

# The use of online MBSR audio in medical staff during the COVID-19 in China

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**Abstract.** – **OBJECTIVE:** This study aims to survey medical staff's acceptance of online Mindfulness-Based Stress Reduction (MBSR) during the Novel Coronavirus Pneumonia (NCP), and to know some information of physical and emotional response of those medical staff who worked at the forefront of COVID-19, through the playback amount of the online MBSR training.

**MATERIALS AND METHODS:** Considering the working environment of medical staff in forefront of NCP, we designed and recorded MBSR audio album including 13 sessions, covering 24 hours of a day, then sent the album to medical staff who had been working in Wuhan, Hubei province, China. We collected the playback amount in each session on February 10<sup>th</sup> and February 24<sup>th</sup>, which were one week and three weeks after the album was finished.

**RESULTS:** On February 10<sup>th</sup> and February 24<sup>th</sup>, there were separately 5778 and 10640 times of broadcasting. The highest broadcasting frequency session was at 5:00 am, followed by 7:00 am. The least broadcasting frequency sessions were 17:00 pm and 19:00 pm. The broadcasting amount in the 6 periods of the night (from 21:00 pm to 7:00 am) was significantly higher than those in the daytime (from 9:00 am to 19:00 pm), with a statistical difference. The tendency of the amount of playback was consistent, which was not affected by the specific content of the mindfulness exercises.

**CONCLUSIONS:** Online MBSR exercises were well accepted by medical staff in the COVID-19. It may help them relax and reduce the risk of stress reactions. During the NCP, medical staff may have different degrees of sleep and emotional problems, which need to be paid more attention to.

*Key Words:*

Mindfulness-Based Stress Reduction (MBSR), COVID-19, Medical staff, Stress.

## Introduction

The outbreak of the COVID-19 in the end of 2019 in China attracted worldwide attention.

During the first one or two months of the epidemics, many medical workers were infected and some of them dead. There were nearly 35,000 medical staff coming from different provinces worked in Hubei province, China, called “the Great Retrograde Person” by general public. COVID-19 was totally a sudden traumatic event for medical staff.

The Chinese National Health Commission issued two timely degrees to protect people's mental health, one was The Occupational Injury Insurance for prevention and rescue personnel in the fight against NCP<sup>1</sup>, the other was The Guideline of Psychological Crisis Intervention for COVID-19<sup>2</sup>.

COVID-19, as other catastrophes, could trigger a series of normal physical and mental responses on individuals, including emotional reactions such as nervousness, fear, sadness, depression, and physical reactions like fatigue, insomnia, appetite changes, etc. Negative psychological responses depression, anxiety and Post-traumatic Stress Disorder (PTSD) would also be shown<sup>3</sup>. There may also be cases indicating positive psychological changes<sup>4,5</sup> of Post-traumatic Growth (PTG), which touches upon personal strength, new possibility, interpersonal relationship, appreciation in life, and spiritual change, etc<sup>6</sup>.

MBSR, as a commonly used psychological intervention, has been applied to people PTSD in recent years, providing mindfulness meditation training to relieve individual stress and regulate emotions<sup>7,8</sup>. Mindfulness exercises can activate the anterior cingulate cortex of the brain, play an important role in focusing attention, stimulating and maintaining motivation<sup>9</sup>, and change emotion-related brain area activities, enhancing the person's experience of positive emotion<sup>10</sup>. At the same time, MBSR may also bring specific changes in the organic structure of the brain, such as slowing down the aging of the cerebral cortex

and increasing tissue density in the auditory cortex, occipital temporal lobe, sensory cortex of the body and cortical gray at the base of the central groove<sup>11</sup>.

Although many studies have confirmed the role of MBSR in PTSD, there were not enough relevant reports in China, and fewer reports on mindfulness exercises conducted online. When COVID-19 occurred, it is necessary to reduce unnecessary contact as far as possible. We need new ways and new forms of self-regulation method timely.

After the outbreak of COVID-19, the West China Hospital of Sichuan University, a famous tertiary hospital in the west China, sent three medical staff teams to work in Wuhan, Hubei province with above 160 medical workers. On Jan 28<sup>th</sup>, three authors of this article were entrusted by the hospital to join the We-chat group of those medical staff teams for psychological support. Since stress reaction was the normal physical and mental reaction for individuals facing abnormal events, we hoped not to enhance burdens of any unnecessary psychological evaluations to medical staff, but to give them effective methods of self-care timely to minimize risks of severe psychological stress reaction. Therefore, we reviewed the literature of crisis intervention and cited our clinical knowledge of Mindfulness-Based Stress Reduction (MBSR) in order to make audio clips for medical staff via the Internet.

Through the broadcasting quantities of online MBSR audio, we hope to understand medical staff's acceptance of MBSR, and their physical and mental conditions from a different angle. We also hope to provide reference for the further development of psychological supporting work for medical staff in the later COVID-19 period.

## Materials and Methods

### *Design and Record MBSR Audio Album*

Considering that the work of medical staff in COVID-19 was a rotation system, which means different medical staff worked in different states during the 24 hours of a day, even when resting, most of them lived in a relatively isolated state of single occupancy, we selected those basic mindfulness exercises that were less demanding on the environment and space, and set the length of each exercise in 8-10 minutes, which would be more convenient for medical staff to understand and use. Except for the introduction to MBSR in

the first section, we wrote 12 sessions of mindfulness exercises followed one audio session every 2 hours per day and modified repeatedly. On Jan 30<sup>th</sup>, the first session of MBSR was recorded through the Himalaya APP, a free audio APP in China, and totally finished on Feb 3<sup>rd</sup> with all the 13 sessions of the MBSR exercise album. The MBSR album included mindfulness breathing, mindfulness body scan, meditation, emotional awareness, five senses training, mindfulness diet, walking mindfulness exercise and mindfulness body awareness, etc. At the same time, we incorporated the mindfulness blessing into each section and reflected it in the naming of each section.

### *Audio Pushing*

The MBSR audio album was pushed through the We-chat group to the three medical staff teams of the West China Hospital, and some We-chat groups of mental health medical staff in Sichuan province. After that, the audio album might be sent to others by medical staff themselves. Although the accurate information of the listeners could not be counted from the APP, the listeners were mainly medical staff.

## Data Collection and Analysis

### *Broadcasting Counts Collection*

Before 12:00 am of the Feb 10<sup>th</sup>, each section was named as "Good Morning, Dear Me (7:00 am)" or "Good Afternoon, Dear Me (15:00 pm)", without noting the specific content of each section. After that time point, we added the specific content of mindfulness exercise in section titles, such as "Good Morning, Dear Me (7:00 am, Mindfulness Breathing 1)", or "Good Afternoon, Dear Me (15:00 pm, Five Senses Training)", etc [Table I].

Then, on February 10<sup>th</sup> and February 24<sup>th</sup>, the first week and the third week after the album had been finished, we collected each session's playback amount of audio from the backstage of the Himalaya APP, to understand the playback volume before and after the introduction of the specific content of each mindfulness exercise.

### *Data Analysis*

We compared the playback volume of the two point, Feb 10<sup>th</sup> and Feb 24<sup>th</sup>, and the difference between the daytime playback volume and the nighttime playback volume (each 6 sessions) through SPSS 19.0 (IBM, Armonk, NY, USA).

**Table I.** Each session's name of the MBSR audio album.

Before Feb 10 <sup>th</sup>		After Feb 10 <sup>th</sup>
Session 1	Audio introduction	Audio introduction
Session 2	Good morning, dear me	Good morning, dear me (7:00 am, Mindfulness Breathing 1)
Session 3	Good morning, dear me	Good morning, dear me (9:00 am, Mindfulness Body Awareness)
Session 4	Go into the park in my heart	Go into the park in my heart (11:00 am, Mindfulness Meditation 1)
Session 5	Good afternoon, dear me	Good afternoon, dear me (13:00 pm, Mindfulness Body Scan 1)
Session 6	Good afternoon, dear me	Good afternoon, dear me (15:00 pm, Five Senses Training)
Session 7	Hi, dear me	Hi, dear me (17:00 pm, Mindfulness Breathing 2)
Session 8	Good evening, dear me	Good evening, dear me (19:00 pm, Mindfulness Eating)
Session 9	Let's exercise with mindfulness	Let's exercise with mindfulness (21:00 pm, Mindfulness Walking)
Session 10	Good night, dear me	Good night, dear me (23:00 pm, Mindfulness Body Scan 2)
Session 11	Hi, dear me	Hi, dear me (1:00 am, Mindfulness Emotion Awareness)
Session 12	Thank you, dear me	Thank you, dear me (3:00 am, Mindfulness Meditation 2)
Session 13	Hi, dear me	Hi, dear me (5:00 am, Mindfulness Body Scan 3)

### Results

On Feb 10<sup>th</sup> and Feb 24<sup>th</sup>, there were separately 5778 and 10640 times of broadcasting [Table II]. 408 people subscribed to the audio album. Except for the audio introduction section, the highest broadcasting frequency session was on 5:00 am, followed by 7:00 am. The least broadcasting frequency sessions was on 17:00 pm, then on 19:00 pm [Table II]. The broadcasting amount in the 6 periods of night

(from 21 pm to 7 am) was significantly higher than that in the daytime (from 9 am to 19 pm), with a statistical difference [Table III]. The tendency of the broadcasting amount was consistent [Figure 1], which was not affected by the specific content of the mindfulness exercise [Table I].

Except for the broadcasting amount, there were 58 positive feedback received from the APP backstage till Feb 24<sup>th</sup>, which suggested that medical staff have good acceptances of the MBSR online.

**Table II.** Playback amount of the two point of time on Feb 10<sup>th</sup> and Feb 24<sup>th</sup>.

Each session/date	Feb 10 <sup>th</sup>	%	Feb 24 <sup>th</sup>	%	New playback amount	%
Audio introduction	1030	17.83	1657	15.57	627	12.90
7:00am	607	10.51	1098	10.32	491	10.10
9:00am	361	6.25	632	5.94	271	5.58
11:00am	303	5.24	570	5.36	267	5.50
13:00pm	305	5.28	522	4.91	217	4.46
15:00pm	314	5.43	561	5.27	247	5.08
17:00pm	170	2.94	346	3.25	176	3.62
19:00pm	198	3.43	406	3.82	208	4.28
21:00pm	252	4.36	582	5.47	330	6.79
23:00pm	341	5.90	900	8.46	559	11.50
1:00am	218	3.77	520	4.89	302	6.21
3:00am	342	33.20	644	6.05	302	6.21
5:00am	1337	23.14	2202	20.70	865	17.80
Total	5778	100	10640	100	4862	100

**Table III.** The *t*-test of independent samples for broadcast amount (Day/Night).

	New playback amount from Feb 10 <sup>th</sup> to Feb 24 <sup>th</sup>	N	Mean	<i>t</i>	df	sig
Feb 10 <sup>th</sup> playback amount	21:00 pm-7:00 am (6 sections) 9:00 am-19:00 pm (6 sections)	2	2998.00 1493.50	7.044	2	0.020

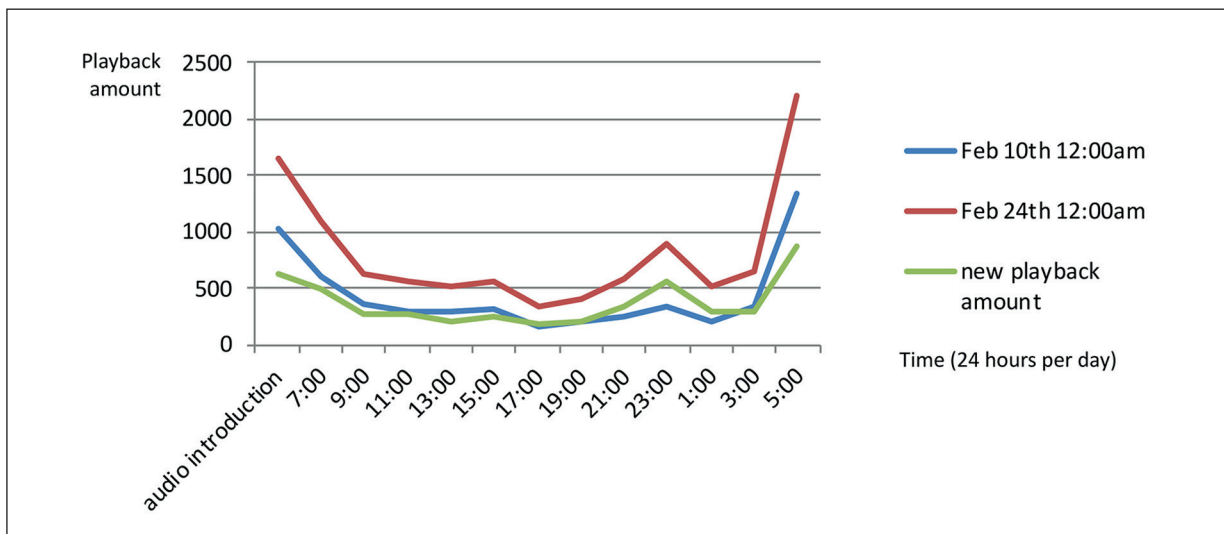


Figure 1. Trend chart of audio playback amount in each period.

## Discussion

Repetition of mindfulness practice is conducive to cultivating the attitude of focusing on the current, with non-judgment and acceptance<sup>12</sup>. Under the limited time and space, mindfulness practice can help medical staff quickly return to the awareness of the present, opening up various sensory channels, maintaining the awareness and acceptance of somatic reactions, emotions and ideas, which could help individuals transfer the attention from traumatic memories to the current experience<sup>13</sup>. In addition, mindfulness can also help individuals better accept traumatic memories and thoughts and emotions related to traumatic events, treat these thoughts and emotions as events in the brain and not get involved in them, or evaluate them negatively<sup>14,15</sup>. Some researchers also prove that higher level of mindfulness is beneficial to relief PTSD symptoms<sup>16,17</sup>.

According to the results of the broadcast amount, the broadcasting amount at night (from 21 pm to 7 am) was significantly higher than that in the daytime. It presented that medical staff may have different degrees of sleep problems, including difficulties in falling asleep and/or waking up early. The highest broadcast amount occurred on 5 am, which indicates the possibility of waking up early [Table II]. We need also to be alert to the relationship between waking up early, depression and anxiety, in addition to the power of work of the medical staff.

The broadcast rate of mindfulness exercises in the 6 sessions from 9:00 am to 19:00 pm was sig-

nificantly lower than the others and had nothing to do with the specific contents of mindfulness exercises. It suggested that medical staff may be in high-intensity working state for up to 14 hours (7:00 am-21:00 pm). According to some news reports, except clinical work, medical staff' work may also include various materials sorting, epidemic reporting, holding working meetings, etc. Under such high intensity of works, we need more quick and effective way to do self-decompression. Online mental health services may be an effective way to help medical staff relieve stresses<sup>18</sup>. MBSR online, as an effective training to get relaxation and mental rehabilitation, could be a good method to adapt complex disasters. In future work, we need have more flexible mental health services to face different stresses<sup>19,20</sup>.

## Conclusions

MBSR online was well accepted by medical staff. Since we are facing more and more severe, complex stress events, we need more flexible mental health services to deal with different situations. MBSR online exercises could be a good method to help relaxing and reducing risks of stress reactions. According to the results of broadcasting amount, we hope to remind that medical staff may have different degrees of sleep problems, including difficulties in falling asleep and/or waking up early, which need to be pay more attention to.



### Conflict of Interest

The Authors declare that they have no conflict of interests.

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