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RESEARCH ARTICLE

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Impact of Gold Needle Therapy on *mGo-rlung* (vertigo) symptoms: an observational study

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ABSTRACT

Introduction: Gold Needle Therapy is regarded as a gold standard treatment for *mGo-rLung* (vertigo) in Bhutanese Traditional Medicine. However, evidence supporting impact of Gold Needle Therapy in treating *mGo-rLung* remains limited. This study, therefore assessed the impacts of Golden Needle Therapy in alleviating symptoms of *mGo-rLung* in a routine traditional medicine practice setting in Bhutan.

Method: Data for this longitudinal observational study was collected at National Traditional Medicine Hospital in Thimphu. A total of 193 patients meeting the diagnostic criteria for *mGo-rLung* were selected. However, 11 participants dropped out, resulting in a final analysis of data from 182 participants. Outcomes were measured using Dizziness Severity Index (DSI), Visual Analogue Scale (VAS) and Insomnia Severity Index (ISI).

Results: Out of 182 participants, 104 reported severe dizziness in DSI on Day 0. On day 7, only three participants reported severe dizziness. Similarly, 50 and 30 participants reported moderate dizziness on Day 7 and Day 21, respectively. The loudness of tinnitus, assessed using the VAS, showed a reduction in mean score (±SD) from 5.08 (±1.23) on Day 0 to 3.52 (±1.61) on Day 7, further down to 3.20 (±1.80) on Day 21, with p <0.001. Initially, 54 participants reported "severe insomnia" on ISI, while no participant reported "severe insomnia" on Day 7 and Day 21.

Conclusion: This study indicates that Gold Needle Therapy help reduce dizziness, tinnitus and insomnia among patients with *mGo-rLung*.

Keywords: Bhutanese Traditional Medicine; Dizziness; Gold Needle Therapy; Insomnia; Tinnitus; Vertigo

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INTRODUCTION

Vertigo and dizziness are common presenting complaints in emergency departments and outpatient clinics, accounting for approximately 15 – 20% of adult cases annually [1]. Vertigo is the perception of one's body, the environment, or both moving, in the absence of any actual movement [2, 3], and is often accompanied by secondary symptoms such as cold sweats, nausea, and vomiting. The causes of vertigo are multi-factorial and may include vestibular, neurological, infectious, or vascular origin [2]. Vertigo is broadly classified into central and peripheral types [2]. Although the lifetime prevalence of dizziness and vertigo is 20 – 30%, with a one-year prevalence of vertigo estimated at 4.9% [4], the burden of ver-

tigo is often under-reported due to the unpredictability of attacks and the nature of the condition [3]. Vertigo is not fatal or life-threatening, however, it significantly impacts the quality of life, interferes with daily living activities, and increases the risk of fall, which may lead to morbidity and mortality [5].

Various treatments are available for vertigo depending on its cause, including medication, physiotherapy, psychotherapy, and in some cases surgical interventions [3]. For example, acute vestibular neuritis is treated with corticosteroids, Meniere's disease with high-dose, long-term betahistine, and benign paroxysmal positional vertigo with physiotherapy [3]. Given the multi-factorial causes of vertigo, patients often turn to alternative, complementary and traditional medicine as well. Treatment approaches vary by country, as traditional medicine practices are influenced by cultural, religious, philosophical and social attributes. For example, *Yokukansan*, a traditional Japanese herbal medicine, is used to treat vertigo in Japan [6]. In Traditional Chinese Medicine, *Linggui Zhugan Decoction*, when combined with allopathic medicine, has been found more effective in treating peripheral vertigo than allopathic medicine alone [7].

According to Bhutanese Traditional Medicine, *mGo-rLung* results from the imbalance of *rLung*, a humour associated with the decline of positive energy in the brain and nerve [8]. Disturbance of *rLung* energy in the head results in symptoms such as giddiness, tinnitus, insomnia, and nausea. Additionally, pulse reading may appear flattened, empty or irregular [9]. Treatment of *mGo-rLung* (loosely translated as vertigo) involves traditional medicines, dietary and lifestyle modifications, as well as external therapies such as massage, moxibustion, Gold Needle Therapy, *Sorig* Yoga, breathing exercises, meditation, *sNum-tsuk* (oil application) and acupuncture [10]. Although Gold Needle Therapy is considered the gold standard for treating vertigo in Bhutanese Traditional Medicine, there are no existing studies on its effectiveness. This paper aims to assess the impact of Gold Needle Therapy in alleviating the symptoms of *mGo-rLung*.

METHODS

Study Design

This was an observational study, conducted over one year from September 2020 through August 2021.

Setting

Bhutan is a landlocked country located between India and China, with a population of approximately 0.7 million. Both allopathic and traditional medicine coexist within the country's state-funded healthcare system. As of 2024, there were 81 traditional medicine units co-located with the allopathic hospitals across Bhutan. This study was conducted at the National Traditional Medicine Hospital in Thimphu.

Study population

Using convenience sampling, we recruited patients undergoing Gold Needle Therapy for *mGo-rLung* at National Traditional Medicine Hospital. We included the participants aged 18 years and older who visited the National Traditional Medicine Hospital and met the diagnostic criteria of *mGo-rLung*. However, patients receiving other therapies for *mGo-rLung*, those with inner ear disorders and history of allergy to heat or gold were excluded from the study. A total of 193 participants were enrolled in the study; however, nine were lost to follow-up and two withdrew. Complete data set were available for 182 participants.

Data collection procedures

The Principal Investigator collected the data using a questionnaire, gathering information on participants' socio-demographic profile, dietary habit, behavioral and clinical history. Literate participants completed the questionnaire independently, while the Principal Investigator assisted illiterate participants. Follow-ups were conducted at seven and twenty-one days.

We used Dizziness Severity Index (DSI) to assess dizziness, Visual Analogue Scale (VAS) to measure tinnitus and the Insomnia Severity Index (ISI) to evaluate insomnia. The DSI consists of five components of dizziness; none, loss of balance, dizziness while moving the head, feeling of floating, light-headedness and nausea. Participants rated each component from 0 to 4 (0 = none, 1 = mild, 2 = moderate, 3 = severe and 4 = very severe). However, we could not find studies on the reliability and validity of this tool in measuring severity of dizziness.

Tinnitus severity was self-reported by participants using the VAS. Participants marked their perceived severity of tinnitus on a 100-millimeter scale, which the Principal Investigator measured with a ruler. Four components of tinnitus – loudness, an-

noyance, distress, and coping ability – were rated by participants. VAS is a valid and reliable screening tool for assessing tinnitus [11].

Insomnia was measured using a seven-item questionnaire on subjective sleep qualities, including symptom severity, satisfaction with sleep patterns, interference of insomnia with daily functioning, how noticeable insomnia is to others, and distress caused by the sleep problems. The total score ranges from 0 to 28, with the following interpretations: 0 – 7 = "not clinically significant insomnia", 8 – 14 = "subthreshold insomnia", 15 – 21 = "moderate insomnia" and 22 – 28 = "severe insomnia" [12]. The ISI is a reliable and valid tool to quantify perceived insomnia severity [12].

Gold Needle Therapy procedures

Hygiene and disinfection

Only certified practitioners are permitted to perform Gold Needle Therapy. Complying to the Infection Control Guideline, forceps and kidney trays were used during the therapy [13].

Pre-procedure

As part of the pre-procedure protocols for effective treatment, the practitioner took refuge in Medicine Buddha and pantheon of medical deities by reciting the Medicine Buddha mantra (སྨན་བླ་གཟུངས་དང་) and *Metsa Chabdro* (མེ་བཙོན་སྒྲུབས་འགྲོ།) to promote infection prevention and support the patient's quick recovery [14].

Gold Needle therapy

The gold needle was heated for one to two minutes until it turned red, then gently applied to the *Tshoksang*, *Chitshuk*, or *Dud-go* (Figure 1). Only the five marked points in the cross-section area of head were cauterized, with a gap size of a barley grain maintained between the marks.

Time Gap

Subsequent cauterization at the same site cannot be performed immediately and requires a minimum interval of seven days before the next treatment [15]. Although the exact time gap is not specified, the practitioners must observe the wound's surface and decide on follow-up therapies based on clinical judgment [15]. After cauterization, patients were advised to drink only lukewarm water and avoid bathing to prevent complications, including infections [16].

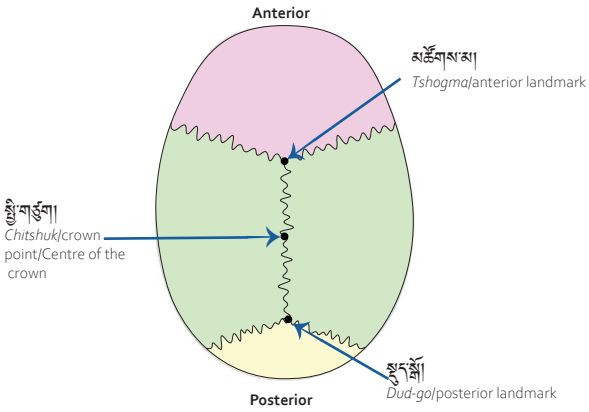

Figure 1. The points of application of Gold Needle on the human head

Data analysis

Continuous variables were summarized as mean and standard deviation, while categorical variables were summarized as frequency and percentages. Paired t-test and one-way repeated measures ANOVA were used to compare means between Day 0, Day 7 and Day 21. P values less than 0.05 were considered statistically significant. Data were entered and analyzed using SPSS (Version 26.0. Armonk, NY: IBM Corp).

Ethics considerations

Ethics approval was obtained from the Institutional Review Board via letter No. INTERIM IRB/PO20/021/449 dated 3 August 2020. Administrative approval was obtained from the Policy and Planning Division, Ministry of Health and the Medical Superintendent, National Traditional Medicine Hospital. Informed consent was taken from the individual participants before the administration of questionnaire.

RESULTS

Socio-demographic profile

Of 182 participants, 138 (75.82%) were female (Table 1), and the largest age group was 30 – 39 years, comprising 36 participants (19.78%). The mean age of participants (±SD) was 48.87 years (±18.11).

The majority of the participants were housewives and farmers, with 72 (39.56%) and 41 (22.53 %), respectively. Among the participants, 105 (57.69%) were illiterate. For Gold Needle Therapy, 37 participants (20.33%) used all the vertigo-cauterization points, while 96 (52.75%) used *Chitsuk* and *Tshog-sang*, and 26 (14.29%) used *Chitshuk* point. Additionally, 12 (6.59%) and 11 (6.04%) participants used *Duedgo* and *Tshog-sang*, respectively

Severity of dizziness

Table 2 shows that a total of 104 participants reported experiencing very severe dizziness on Day 0. However, only three participants reported very severe dizziness on Day 7. Similarly, 108 participants reported moderate dizziness on Day 7, while only 83 participants reported moderate dizziness on Day 21.

Table 1. Sociodemographic profile of participants with *mGo-rlung* treated with Gold Needle Therapy at the National Traditional Medicine Hospital, Bhutan, September 2020 – August 2021

Parameters	n	(%)
Sex		
Female	138	75.82
Male	44	24.18
Age group (years)		
18 – 19	7	3.85
20 – 29	18	9.89
30 – 39	36	19.78
40 – 49	35	19.24
50 – 59	29	15.93
60 – 69	25	13.74
70 – 79	24	13.18
80 years and above	8	4.39
Marital status		
Married	118	64.84
Not married	25	13.74
Divorced	10	5.49
Widow	17	9.34
Living separately	12	6.59
Occupation		
Housewife	72	39.56
Farmer	41	22.53
Private Business	29	15.93
Civil servant	14	7.69
Monk/Nun/*Gomchen*	4	2.20
Others	22	12.09
Literacy status*		
Illiterate	105	57.69
Literate	77	42.31
mGo-rLung points		
Chitshuk (centre of the crown)	26	14.29
Tshog-sang (anterior fontanelle)	11	6.04
Dued-go (occipital fontanelle)	12	6.59
Chitsuk and *Tshog sang*	96	52.75
All points (*duedso -sum*)	37	20.33

*Literate – someone who could read or write Dzongkha; Illiterate – someone who cannot either read or write Dzongkha

Meanwhile, the mean score of dizziness (±SD) reduced to 8.76 (±2.45) on Day 7 from 15.47 (± 1.83) on Day 0, which further reduced to 7.45 (±2.62) on Day 21 with $p < 0.002$ (Table 3).

Tinnitus

The reduction in mean tinnitus score (±SD) from Day 0 to Day 7 and subsequently to Day 21 was statistically significant ($p < 0.002$), as shown in Table 3. For example, the mean VAS score for loudness of tinnitus on Day 0 was 5.08 (±1.23), which decreased to 3.52 (±1.61) on Day 7 and further reduced to 3.20 (±1.80) on Day 21 ($p < 0.002$).

Insomnia

Out of 182 participants, 156 (85.71%) reported having insomnia, with 54 participants (29.67%) experiencing severe insomnia (Table 2). However, on Day 7 and Day 21, none of the participants reported severe insomnia. The mean insomnia score(±SD) was 16.87 (±1.74) at the start of therapy, but this decreased to 10.11 (±1.51) on Day 7 and 7.75 (±2.32) on Day 21 with $p < 0.002$ (Table 3).

DISCUSSION

In this study, *mGo-rLung* patients who underwent three sessions of Gold Needle Therapy experienced a statistically significant reduction in the intensity of dizziness, tinnitus and insomnia.

Although the exact mechanism by which Gold Needle Therapy reduces *mGo-rLung* symptoms is yet to be fully understood, it is hypothesized that the heating effect of the therapy may help alleviate the symptoms. Gold Needle Therapy warms the entire head and brainstem veins, allowing blood to flow more freely [17]. The transformation of thermal energy expands blood capillaries, increasing blood flow to the affected areas [18] resulting in a reduced dizziness. Consistent with these findings, *traden serkhap* (Gold Needle Therapy with moxibustion) has been found effective in treating *mGo-rLung* symptoms, including tinnitus [19]. A pleasant heating sensation penetrating deeply into the body restores balanced blood flow and *rLung*. Conversely, a study conducted in Vienna reported that high temperatures increased the risk of tinnitus-related emergency room visits [20].

In our study, the majority (n=156) participants reported insomnia, and Gold Needle Therapy significantly improved the insomnia problems. According to the ཀོང་སྤྲུལ་གསོ་རིག་རྩ་འགྲེལ insomnia can be

Table 2. Dizziness Severity Index and Insomnia Severity Index among patients with *mGo-rLung* treated at the National Traditional Medicine Hospital, Bhutan, September 2020 – August 2021

	Day 0		Day 7		Day 21	
Symptoms	**n**	**(%)**	**n**	**(%)**	**n**	**(%)**
Dizziness Severity Index						
None	0	-	0	-	0	-
Mild	2	1.10	21	11.54	58	31.87
Moderate	7	3.85	108	59.34	83	45.60
Severe	69	37.91	50	27.47	35	19.23
Very severe	104	57.14	3	1.65	6	3.30
Insomnia Severity Index						
Not Significant	26	14.29	43	23.63	94	51.65
Sub-threshold	17	9.34	108	59.34	64	35.16
Moderate	85	46.70	31	17.03	24	13.19
Severe	54	29.67	0	-	0	-

Table 3. Dizziness Severity Index, severity of tinnitus on Visual Analogue Scale and Insomnia Severity Index score among patients with *mGo-rLung* treated at the National Traditional Medicine Hospital, Bhutan, September 2020 – August 2021

	Day 0			Day 7			Day 21		
Symptoms	**Mean**	**SD**	**p value**	**Mean**	**SD**	**p value**	**Mean**	**SD**	**p value**
Dizziness Severity Index	15.47	1.83	<0.000	8.76	2.45	<0.001	7.45	2.62	<0.002
Severity of tinnitus on Visual Analogue Scale									
Loudness of Tinnitus	5.08	1.23	<0.000	3.52	1.61	<0.000	3.20	1.80	<0.000
Annoyed by Tinnitus	5.15	0.89	<0.000	3.55	1.30	<0.000	3.25	1.42	<0.000
Distressed by Tinnitus	4.99	1.01	<0.000	3.53	1.05	<0.000	3.27	1.11	<0.000
Coping with Tinnitus	4.68	0.68	<0.000	3.52	0.95	<0.000	3.24	0.90	<0.000
Insomnia Severity Index	16.87	1.74	<0.000	10.11	1.51	<0.001	7.75	2.32	<0.002

SD= Standard Deviation

treated using heat therapy on *rLung-sang* points [21]. Basically, *rLung* disorders are characterized by cold and the warmth of the therapy restores the equilibrium [22]. Similar to this study's findings, a systematic review and meta-analysis reported that moxibustion was more effective than western medications in treating primary insomnia [23]. Heat therapy improves the blood supply to brain tissue, increases the elasticity of blood vessels, and enhances the excitability of relevant sites on the cerebral cortex to improve the sleep quality [24].

This study is the first to explore the impact of Gold Needle Therapy on reducing symptoms of *mGo-rLung*. The main challenge encountered was the disruption of data collection due to the COVID-19 pandemic. Frequent lockdowns hindered regular patients visit to the National Traditional Medicine Hospital, limiting our ability to recruit a larger sample. The study was conducted at a single hospital, which limits the generalizability of the findings. Robust studies, including cohort studies or randomized controlled trials with larger populations, are strongly recommended to further assess the effectiveness of Gold Needle Therapy for the treatment *mGo-rLung*.

CONCLUSION

Gold Needle Therapy is found to reduce the severity of dizziness, tinnitus, and insomnia among *mGo-rLung* patients and provides an alternative scope of treatment for *mGo-rLung*.

Declarations

Ethics approval and consent to participate.

Ethics approval was obtained from the Institutional Review Board via letter No. INTERIM IRB/PO20/021/449 dated 3 August 2020. Administrative approval was obtained from the Policy and Planning Division, Ministry of Health and the Medical Superintendent, National Traditional Medicine Hospital. Informed consent was taken from the individual participants before administration of questionnaire.

Consent for publication
Not applicable

Competing interests
MT, TG, DG and KT are editors of this journal. MT, TG, DG and KT were blinded from the peer review process of this article.

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Availability of data materials
The data set is available from the corresponding author upon request.

Author contributions
Conceptualization, Methodology, Formal analysis, Investigation, Resource, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration: TC & KT
Methodology, Validation, Data curation, Writing - Review & Editing: MT
Validation, Formal analysis, Data Curation, Writing – Review & editing: TC, YC, DG, T and NG
Validation, Data curation & Writing – review & editing: ND & TG

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