

Digital Media and the Changing Mode of Intervention Delivery: Does Intervention Delivered Online Produce the Same Effect as that Delivered Face-to-Face?

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Abstract

Background: There is a raging debate about whether interventions delivered virtually produce the same effect as those delivered in a physical setting. This debate calls for more empirical evidence to guide researchers when making decisions regarding the setting of their interventions.

Objective: The aim of this study was to determine the effectiveness of interventions delivered in an online setting compared to those delivered in a physical setting.

Methodology: The researchers used a quasi-experimental design and examined the impact of online and face-to-face music therapy in reducing depression among trying-to-conceive women. The data collection instrument was a self-rating depression scale, while data were analysed using descriptive and inferential statistics.

Result: Intervention delivered through an online platform produced the same effect as that delivered in a face-to-face setting. There was no significant statistical difference between participants in an online setting and those in a face-to-face setting. Rather, those in an online setting reported more satisfaction with the intervention than those in a face-to-face setting. The intervention delivered virtually also led to fewer dropouts and fewer cases of absenteeism compared with face-to-face intervention.

Contribution: This study has provided empirical evidence supporting the use of mediated platforms to deliver interventions in 21st-century society.

Conclusion: Interventions delivered through mediated platforms produce the same result as those delivered face-to-face.

Recommendations: Online platforms should be used as alternatives to deliver interventions to subjects because they produce the same results as face-to-face interventions. Virtual interventions also allow participants from different locations.

Keywords: Digital Media; Interventions; Online; experiment; effect.

Introduction

Interventions are essential strategies that researchers adopt to change behaviour, create awareness, or educate a target population on a particular issue. A research intervention is a carefully planned package delivered to the target population to guide them in making better decisions. It is a design that aims to solve a research problem. An intervention focuses on an artificial system instead of a

natural one. An intervention is designed to answer the question: will it work? According to Oliva (2019), interventions help test or formulate new theories.

Historically, intervention is traced to action research, which is attributed to Lewin's postulations (1945). Action research perspectives postulate that studying complex and challenging social events in the laboratory is difficult, if not impossible. The goal was to ensure that human problems were understood and strategies adopted to address them. Action research, according to Lewin, involves a series of activities that require the identification of a problem, planning on how to address the issues identified, taking action and evaluating the effectiveness of the actions taken. Interventions come from this process of planning and implementing actions to address problems. According to Hughes and Dexter (2011), interventions serve as strategies for researchers of behaviour scientists to address problems facing society.

Before the improvement in technologies, interventions were typically delivered face-to-face. For example, if a researcher was interested in evaluating the impact of a music intervention in reducing symptoms of posttraumatic stress disorder symptoms, this was done by gathering the participants in a single place and then offering the music intervention to them. Additionally, if a researcher is interested in studying the impact of health intervention on health behaviour, the participants were required to compulsorily gather the participating subjects to a location and then administer the intervention to them. Carl et al.(2006) note that the intervention setting is important because it plays a key role in the attainment of the goal of the intervention. However, technological improvements have raised fresh hope regarding the venues for interventions to be offered to people.

The outbreak of COVID-19 reinforced the need to deliver interventions to target receivers through mediated platforms. During the pandemic, movements were restricted, lockdown measures were enforced, and people were discouraged from participating in large gatherings face-to-face. As a result of these physical distancing measures, the internet became a very useful avenue for people to maintain interaction and keep networks alive. According to Itarto et al. (2022), the COVID-19 pandemic led to a change in the delivery of interventions in studies aimed at changing behaviour. Itarto et al. did a systematic review and reported that interventions delivered online were very helpful in helping people manage their mental health issues better. Schleider et al. (2022) conducted a study and reported that interventions delivered online were effective in assisting adolescents in better managing COVID-19.

Studies have also compared the effectiveness of online and face-to-face interventions. For example, Ierardi et al. (2022) conducted a study to examine the impact of interventions delivered to participants online and delivered on a face-to-face basis. The focus of the intervention in the study of Ierardi et al. was a psychodynamic counselling intervention to assist university students during COVID-19. The researchers sampled 34 students who took part in the online intervention and 81 of them who took part in the face-to-face counselling intervention. The researchers examined the counselling intervention's impact on reducing students' psychological distress. The researchers reported that both the online and face-to-face interventions were effective in helping the students better manage their mental health during the pandemic. The study by Ierardi et al. (2022) shows the usefulness of offering interventions online and offline.

Wagner et al. (2014) conducted a study wherein they examined the impact of online-based and face-to-face interventions for reducing symptoms of depression. The researchers sampled 62 participants with depression symptoms and assigned them to internet-powered and face-to-face cognitive behaviour therapy. The researchers administered the intervention to the participants for a period of eight weeks, and patients in both groups received the same intervention. The

researchers found the interventions were effective for both online and face-to-face groups in reducing symptoms of depression. Their results further showed that during the three months of follow assessment, participants in the Internet group remained stable, but those who received the intervention on a face-to-face basis reported worsened symptoms of depression. The implication is that Internet-powered intervention was more effective in maintaining the impact of interventions than face-to-face.

Erbe et al. (2017) conducted a systematic review to determine the impact of face-to-face and Internet-powered interventions on target participants. The researcher examined 64 studies, among which 27 were randomly controlled trials. Their result revealed that therapies that are delivered online are effective and save time, resulting in lower drop rates and lower abstinence rates of patients. The researchers also reported that online intervention was more effective in sustaining changes achieved from interventions. The study of Erbe et al. acknowledged that very few studies have compared both online and face-to-face interventions so far.

Fishman et al.(2013) conducted a study to determine the differences between teachers' and students' experiences in teaching delivered both online and in a classroom setting. The researchers used a quasi-experimental design and reported that there was no significant difference in the effectiveness of teaching and learning in both online and face-to-face settings. The unique thing about the study of Fishman et al.(2013) is that it examined the impact of internet platforms as venues for activities that were once done strictly in a face-to-face setting. Among all the studies reviewed above, none of them examined how intervention delivered to trying-to-conceive women could be useful in helping them reduce depression symptoms.

Trying-to-conceive women are conceptualised in this study as those women who are married and are staying with their partners and having regular sex but have not been able to conceive after two years of their marriage. Such women regularly seek solutions that enable them to conceive and become mothers, like their other counterparts. When women are trying to conceive, it will very likely impact their mental health. Some of the studies reviewed herein support this assumption.

Lakatos et al. (2017) conducted a study to examine the impact of the inability to conceive on the mental health of women. The researchers examined 225 women who had issues in conceiving. They collected data using a structured questionnaire and reported that although trying to conceive women were largely young, they reported serious psychological problems. The women particularly reported high depression symptoms and anxiety as a result of their inability to conceive. The study of Lakatos et al. (2017), however, did not provide empirical evidence on how to reduce symptoms of depression in trying to conceive women. The current study filled this gap.

Fernandes et al. (2021) conducted a study to determine the impact of depression on the sexual functioning of couples who are trying to conceive. The researchers used a descriptive survey design and sampled 107 individuals in a heterosexual relationship for more than a year. Their result revealed that depression in couples who are trying to conceive negatively and significantly affects the sexual performance of both men and women. This study implies that there is a need to develop interventions to address depression in trying-to-conceive women so that their sexual functioning will improve with a corresponding possibility to increase their chances of conceiving. Based on the background above, the current study examined the effectiveness of music therapy delivered online and face-to-face in addressing depression symptoms in trying to conceive women.

Objectives and hypotheses of the study

The general objective of this study was to determine the effectiveness of online and face-to-face music therapy in reducing depression in trying to conceive women. The study tested the following hypotheses:

Ho1: There is no significant mean difference in attendance to intervention between online and face-to-face participants.

Ho2: There is no significant difference in satisfaction with online and face-to-face intervention settings among trying to conceive women.

Ho3: There is no significant difference in the mean scores in dropout among participants in online and face-to-face settings.

Ho4: There is no significant difference in the impact of online and face-to-face intervention in reducing symptoms of depression in trying to conceive women.

Materials and methods

The researchers present the method of this study with the use of sub-headings as shown below:

Design of the study: A quasi-experimental design was used. This type of design is usually appropriate for studies that seek to evaluate the impact of an intervention in a non-laboratory condition. Previous studies (Johnson et al., 2024; Ugwuanyi et al., 2023) have shown that it is a useful design for testing the impact of interventions. Therefore, the researchers used this design to understand the impact of online and face-to-face interventions on trying-to-conceive women.

Population of the study: This study's target population was women who had been married for at least two years but had not been able to conceive, even though they were ready to get pregnant. The population is infinite because there is no sampling frame for a list of trying-to-conceive women in Nigeria.

Sample size and sampling technique: The sample size was 102 trying to conceive women in Nigeria. The women were selected through a respondents-driven chain referral sampling technique. Initial respondents were identified through social media announcements. They were then asked to suggest other potential participants. The process continued for one month, thus leading to a sample of 102. The participants were randomly assigned to face-to-face and online groups made up of 51 participants each.

Instrument for data collection: The researchers used Zung's (1965) self-rating depression scale as the instrument for data collection. The scale is made up of 20 items, which are assessed on a 4-point scale. The range of the score is from 20-80. Zung found a reliability of 0.73, which is considered reliable (Agama, 2023; Nwabueze, 2023). A pilot study was conducted with 30 participants, and the outcome showed a reliability score of .76, which was considered high. It is important to note here that the scale scores are categorised as follows: A score of less than 50 is considered normal depression, a score of 50-59 is regarded as moderate depression, a score of 60-69 is considered major depression, while a score of 70 and above is regarded as severe depression.

The Intervention

The intervention used in this study was music therapy. Typically, music therapy involves using music as a strategy for treating mental health conditions. The music therapy was designed by a music expert and validated by three other experts. It consisted of 12 episodes delivered over twelve weeks, each lasting one hour. An expert in music therapy delivered the intervention. Episode one of the intervention focused on allowing the participants to share experiences of their efforts in trying to conceive. In the second episode, they listened to a musical track that assured them that all hope was not lost. They were also told in the music that worry was not going to help them. In

the third episode, they were requested to compose music of hope and assure themselves that there was hope for them to conceive. During the fourth to sixth episodes, the participants listened to music that tried to discourage worry in the face of problems. In the music, stories of women who initially had conception issues were shared in a musical format. Episodes 7th to 12th were a repeat of episodes 1-6. The participants in the online and face-to-face settings received the same intervention. The only difference was the setting.

Data analysis

The data in this study were analysed using descriptive statistics like mean and standard deviations. Inferential statistics, such as independent t-tests, were also used to test the study's hypothesis. The dependent variable in this study was the music intervention, while the independent variable was depression symptoms. The setting of delivery was the moderating variable. The results were presented in tables.

Results

The result of the study is presented based on the hypotheses thus:

H01: There is no significant mean difference in attendance to intervention between online and face-to-face participants.

Table 1: Mean scores in attendance between the online and face-to-face groups

Groups	Scores			
	Mean	SD	Df	Sig
Online group	3.6	.54		
Face-to-face group	2.9	.89	3	.03

The researchers computed Table 1 to determine the mean difference in attendance between online and face-to-face groups. The researchers found that the participants in the face-to-face group reported higher attendance than their counterparts in the online group. The study's results is contrary to the first hypothesis, and it was concluded with a 95% confidence that online intervention leads to lower absenteeism rates than face-to-face.

H02: There is no significant difference in satisfaction with online and face-to-face intervention settings among trying to conceive women.

Table 2: Mean scores on satisfaction between the online and face-to-face groups

Groups	Scores			
	Mean	SD	Df	Sig
Online group	3.1	.89		
Face-to-face group	2.7	.45	3	.01

In Table 2, the researchers examined satisfaction with the intervention between online and face-to-face participants. The result of the study showed that participants in the online group reported more satisfaction than their counterparts in the face-to-face group. The second hypothesis was also rejected, and it was concluded that online interventions lead to greater satisfaction than face-to-face intervention.

Ho3: There is no significant difference in the mean drop-out scores among participants in online and face-to-face settings.

Table 3: Mean scores on dropout between the online and face-to-face groups

Groups	Scores			
	Mean	SD	Df	Sig
Online group	1.1	.54		
Face-to-face group	2.2	.89	3	.02

The researchers examined the dropout rates between the participants in the face-to-face and online groups. The result of the study showed that online participants reported fewer dropouts than those in the face-to-face group. Based on this outcome, the third hypothesis was rejected, and the researchers concluded that online interventions lead to fewer dropouts than face-to-face interventions.

Ho4: There is no significant difference in the impact of online and face-to-face intervention in reducing symptoms of depression in trying to conceive women.

Table 4: Depression scores among trying to conceive women at Times 1, 2 & 3

Setting	Depression score	Depression classification
Time1: Online	73	Severe depression
Face-to-face	72	Severe depression
Time 2: Online	46	Normal depression
Face-to-face	48	Normal anxiety
Time 3: Online	29	Normal depression
Face-to-face	53	Moderate depression

The result of the study, as shown in Table 4, revealed the depression scores of the participants before the intervention, after the intervention and after the six-month follow-up assessment. It was found that before the intervention, online and face-to-face women did not significantly differ in their depression scores; both women reported severe depression. During Time 2, women in the

online group both reported normal depression, although those in the face-to-face had a slightly higher score. During Time 3, which was six months later, women in the online group maintained their normal level of depression, but those in the face-to-face group slightly dropped back to moderate depression. Generally, there was a significant main effect of time and the depression score of the women, $F(1,303)301.341, p=.001, \eta^2=.502$. Based on this result, the last hypothesis was rejected, and the researchers concluded there is a significant difference in the impact of online and face-to-face intervention in reducing symptoms of depression in trying to conceive women.

Discussion of findings

This study examined the effectiveness of interventions delivered online and those delivered face-to-face. The researchers used a quasi-experimental design for the study and examined trying to conceive women. The results of the study showed that interventions delivered online led to fewer instances of absenteeism than those delivered face-to-face. This aspect of the study is similar to that of Itarto et al. (2022), who reported that mediated interventions led to fewer instances of absenteeism than face-to-face interventions. The possible reason that intervention through online platforms led to low absenteeism is that people could attend in the comfort of their rooms or any other location. Unlike face-to-face intervention, where people are required to visit the intervention venue compulsorily.

The result of the study also revealed that the women in the online intervention reported more satisfaction with the intervention than their counterparts in the face-to-face setting. This is not surprising because women in the online intervention can attend the intervention wherever they are, and they are more likely to be happy with it. This study has extended that of Schleider et al. (2022) that examined satisfaction with online and face-to-face settings. By doing this, the researchers were able to provide empirical evidence on how participants feel about interventions.

Additionally, the researchers examined the dropout rates among women in online and face-to-face settings. The result of the study showed that there were fewer cases of dropout in the online intervention when compared with face-to-face settings. This result is similar to that of Ierardi et al. (2022) who reported that online interventions lead to less dropout when compared with face-to-face intervention. The possible why intervention online led to fewer dropouts was because participants had a chance to attend the intervention wherever they were.

Another aspect of the result was the impact of the mediated intervention on the reduction in symptoms of depression among trying to conceive women. The result showed that women in the mediated intervention and those in the face-to-face setting reported a drop in their depression symptoms after the intervention. However, during the six-month follow-up evaluation, those in the online group sustained their drop, but their counterparts in the face-to-face group relapsed into moderate depression. This means online intervention led to a sustained drop in their depression symptoms. This result is similar to that of Wagner et al. (2014), who reported that online intervention leads to fewer relapses than face-to-face intervention.

Conclusion and recommendations

Based on the result of this study, the researchers conclude that interventions delivered online lead to more consistent attendance than those delivered to face-to-face participants. The researchers equally conclude that participants in online interventions are typically more satisfied than those who receive their intervention in a face-to-face setting. The researchers also conclude that there are fewer dropouts in online interventions than in face-to-face. Finally, mediated intervention is more effective in sustaining changes than face-to-face intervention. This study has made practical and scholarly contributions. In practical terms, the study has provided information that could guide

the planning and delivery of interventions to target receivers. The study has also contributed to literature related to the usefulness of digital technologies in research. Despite the contribution of this study, it has some limitations. First, the researchers examined a relatively small sample. In addition, the study did not examine other factors like digital media literacy. Also, the age of marriage was not examined in the current study. Further studies are recommended to cover the identified areas.

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