Factors influencing the adherence to bright light therapy in youths with insomnia and eveningness: A mixed-methods study
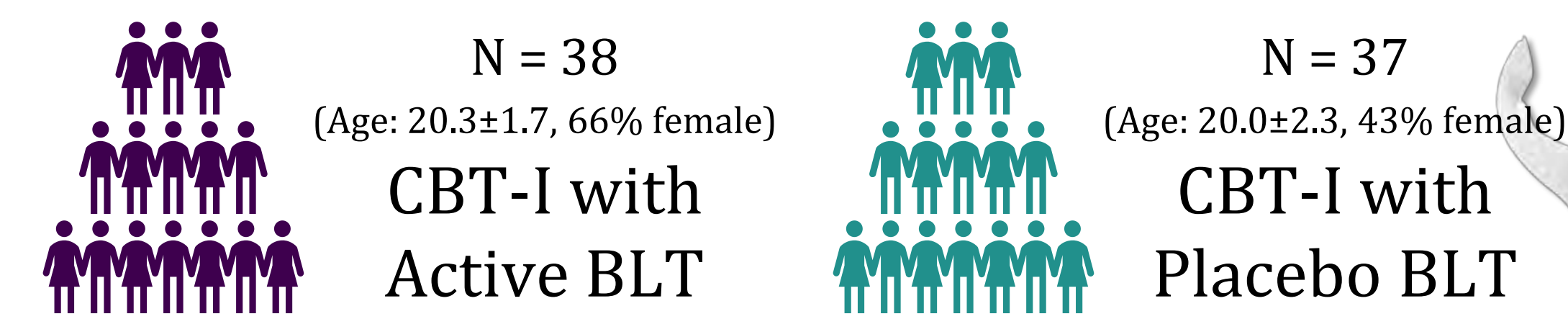
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Introduction

Bright light therapy (BLT) is increasingly being recognised as a promising chronotherapeutic intervention for addressing sleep and circadian problems in youth. However, there are concerns regarding non-adherence to BLT, potentially leading to suboptimal treatment outcomes. Given the limited research examining BLT adherence in this population, this study aimed to explore the factors related to adherence using a mixed-methods approach.

Intervention

N = 38
(Age: 20.3±1.7, 66% female)
CBT-I with Active BLT

N = 37
(Age: 20.0±2.3, 43% female)
CBT-I with Placebo BLT

- BLT was delivered using a portable light device.
- Participants were asked to use the device for 30 minutes in the morning immediately after waking up.
- BLT was provided along with gradual timing advance.

Methods

$$\text{Adherence to BLT was measured using sleep diary} = \frac{\text{no. of days used}}{\text{no. of days prescribed (35)}} \%$$

Quantitative Predictors

- Motivation for treatment (at Baseline)
- Treatment creditability (at Post-Tx)
- Treatment expectancy (at Post-Tx)
- Perceived helpfulness of BLT (at Post-Tx)

(n = 20) Semi-structured interview

- 1-to-1 semi-structured interview to explore factors associated with motivation and barriers for adherence to BLT.

1. Have you used the light goggles for 30 minutes every day as part of your bright light treatment throughout the therapy?
   a. How many days per week have you used the light goggles?
   b. What were some of the factors that that kept you using the light goggles?
   If not 100%, ask:
   c. Why haven't you used the light goggles sometimes?
   d. Have you encountered any difficulties or obstructions when using the light goggles? Please tell me more about it.
2. Overall, have you encountered any difficulties or obstacles whilst applying these strategies you learned from the treatment programme? If so, can you share a bit more?
   a. Do you think your mood (e.g., like feeling low) affects how you practice or implement the strategies taught during the treatment? If so, could you elaborate?
3. We noticed that lots of people haven't been using the light goggles regularly. What do you think could help encourage others to use the light goggles more often?

Quantitative predictors were analysed using univariate linear regression analysis. The interview contents were analysed using a thematic analysis approach.
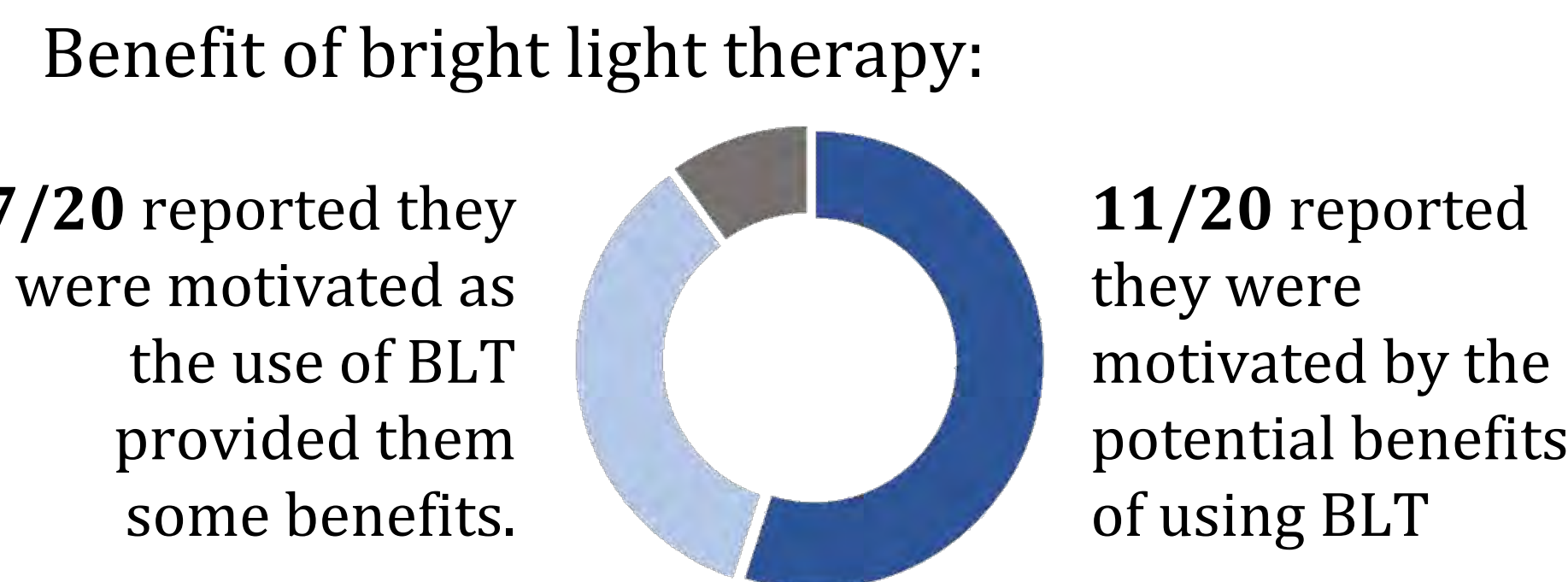
Findings

Overall adherence rate:

CBT-I with Active BLT = **51.7%**

CBT-I with Placebo BLT = **54.0%**

Table 1: Results from regression analysis

	B	se	beta	95% CI	p
Motivation for Treatment	.020	.024	.099	[-.028, .068]	.413
Treatment credibility	.012	.007	.204	[-.003, .026]	.104
Treatment expectancy	.009	.005	.237	[.000, .019]	.058
Perceived helpfulness of therapy	.079	.026	.361	[.027, .131]	.004

B = unstandardised coefficient, se = standard error, beta = standardised coefficients; CI = confidence interval for B

Motivators

Benefit of bright light therapy:

7/20 reported they were motivated as the use of BLT provided them some benefits.

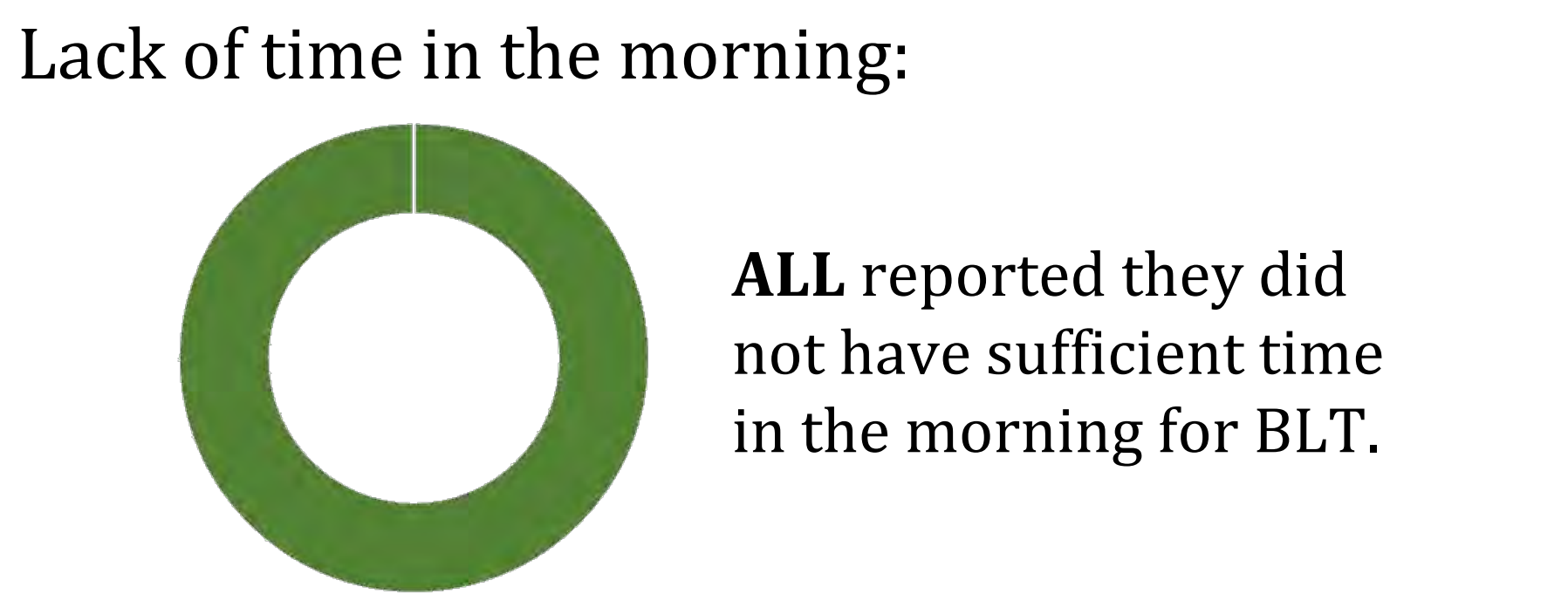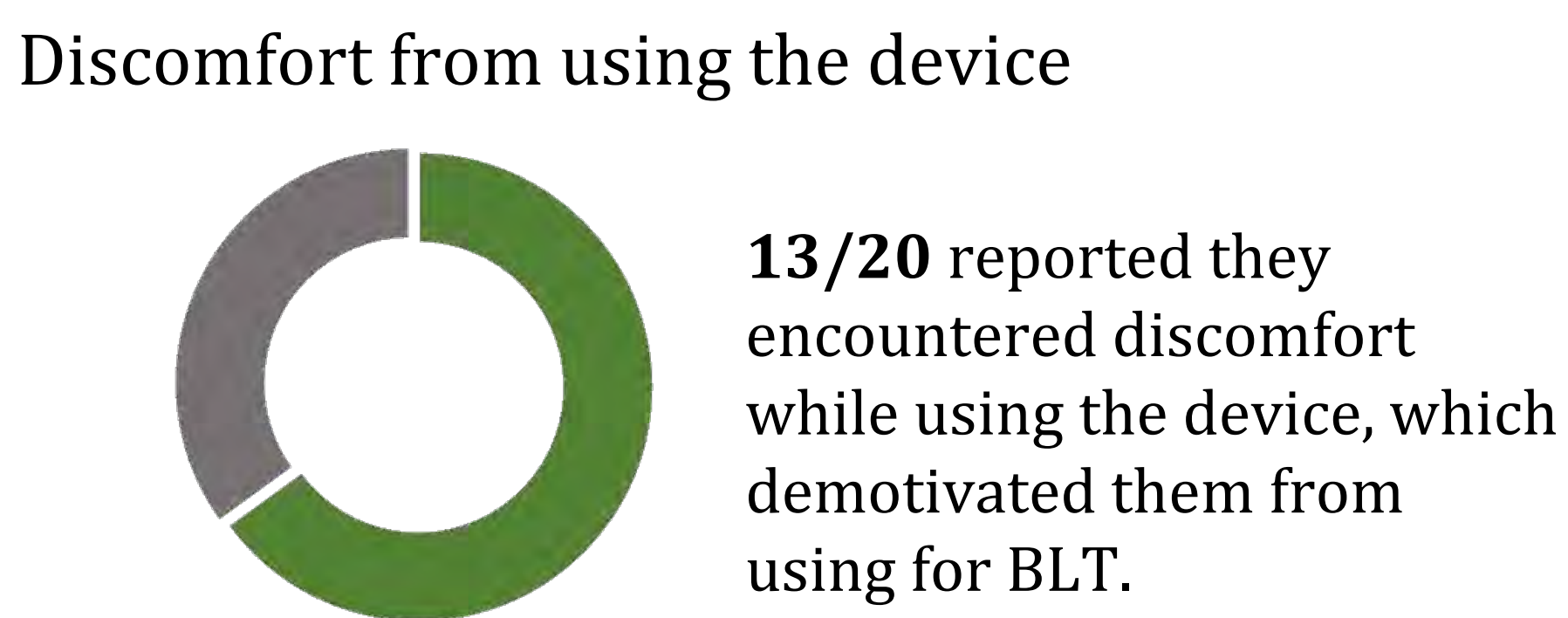**11/20** reported they were motivated by the potential benefits of using BLT

"I wear the goggles because I think they only give me benefits and no drawbacks. So, I thought, why not give it a try with an experimental mindset?"
- Secondary school student, Female, 16 y/o

"The main thing is that I noticed wearing the goggles helps boost my mood and concentration. I felt like my work efficiency got better"
- University student, Male, 22 y/o

Barriers

Lack of time in the morning:

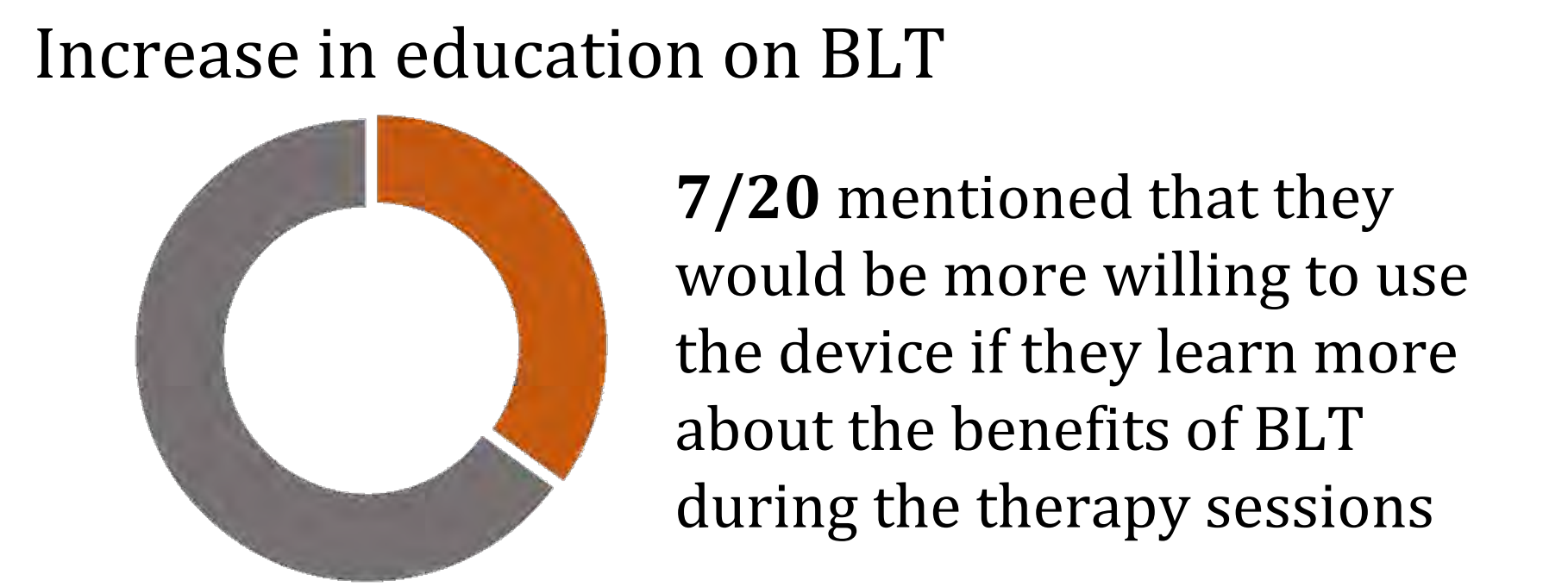**ALL** reported they did not have sufficient time in the morning for BLT.

"Sometimes when I am in a rush to leave home, I may only wear them for ten or twenty minutes. And occasionally, I forget to wear them."
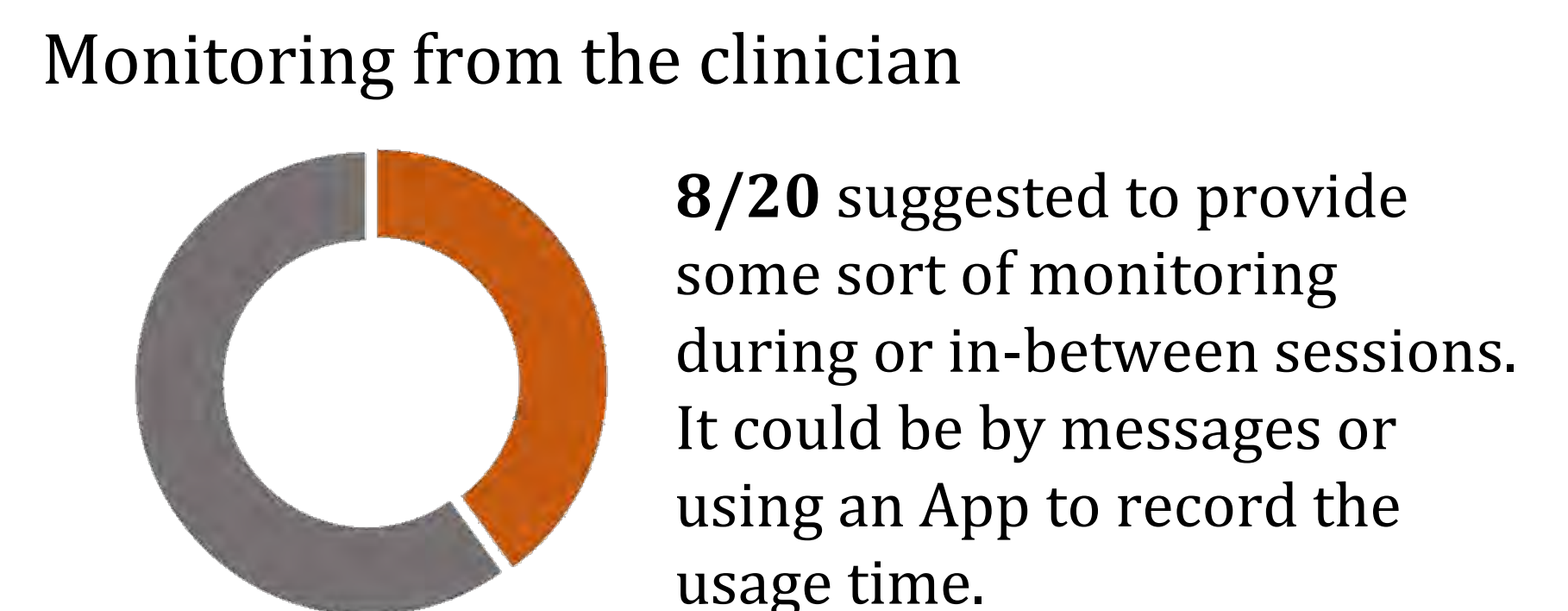- Secondary school student, Female, 14 y/o

Discomfort from using the device

13/20 reported they encountered discomfort while using the device, which demotivated them from using for BLT.

"I did encounter some inconveniences. The goggles tend to slip down frequently and are not easy to secure, so I had to hold them while I was eating…"
- University student, Female, 23 y/o

Suggestions for enhancing adherence

Increase in education on BLT

7/20 mentioned that they would be more willing to use the device if they learn more about the benefits of BLT during the therapy sessions

"I think it's important to really highlight how useful wearing the goggles is, so we can make it a priority and be more aware of using them"
- University student, Male, 20 y/o

Monitoring from the clinician

8/20 suggested to provide some sort of monitoring during or in-between sessions. It could be by messages or using an App to record the usage time.

"Maybe we could come up with a little app, kind of like a check-in sheet, to help keep track of our daily usage"
- University student, Female, 22 y/o

Conclusion

Patients' perceived benefits of BLT can best motivate their therapy adherence. Providing psychoeducation on BLT's benefits and patients monitoring with timely feedback may help increase treatment adherence.