014](#); [Howell et al., 2016](#)). There is no specific treatment for concussion in modern medicine; existing treatment is limited to resting and restoring cognition ([Schneider et al., 2017](#)). Nowadays, if the patients are experiencing any kinds of symptoms and even it lasts only for a short time, it means inhumane ([Brown et al., 2014](#)). Therefore, it is vital to research alternative methods of distress alleviation.

For centuries, Mongolians have used traditional methods (treatments), known as Traditional Mongolian Medicine (TMM) to treat a variety of diseases ([Bold, 1989](#); [Gerke, 2004](#); [Sodnompilova & Bashkuev, 2015](#); [Tsybikova et al., 2019](#)) is well adapted to the nomadic lifestyle of Mongolian people, severe climatic conditions, and dietary conditions. In the context of a nomadic lifestyle, concussions and fractures are common due to falling from horses or colliding with livestock. Among TMM, a widely popular method is *baria zasal*: vernacular bone-setting and cranial massage, as practised by a traditional healer called a *bariachi*. The words *baria* (бариа) means both "to come into contact with" or "massage". The other word element, *zasal*, is an inflection of *zasah* (засах) which means "fixing" as well as "correcting". *Baria zasal* and related traditional Mongolian healing methods have attracted the attention of some non-Mongolian cultural anthropologists. However, there has been no overview of Mongolian medical- and scientific-research on the *baria zasal*, a knowledge gap that this article seeks to fill.

2.0 LITERATURE SEARCH

Traditional Mongolian medicine (TMM) has rarely been promoted around the world or written internationally. Unlike some other vernacular Asian medicine, traditional Mongolian medicine is rarely practised across Mongolian state borders. As such, it has attracted little attention from international scholars. Thus, the possibility of conducting this research according to the systematic review or meta-analysis methodology was limited. We overviewed the written books and articles published in Mongolian about this technique. We also searched articles in PubMed registered journals using the following keywords: "concussion", "*baria zasal*" and "*Bariachi*". The

collected information was published in between 01 January 1921 and 20 June 2021.

3.0 CONCUSSION TREATMENT THROUGH *BARIA ZASAL*

Baria zasal has been passed down through generations for millions of years due to the Mongolian nomadic culture and way of life. When the time, TMM developed rapidly in the 7th, 12th, and 16th centuries, diagnosis and treatment of concussions (*Bariachi* and *Baria zasal*) were written in historical literature ([Bold, 1989](#); [Dagvatseren, 1989](#)). In 1921, after the Mongolian People's Republic was declared, relations with Russia (Soviet Union) intensified, leading to the introduction of modern medicine into the country. As western medicine spread, the use TMM decreased ([Bold, 1989](#)). After the transition to democracy in Mongolia in 1990, the practice of TMM was revived ([Bernstein et al., 2002](#); [Bold, 1989](#)). The patient's personal beliefs influence the decision made between TMM and Western medicine. Although western medicine is preferred for some diseases, it has been proven that *Baria zasal* is preferred for concussions among Mongolians. Especially in the case of children under five years of age, parents often go to the *bariachi* to have concussions treated. The reason includes that the treatment is quick and easy, and patients report that the symptoms will immediately disappear after the treatment ([Goldin, 2012](#)).

No detailed study of therapeutic mechanisms through *baria zasal* in concussion treatment was found in PubMed indexed journals. Since concussion is a mild traumatic brain injury, we assume that it is difficult to determine the mechanisms of the *baria zasal* method at the cellular level, making results difficult to report. A study involving 94 people with concussion treated through *baria zasal* were tested before and after treatment via laboratory examinations ([Dolgormaa, 1990](#)). Before the treatment, the number of leukocytes and lymphocytes in the blood was elevated, and haemoglobin level was decreased. These values returned to normal after *baria zasal*. They also measured cerebrospinal fluid pressure before and after treatment; as expected, there was increased pressure in people with concussions whereas a significant decrease after using *baria zasal* treatment. Thus, a possible explanation for the therapeutic mechanisms of *baria zasal* in the treatment of concussion is an improved blood flow of the brain and the general body circulation.

Worldwide, there are several alternative treatments for concussion, such as massage. However, it is difficult to compare with any other methods because *baria zasal*

cannot be constricted within a specific system and each *bariachi* uses a different method. It has retained its empirical characteristics and have never been adopted into neighbouring countries ([Dagvatseren, 1989](#)). Other scientists also conclude that *baria zasal* of concussion is the only treatment available in Mongolia ([Bold, 1989](#); [Dagvatseren, 1989](#); [Dolgormaa, 1990](#); [Sodnompilova & Bashkuev, 2015](#); [Tsybikova et al., 2019](#)). Scientists also found that the uniqueness of Mongolian *baria zasal* for concussion from other folk medicines. For instance, in Tibetan medicine, which is quite similar to TMM, practitioners use calm methods to treat concussion while Mongolians use a kind of vibration (shaking head) in combination with massage for the treatment ([Bold, 1989](#); [Sodnompilova & Bashkuev, 2015](#)). In other words, some *Bariachis* believe that concussion can be treated by shaking the head forward and backwards. Finally, *baria zasal* is more complicated than other alternative methods used to treat concussions. Therefore, there is a need to study and profile the practitioners' qualifications as well as their methods and techniques used in treating concussions.

4.0 CONCUSSION HEALERS (BARIACHI) AND THEIR METHODS

As mentioned above, *Bariachi* is an advanced practitioner of the *baria zasal*. Most *Bariachis* are not formally trained, and they practise *baria zasal* often based on their instincts, natural talents and abilities ([Bold, 1989](#); [Dagvatseren, 1989](#); [Dolgormaa, 1990](#)). Thus, some *bariachis* are not trained medically. However, not any TMM practitioner can perform *baria zasal* or treat concussions. Therefore, only a few TMM practitioners ended up becoming concussion healers. However, the reason for this has not yet been explained. Therefore, more research needs to be carried out to answer various pertinent questions such as what techniques are used in *baria zasal* that make them different from regular massage therapists?

As we mentioned above, each *bariachi* has their own techniques to heal concussions. In the literature, we found 13 most common concussion *baria zasal* techniques ([Dagvatseren, 1989](#); [Dolgormaa, 1990](#)). Almost all types of *baria zasal* include massages ("baria"). But some *baria zasal* techniques combine with other elements, which is called *dom zasal*. Some *bariachis* treat concussions using only the *dom zasal* method ([Bold, 1989](#)). These *dom zasal* techniques make

the *baria zasal* more empirical. While some *dom zasal* cannot be explained scientifically others have scientifically-based explanations. For example, one *dom zasal* technique involves firing off a pistol during difficult labour. The sudden, startling sound induces relaxing of the cervix ([Bold, 1989](#); [Dagvatseren, 1989](#)). One *dom zasal* method to treat concussion is for the patient to bite on a wooden chopstick while a ceramic bowl filled with millet rice and wrapped in cotton gauze is placed upside-down on top of the patient's head. Next, either end of the chopstick in the mouth of the patient is tapped with another wooden chopstick. This is one example of a *dom zasal/baria zasal* method that might induce a placebo reaction in adults ([Jagan et al., 2019](#)). Due to the lack of empirical research into the TMM itself, their effectiveness might be explained in terms of the trust that the patients place on the practitioner or solely the placebo effect ([Gerke, 2004](#)). Furthermore, there is a solid religious affiliation in TMM, including *baria zasal* and *dom zasal* ([Bold, 1989](#)). However, a study found that the effectiveness of *baria zasal* concussion treatment was higher than that of placebo treatment ([Ganbat et al., 2021](#)). This supports that the *baria zasal* treatment needs to be investigated with science-based disciplines.

5.0 CONCLUSIONS

We found that concussion treatment by *baria zasal* is not classified under a specific system. Individual *bariachi* deploys a wide range of techniques to treat concussions as they have not been formally trained, and practise based on their instincts, natural talents, and abilities. Therefore, it is recommended to study their techniques in further detail to draw up a scientifically based explanation for the apparent success of their treatment. It also needs to be studied in conjunction with other science-based disciplines, such as biophysics, biochemistry, psychology, and anthropology. For future research, more scientific approach to study concussions by using modern technology to investigate the effectiveness of *bariachi* healers should be performed.

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