From Offline to Online: Investigating Acceptability and Accessibility of a Digital Intervention Among Indonesian Undergraduate Community Students

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ABSTRACT

Undergraduate students experience many challenges that can disturb their academic achievement and mental health. Digital interventions have the potential to be a solution because these type interventions can reach a lot of people at anytime and anywhere. Although there are several advantages of online compared to offline interventions, there are some issues (for example high drop-out rates) that should be considered to maximize benefit for participants. To the best of our knowledge, very few studies about digital interventions in Indonesia. Therefore, there is still a gap in the literature that requires further research. Using a brief mindfulness online intervention, the aim of this study was to investigate the acceptability and accessibility of a digital intervention for Indonesian undergraduate community students. In the first part, we developed an online platform and conducted a pilot study, and in the second part, we involved 110 undergraduate students as users to participate in a 14-day intervention. To gather comprehensive information, we conducted Zoom focus group discussions and an open-ended survey via Qualtrics. We formulated the questions to gather user feedback on the website and to understand users' experiences during the intervention. Results showed that majority of undergraduate students had positive responses, indicating they are open to accepting and accessing a brief online mindfulness intervention (on the digital aspects). In conclusion, to successfully implement digital interventions, conducting a pilot study is advised as it allows for evaluations and reduces the potential for errors. The technology also should be tailored to the target group who needed the intervention. Additionally, understanding participants' characteristics and providing support for any issues related to the interventions are key factors in ensuring their smooth execution.

Keywords: acceptability, accessibility, digital intervention, mental health, undergraduate community

Introduction

Global research consistently shows that undergraduate students face many challenges inside or outside academia (such as daunting tasks and interpersonal relationship issues with peers or lecturers), leading to a decrease in academic achievement and escalating mental health problems (e.g., Gong et al., 2023; Tan et al., 2021). In Indonesia, undergraduate students showed a higher prevalence of mental health problems (e.g., El-Matury et al.,

2018; Marthoenis et al., 2018). However, the handling of these mental health issues is still far from ideal due to the lack of mental health professionals (Putro, 2018) and social stigmatization (Putri et al, 2019).

Nowadays, technology and digital services have become an important part of human life. As such, digital interventions can offer a solution for mental health. Through these interventions that are delivered online, participants can practice anytime, anywhere, at a lower cost, and with anonymity (Gong et al., 2023). A systematic review showed that digital interventions yield promising results in decreasing stress, depression, anxiety, and eating disorder symptoms among undergraduate students (Harith et al., 2022). However, compared to lab-based (offline) intervention with strict procedures, these types of interventions show less controls (Rozental et al., 2014) and high occurrence of dropout rates (Roig et al., 2020). The acceptance aspect of user experience plays a crucial role in determining the adoption and ongoing usage of a digital tool (De Angelis et al., 2024). The other factor that needs to be put into account is accessibility as perceived by participants, referred to as the subjective rating of ease of accessing services or resources (regarding digital interventions) subjectively (Lu et al., 2022).

In Indonesia, with the rapid growth of the internet (Asosiasi Penyedia Jasa Internet Indonesia 2023), there is an opportunity to access digital interventions. To the best of our knowledge, there have only been few studies regarding digital interventions (e.g., Arjadi et al., 2018; Juniar et al., 2019) in Indonesia. Using an online mindfulness intervention as an example, we will discuss acceptability and accessibility in applying digital interventions among Indonesian undergraduate community students. Practicing mindfulness could significantly enhance the mental well-being, such as decreased neuroticism (e.g., Hanley et al., 2019) and change negative to more positive emotions (e.g., Kennes et al., 2024). Gong et al., (2023) also found the effect sizes of mindfulness on mental health in undergraduate students were larger compared to the general population (non- undergraduate students). Hanley et al., (2019) mentioned through mindfulness intervention, participants learned to observe their experiences and pay attention to them with an accepting, non- judgmental attitude. Therefore, by fostering attention control, emotion regulation and self- awareness, mindfulness intervention can increase self-regulation. However, most mindfulness studies were conducted in Western countries (Tan et al., 2023), leaving a gap in the literature that should be investigated further. This study may also help other researchers in shaping the design of future interventions (across various topics), particularly emphasizing how online delivery could address challenges encountered in the execution.

Methods

We adapted materials from Cavanagh et al (2013; 2018) on the "brief online mindfulness intervention" and used them to develop *Psyche*, the web platform for the intervention. All of the materials have been validated by mental health professionals and language experts.

Procedures and measurements

This study consists of 2 parts. In the first part, we developed Psyche with the programmers (see figure 1,2, and 3) and conducted a pilot study to gather digital experiences. Psyche consists of a lesson on mindfulness presented in both text and video

formats and includes audio for practicing mindfulness that has been translated into the Indonesian language (Bahasa). We conducted focus group discussion (via Zoom) for undergraduate students to provide feedback after trying the website. Based on their feedback, some adjustments were made to ensure the proper implementation of the digital intervention.

In the second part, we involved undergraduate students as users to participate in a 14-day (brief) mindfulness online intervention. To assess acceptability and accessibility, we formulated a survey of the undergraduate students (via Qualtrics) about their experiences using the website, including any difficulties they encountered. We used open-ended questions to allow them to express their experiences more fully. We also asked the research assistants (who were involved in setting up the intervention schedule on the website and contacting the participants) regarding their digital experiences to gather more comprehensive information.
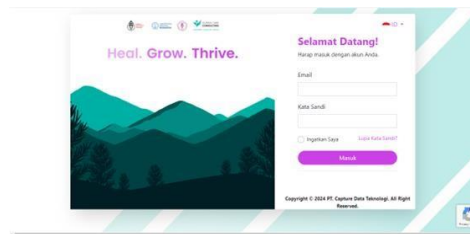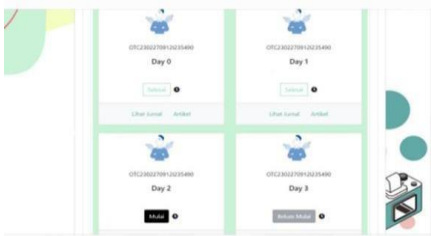

Figure. 1 Psyche's web

Figure. 2 The Dashboard from participants' point of view

Figure. 3 The dashboard from the research assistants' point of view

Results

Table 1 shows that five undergraduate students (100%) who participated in the first part reported that the content of the mindfulness intervention was understandable and that the daily journal feature (which allowed participants to write down any idea during the intervention) was interesting. They were able to practice the intervention using the audio, although they encountered some difficulties in the beginning. Moreover, all of them mentioned that some tips for practicing the intervention could be helpful, but they preferred to have written in the shorter language. In terms of accessing the website in general, most of them (80%) did not find any difficulties.

Table.1 Feedback regarding the website in the pilot study

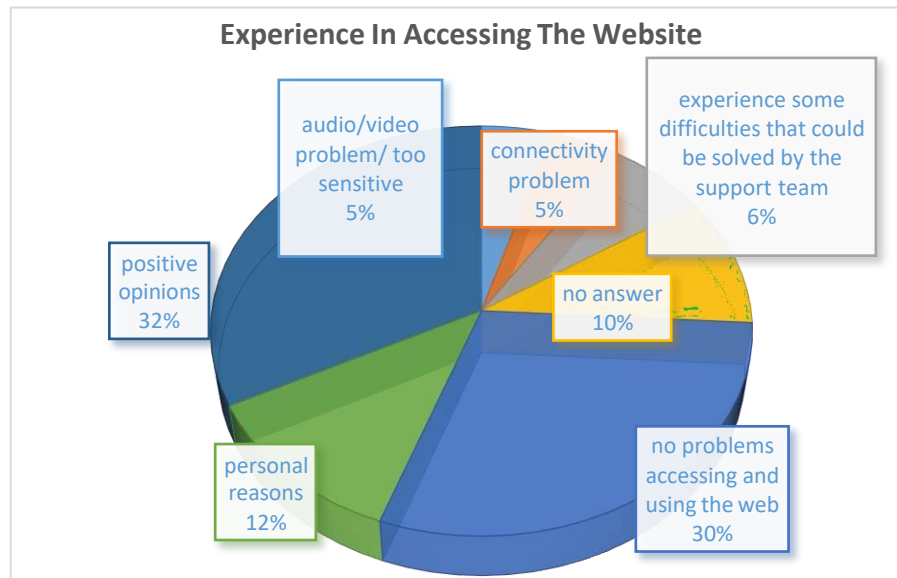| Themes	Response	N	Percentage
The content that delivered via online	Clear (understandable)	3	60%
	Did not answer	2	40%
Journal feature	Interesting	3	60%
	Did not answer	2	40%
Practice the interventionusing the audio via online	No problem	3	60%
	Difficult in the beginning,because they were not used to	2	40%
Comments about tips forpracticing the intervention	They helped	5	100%
Website performance ingeneral	No problem	4	80%
	Problems in the beginning/find someerrors	1	20%
Suggestion: 1. The language (regarding the tips for practicing the intervention) could be shorter 2. Fixed the error		5	100%
		1	20%

Experience In Accessing The Website

audio/video problem/ too sensitive
5%

connectivity problem
5%

experience some difficulties that could be solved by the support team
6%

positive opinions
32%

no answer
10%

personal reasons
12%

no problems accessing and using the web
30%

Figure. 4 Experience in accessing the website

**Experience In Practicing
The Intervention Via Online Platform**

no answer
8%
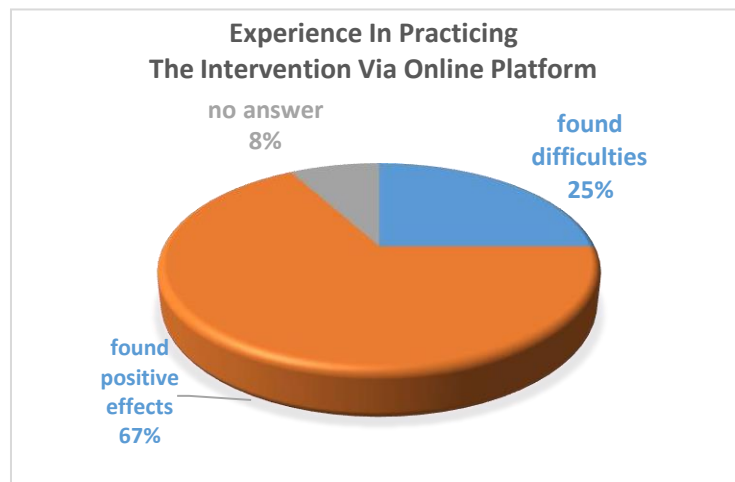
found difficulties
25%

found positive effects
67%

Figure. 5 Experience in practicing the intervention via online platform

The second part is still ongoing, and approximately 110 undergraduate students participated in this part. They evaluated the website's performance and shared their experiences in practicing mindfulness online (see Figures 4 and 5). The two highest answers regarding the website were: they showed positive opinions, such as the website being useful and quite enthusiastic to try, and they did not find any issues with accessing or using it since the beginning. In terms of practicing the intervention online, the majority mentioned they perceived positive effects.

Eight research assistants mentioned that they could easily understand how to operate the

website (see Table 2). The most challenging aspect was to set participants' intervention schedule. We required participants to log-in the website every day, but we also acknowledged that unforeseen circumstances, such as illness or accidents, might prevent them from doing so. This consideration must be taken into account; therefore, the research assistants should be very careful in making the schedule (see Figure 4). Additionally, there were difficulties in sending out the tips for practicing mindfulness (that varied on certain days). Therefore, if participants are late in accessing the website, the research assistants should make manual adjustments.

Table. 2 Research assistants' point of view about the website

Themes	Responses	N	Percentage
How to operate the website	Understandable	8	100%
Difficulties regarding the website:			
1. Scheduling		4	50%
2. Sending the tips for practicing the intervention		3	37.5%
3. Handling participants' complaint		1	12.5%

Discussion

This study investigated the acceptability and accessibility of a digital intervention among Indonesian undergraduate community students, using a brief online mindfulness intervention as an example. Mindfulness can be described as actively and attentively observing one's current state without passing judgment. This involves being fully aware of one's feelings, thoughts, physical condition, consciousness, and surroundings, while promoting a mindset of openness, curiosity, and acceptance (Dai et al., 2022).

Acceptability represents individuals' thoughts and feelings about the technology before, during, and after its use (Perski & Short, 2021), and accessibility is referred to as the perceived ease of accessing services or resources related to digital interventions (Lu et al., 2022). Both of them are important aspects in delivering digital interventions. Harith et al (2022; p3) mentioned a digital intervention is "mental health support that is delivered via website-based or mobile-based platforms, which further denotes itself as eHealth and mHealth interventions".

One possible barrier to the delivery of digital interventions is related to a lack of technology or an unfriendly interface (Hall et al., 2020). Lippke et al., (2021) found that negative experiences with online interventions may give negative consequences (such as decreased motivation), potentially reducing participants' engagement in these interventions. To handle those issues (such as unplayable audio/video and keep their enthusiasm), the support team, consisting of research assistants and programmers, quickly resolved these

within 24 hours, allowing participants to continue their training without any delay. Before starting the intervention, we also informed them of the technology requirements they needed.

Accessibility in the digital world means that the content and design of a website or tools can be easily understood and navigated, whether or not assistive technologies are utilized (Bunyi et al., 2021). In the context of this study, we made some minor adjustments to the original source, such as shortening the information regarding some tips for mindfulness training. Sending these tips can serve as a strategy to reduce the possibility of high attrition and enhance participants compliance. We chose a platform familiar to Indonesian users (for sending tips) to facilitate easy contact and maintain engagement throughout the study. When conducting interventions, it is crucial to consider participants' characteristics, such as age, education level, and habits, to minimize dropout and non-compliance (Lippke et al., 2021).

In this study, only a small percentage of participants (12%) perceived themselves as incapable of addressing the issues that arose during the intervention, which came from personal factors, such as tight activities, rather than the online intervention itself. One unresolved issue concerned the sensitivity of the reminder feature. Several participants reported that when they attempted to increase or decrease the volume, it triggered a reminder preventing them from leaving the website page. However, this inconvenience did not cause them to discontinue their practice.

Conclusion

This current study showed a positive response, indicating that Indonesian undergraduate students are open to accepting and accessing a brief online mindfulness intervention (on the digital aspects). These findings strengthen previous research (e.g., Arjadi et al., 2018; Juniar et al., 2019) that suggests digital interventions have the potential to be applied in the Indonesian population. We highlight that "giving online interventions" does not mean only moving the medium from face-to-face interventions (in the lab/ offline) to digital platforms (online). While digital interventions offer practicality, they also come with new challenges that can become serious threats. Therefore, a pilot study with the target group becomes important because, through it, how participants perceived the interventions can be measured, and evaluations and adjustments can be made to reduce errors that could occur in the interventions. Consequently, sufficient time should be allocated to prepare these kinds of interventions. Tailoring the technology to the target group that needed the intervention, understanding the characteristics of participants, and providing support whenever participants need it are key factors to ensure the successful delivery of digital interventions and decrease dropout levels.

Acknowledgement

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