

Weight Management among College Females during the COVID-19 Pandemic: A Qualitative Analysis

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Abstract

Objective: Millions of college students are considered overweight. COVID-19 may have exacerbated this problem, therefore there is a need to examine the experiences of college students trying to manage their weight during the pandemic.

Participants: Overweight college females.

Methods: Semi-open interview were conducted after six doses of Motivational Interviewing (MI) or electronic education (control). Interpretative phenomenological analysis was utilized to analyze the experiences.

Results: Four themes emerged related to overarching struggles of COVID-19's impact: Loss of gym access, mental struggles, boredom/stress eating, and loss of structure/living conditions. Four themes were also identified related to the intervention received i.e., MI was more remarkable, MI more notable during the shutdown, subjects receiving MI enjoyed the autonomy focus, and subjects receiving MI felt comfortable to share information.

Conclusion: Responses indicate numerous struggles related to COVID-19. These same responses point to a more positive perception of MI compared to the control group.

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Introduction

A large percentage of adults are overweight, with no signs of improvement over the last several years [1]. This is concerning for health professionals due to the various health consequences of excess weight [2]. College students are not excluded from this issue with the American College Health Association-National College Health Assessment II reporting almost 39% of college students considered at least overweight using self-reported height and weight [3]. This same survey also demonstrated females had higher rates of class I, II, and III obesity. Furthermore, this survey also highlighted a lack of physical activity and proper nutritional intake as factors related to weight gain in college students. Unfortunately, few interventions have demonstrated success in improving anthropometric status among college students [4]. As many college students changed environments and/or had restricted access to physical activity and nutritional intake, the COVID-19 pandemic may have negatively influenced the weight status of college students.

COVID-19 greatly impacted society during 2020. As of September 2021, there have been over 32 million cases of COVID-19 in the United States [5]. About 90% of adults were confined to stay at home during the COVID-19 pandemic [6]. This resulted in a shutdown across the

country, which included integral aspects of almost every community in the country. Universities and colleges across the country closed, which often resulted in college students losing their living space and having to move back home to their prior living arrangements. It is unclear how this disruption may have impacted various health behaviors, including those related to weight management.

Motivational Interviewing (MI) is an empathetic and patient-centered communication approach that may provide a feasible and low-cost solution to address weight management among college students [7]. MI has demonstrated success in increasing adherence to various health behaviors [8-10] including weight management across various populations [11-13]. Unfortunately, these reviews/meta-analysis for weight management-based MI include few studies with adequate rigor, therefore more research is needed, especially among college students. As MI can be provided via video chat (e.g. zoom), the weight loss intervention continued during the pandemic, which provides a unique insight into MI as a weight management intervention tool across environmental changes. Therefore, the purpose of this study is to report the experiences of college students engaged in a weight management intervention during the COVID-19 pandemic.



Methods

Participants

College students were recruited by word of mouth, e-mail, flyers, and social network blast within a large university located in the southeast. To be eligible for this study, participants had to be: a college student, low risk for medical complications from exercise (as determined by the Physical Activity Readiness Questionnaire (PAR-Q)), currently not exercising, over 25 body mass index (BMI), and not pregnant. A total of 40 college students met qualifications and were randomized. Experimental conditions did not differ significantly at baseline in demographic characteristics or BMI. Twenty-two participants participated in final data collection and were included in a separate quantitative analysis. Of these 22 participants, 18 were females and completed an exit interview, therefore, we chose to purposively focus solely on females due to the increased rates of obesity found by the latest American College Health Survey [3]. Of the 18 female participants, 11 underwent the MI intervention while seven underwent the electronic education condition. Participant details can be seen in the table (Table 1).

Table 1: Means, percentages, and standard deviations for demographic information for participants included in qualitative analysis.

Variable	MI (n = 11)	EE (n = 7)	Total (n = 18)
Age	21.28 (1.95)	23.43 (3.44)	22.07 (2.72)
BMI	29.87 (6.88)	29.67 (4.55)	29.80 (5.98)
% Female	100.0%	100.0%	100.0%
% White	83.3%	57.1%	73.7%
% Black	16.7%	28.6%	21.1%
% Hispanic	0%	14.3%	5.2%

Where: MI = Motivational Interviewing; EE = Electronic Education; BMI = Body Mass Index

Intervention

This randomized trial was approved by the University Institutional Review Board for Research Involving Human Subjects (IRB) and followed the standards set by the Declaration of Helsinki under the protocol number 19-388 AR 1810. The registered clinical trial number is NCT04130386. Each participant read and signed a written informed consent and completed the PAR-Q. Participants who qualified for the study were randomized to either the MI group or the electronic education (control) group in January 2020. The intervention group received three in-person MI sessions before the onset of COVID-19 (January-March 2020) and three video chat MI sessions after quarantine restrictions were enacted (April-June 2020), which all lasted 30 minutes in duration over six months. MI sessions were conducted by a trained exercise physiologist. Sessions were rooted in the spirit of MI, remaining empathetic and subject-centered. Topics ranged from physical activity, nutrition, stress management, alcohol consumption, and sleep. It is important to note that since the sessions were subject-centered, the interviews revolved around the subject's concerns, motivations, and goals.

The control group received monthly electronic education materials sent via email over six months (resulting in six total education materials). Topics covered included physical activity, nutrition, stress management, excessive drinking/behaviors, and time management. After the onset of the COVID-19 pandemic, the electronic education was adjusted to various forms of physical activity that could be performed at home.

Measures/Procedures

A semi-open interview one month after the final dose of the respective intervention was delivered to collect qualitative data. There were seven questions read in every interview and potential follow-up questions were asked to probe on a topic if needed. Interview questions can be found in the table (Table 2).

Table 2: Interview Questions.

Question 1	How do you feel you did during the study?
Question 2	Do you feel that the interviews or educational material helped you? Describe how.
Question 3	How did Covid-19 impact your health behavior?
Question 4	What struggles did you have related to Covid-19?
Question 5	What was a typical exercise routine for a week?
Question 6	Did the interviews or educational material help you during the outbreak of Covid-19?
Question 7	If a similar situation (pandemic) were to happen in the future, would you be better prepared in regard to managing your weight?

Data Analysis

Interpretative phenomenological analysis (IPA) was utilized as a methodology aiming to examine how the participants made sense of their experiences within this weight management intervention, as most of it took place during the COVID-19 pandemic [14]. Previous interventions have utilized this method to better understand exercise habits [15, 16]. To achieve this, transcripts were read multiple times, coded line-by-line for significant findings on one margin, then once again for emerging themes on the opposite margin. A summary table was then written for each participant to compare across all participants for themes. Finally, a master table was created with all major themes. A discussion between co-authors took place to examine the data alongside transcripts to further hone the themes.

Results

Analysis of the interview data revealed several emerging themes. There were four themes related to the overarching struggles of COVID-19's impact: Loss of gym access, mental struggles, boredom/stress eating, and loss of structure/living conditions. There were also four themes related to the weight management intervention: MI was more effective, MI was particularly useful during the shutdown, subjects receiving MI enjoyed the autonomy focus, and subjects receiving MI felt comfortable to share information and trusted the MI interventionists. Quotations for forthcoming themes can be found in the table (Table 3).

Themes

Loss of gym: Numerous participants in both groups mentioned that losing access to a gym presented difficulty during the shutdown. In fact, 61% of the subjects discussed this fact in the interview. Participant 10 mentioned: *"Honestly, the biggest change was not being able to go to the gym."* Since the first several weeks of the study started before COVID-19, it appears that losing access to the gym also derailed current progress and routine. Participant 25: *"I was unable to go to the gym, so I lost my typical routine, and this really stopped my progress."* It was also evident that this created a major roadblock due to the participants needing to come up with new forms of exercise. Participant 9: *"Losing the gym was massive. That was my favorite form of exercise and I felt lost without it."*

Boredom/stress eating: Many of the participants reported that they noticed they were eating differently due to various emotions. About 39% of the subjects mentioned some form of emotional eating.



Table 3: Additional Qualitative Quotes.

Loss of Gym	Participant 28 MI Group: "It was really hard to wrap my head around at first. Everything just changed all of a sudden. I couldn't go back to school which was weird and that threw off my schedule and gym routine. It was also different to exercise so much at home, it was tough to be consistent the first few weeks." Participant 10 MI Group: "Losing the gym was the worst for sure." Participant 30 MI Group: "Losing my routine, the gym, campus."
Mental Struggles	Participant 35 MI Group: "The biggest hurdle was just mentally getting over losing the gym and being locked up for a few months." Participant 32 EE Group: "Besides just being overwhelmed, I just never felt like doing anything. I almost felt depressed about life in general. So groggy, so tired. I think the biggest hurdle was just mentally, I couldn't get passed being stuck in the house." Participant 27 EE Group: "I went on spring break and then came back to a whole different world. I couldn't come back to school, exercise on campus, eat the way I planned. It was so crazy. I went back home and just stayed in the house. I didn't want to exercise; I didn't want to eat right. I was depressed to a certain extent."
Boredom/Stress Eating	Participant 35 MI Group: "It was also tough to stop the excess eating from emotion or boredom." Participant 36 MI Group: "My eating options were basically the same, but I was at home a lot more and found myself snacking so much more. I didn't really have anything else to do half the time." Participant 36 EE Group: "I ate pretty much the same so that wasn't too bad but probably did some extra stress eating."
Loss of Structure/Living Conditions	Participant 32 EE Group: "I don't feel I can even go outside and walk due to where I lived during all this." Participant 27 EE Group: "I wasn't focused on the little things anymore, I was more worried about my classes, family, and how I was going to survive having to stay in the house. The little things like not being able to go to the gym or have only good food around me impacted me but I haven't even thought about it until now." Participant 36 MI Group: "Every week I would have a day or two where I didn't want to do anything. My whole schedule was disrupted. My sleep was weird, I was groggy all the time."
MI was more Remarkable	Participant 27 EE Group: "It reminded me of the study and my goals, but I didn't change anything." Participant 30 MI Group: "The interviews were awesome. The discussions were great, I got a lot out of them. It was nice to talk out everything, I felt a lot smarter after our discussions." Participant 36 EE Group: "I didn't use a lot of the information in practice, other than the at-home workouts, but it still reminded me of my goals."
MI more Notable during the Shutdown	Participant 28 MI Group: "The interviews were really nice during this time. We worked out a plan for my exercise options at home which was really useful. It also made me refocus as I was in a bit of a daze when I first had to quarantine. We made some adjustments along the way as well, it was overall really helpful." Participant 35 MI Group: "The exercise band stuff we discussed was really helpful. I didn't really think about it, but it makes sense that band work is still resistance." Participant 25 EE Group: "The at-home workout information was nice but it really didn't cause me to bounce back. It wasn't that effective overall."
Subjects Receiving MI Enjoyed the Autonomy Focus	Participant 10 MI Group: "I know I bounced several ideas off of you and we talked about specific exercises that I could do at home during the pandemic." Participant 35 MI Group: "I liked the topics and I really liked you asking me about what I wanted out of the study and asking for my input." Participant 02 MI Group: "The interviews were very helpful. I was asked some really interesting questions and I really had to dig deep to talk about why I wanted to exercise and eat better. I wasn't expecting that but it really made me become intentional with my actions. I have been focusing on what is enjoyable and activities that I actually want to do."
Subjects Receiving MI Felt Comfortable to Share Information	Participant 35 MI Group: "At first I didn't want to discuss my problems, but I felt really comfortable sharing after talking for a little while, so I was able to put everything on the table and restart." Participant 02 MI Group: "Talking through my struggles during this time was great. Just to be able to share my ups and downs with someone else was very helpful." Participant 13 MI Group: "I felt really comfortable talking about my struggles while stuck at home and I am really happy about it now."

Where: MI = Motivational Interviewing; EE = Electronic Education

Participant 32: "Eating-wise, I started eating even more as well. I did a lot of emotional eating, lots of eating out of pure boredom." This was likely a result of being quarantined and staying within their living space for much longer durations of time. There were also other emotions mentioned other than boredom with Participant 22: "I ate more sugar/dessert than normal, maybe due to feelings of depression at times." Once again, being forced to stay inside their home and the abrupt change in their daily lives appeared to result in various emotions that the participants felt changed their eating habits.

Mental struggle: The most common struggle mentioned related to COVID-19 was mental struggles, which was discussed by about 44% of the participants. Participant 13: "It was just hard to get my brain around what was going on. I spent a lot of time early on just wandering around the house, I just wasn't fully present mentally." Many of the participants felt like they were stuck in a cycle of low production and couldn't get over being stuck inside. Participant 1: "Mentally tough for sure. I was just pacing back in forth in the house or laying around for what felt like months. I hated it." While the physical barrier of losing access to fitness facilities and opportunities was a massive hindrance, the sudden

change brought about by quarantine restrictions took a major, mental toll on these participants.

Loss of structure: For these participants, they were notified during Spring Break that face-to-face classes were being canceled and the campus was being closed. Many of the participants were forced to go back home with their parents on short notice and completely change the way they planned to live for the rest of the semester. Participant 3: "I had lost my method of exercise and I was having to stay surrounded by food all day, whereas, I typically was at school for large parts of the day." Many also mentioned that they had more on their mind than just managing their weight due to the sudden, life-altering situation. Participant 25: "I exercised a lot less and less intensely and my eating habits were all over the place after school was canceled. I lost access to my apartment and was sent home, so I had so much other stuff to deal with." The loss of structure greatly derailed the progress that was made during the early portions of the intervention was an intense moment for the participants.

MI more remarkable compared to electronic education: The participants receiving MI were much more positive on the intervention



when compared to the control group. Participant 2: *"The interviews were very helpful. I was asked some really interesting questions and I really had to dig deep to talk about why I wanted to exercise and eat better."* Many of the participants noted that the interviews made them think and reflect about why they actually wanted to exercise. Participant 28: *"The interviews were useful. I felt like I was able to ask a lot of questions and I was definitely asked some questions that I really had to think about. I initially just thought I wanted to lose weight, but after thinking on it, I wanted to add some lean mass as well. I wanted to look and feel better."*

89% of participants in the control group felt the electronic education was helpful but were lukewarm on the impact. Participant 32: *"The educational material was good. I don't think it helped me all that much though. I didn't really use the information."* Most of the participants felt the electronic educational was ineffective as an intervention. Participant 27: *"The educational material really didn't do much. The content was useful for sure, but after reading it, it didn't cause me to act."*

MI more notable during COVID-19 when compared to electronic education: The participants receiving MI mentioned that the sessions were particularly impactful during the pandemic due to the need to strategize a new exercise plan. Participant 35: *"Yes the interviews were a big deal, especially for the banded exercises at home during the shutdown"*. It was also evident that the participants often weren't sure that smaller doses of exercise compared to what they previously were doing would still be beneficial and that the sessions were useful in addressing questions related to changes in exercise habits. Participant 7: *"The interviews really were a big help. I don't know if I would have started walking otherwise. I probably wouldn't have thought it would have made a big difference."*

The electronic education during the pandemic was centered around home workout options. Many of the participants enjoyed the information but did not actually engage in the workouts. Participant 18: *"The educational material was cool, but I didn't do any of the at-home workouts. I never felt like I could actually do it."* Participants often noted that they would have needed something more extensive or would need help to feel comfortable with it. Participant 22: *"The educational material was good. It obviously didn't help a lot. The information was useful, but it didn't really budge me. Something more extensive was needed."*

Autonomy increase: One of the themes that were consistent among the MI group was the enjoyment of the autonomy focus of the sessions, with 61% of the participants within the MI group discussing this sentiment. Participant 3: *"I thought this was going to be a motivating interview where I was told what to do. Instead, I had a chance to focus on my struggles and ideas that work for me."* The participants appeared to like the flexibility of the options, as well as, the focus on realistic changes, even if they were incremental. Participant 13: *"It felt like I was almost talking to myself instead of an expert. This was good though because I got to think a little bit about what was realistic. What I liked to do for exercise, what I actually could do eating-wise."* The participants also mentioned that they liked the focus on their goals and desires. Participant 1: *"At first, it was a little weird as the questions made me think critically. But reflecting on it, it really made me look inward. Why do I want to lose weight, why do I want to be active? It was refreshing to focus on my wants to be honest."*

Trust/comfort: The participants receiving MI felt comfortable sharing personal information even when discussing touchy subjects, like weight. 50% of the participants echoed this viewpoint. Participant

35: *"It was also really nice to not feel judged when we were talking. I usually don't like talking about my weight, but in the interviews, I felt like I could talk about it without feeling bad."* This was also particularly useful when discussing struggles, which is often important to improving behavior. Participant 30: *"I also felt really comfortable talking about struggles I had, it was nice to get that stuff off my chest so I could move past it."* Among these participants, it may have also been a positive thing to speak with someone other than a family member or friend. Participant 1: *"I also felt really good about talking with you. I don't really have these conversations with other people, but it felt safe."*

Discussion

COVID-19 pandemic

Despite the COVID-19 pandemic being a recent occurrence, there are a few studies that have already shown weight gain among those in quarantine [17, 18]. This is in addition to our quantitative findings that subjects in the control group within this research gained about 2.28 kg over 6 months (most of which took place during COVID-19) [19]. Only one study currently exists that explores the struggles with weight maintenance for adults during the pandemic [20]. This study was implemented with older adults that were a part of a physical activity program in France. Findings suggest that the pandemic made physical activity adherence harder to accomplish due to a lack of resources, social interaction, and lack of interest in online, exercise content. Despite being conducted amongst a different population, the results of this study also reflect some of the same results, with a lack of resources (gym and campus) being a large barrier for most of these students as well as the participants in the control group stating that the electronic education for at-home workouts not being enticing enough to engage in consistent exercise. This is notable due to the importance of campus recreation opportunities for college students. It has been estimated about 95% of college students engage in some form of campus recreation multiple times per week [21]. Unsurprisingly, it has also been demonstrated that users of campus recreation facilities report lower BMI [22]. Several participants in our study mentioned having eating struggles related to boredom or emotional eating. Boredom eating is an issue established in the literature and may be a major factor during quarantine due to the extended period at home [23]. There is also support in the literature on other various forms of emotional eating from feelings such as stress or anxiety [24]. Research on the psychological impact of COVID-19, while in its infancy, has already begun to outline anxiety, stress, and depression increases [25]. Another study trying to better understand the impact of COVID-19 specifically targeted college students of various ethnic backgrounds and reported several disruptions from finances, living situations, and academics [26]. There were also mental health challenges such as stress, anxiety, and depression. These results mimic many of our findings in that COVID-19 was a massive moment for college students. Future interventions are needed to better understand the struggles related to health behavior adherence during the COVID-19 pandemic so that solutions can be devised to react to the current situation properly.

One important factor to mention is that while that many of the themes in the pandemic-related struggles (loss of gym, loss of structure, mental struggles, boredom/stress eating) stand alone, it should be stated that many of these categories overlap. For example, many of the participants mentioned mental struggles and then proceeded to mention poor eating habits in a manner that one could interpret a relationship between the two. While this intervention cannot demonstrate a causal relationship of mental struggles causing



issues in other areas, like stress eating, it should be at least be noted. The same can be said for other situations, like the possibility of a loss of structure causing more mental struggles or the loss of the gym leading to more stress eating. Future studies may want to investigate this point as certain weight-related struggles may cause more problems in other areas, and this information could prove very useful for health professionals.

Autonomy increase

Results from multiple interventions substantiate the finding that participants respond positively to the autonomy-driven focus of MI [27-29]. Some of the findings are that self-determination increased within the patients [27], participants felt complete freedom to share without coercion and enjoyed that they were not told what to do [28] and that the participants felt they actually had a choice and control over their behavior [29]. These findings also may support our quantitative findings that the participants within the MI intervention had an increase in autonomy (via survey) from the MI sessions [19]. It does appear that this is currently the only qualitative analysis of MI utilized among college students for anthropometric status. Future interventions can strengthen the literature by focusing on measuring autonomy in weight loss/MI interventions as well as utilizing qualitative analysis in MI studies to investigate participant's experiences.

Trust and comfort

Previous literature substantiates our findings that the participants receiving MI felt comfortable sharing information and had a trusting relationship with the interviewer. One intervention stated that the participants' trust with their registered nurse delivering MI was crucial for the confidential relationship where true feelings could be shared [27]. Another study demonstrated that the subjects felt that the interviewer was caring, non-threatening, trustworthy, and made them feel comfortable [28]. One intervention found that while discussing a sensitive topic in antiretroviral therapy adherence for HIV, 80% of the subjects felt very comfortable discussing their health behavior during the MI sessions [29]. The final study was conducted among HIV/AIDS positive patients regarding safe sex practices [30]. This intervention walked the participants through a new method of communication based on MI via focus group to gather feedback and thoughts. The participants mentioned negative experiences with counseling and felt they were not trusting of the practitioner and therefore, were unable to have effective discussion in the past. One of the largest themes found was the desire for a more trustful and non-judgmental connection with a health professional and many of the participants felt that those delivering MI had high potential to deliver on that desire. Our intervention and these previous findings support MI as an empathetic communication method that drives effective discussion, even when talking about sensitive topics. It is also important to note that our quantitative results found an increase in relatedness (via survey), and these qualitative results may support this finding as participants felt trust/comfort in speaking with the MI deliverer [19]. It appears that too many participants in this intervention, the empathetic nature and focus on building trust was noteworthy.

Limitations

The most significant limitation of this study is the small sample size. This resulted in fewer subjects which would have been very useful in providing insight into more experiences, especially considering qualitative research focusing on college students trying to manage their weight during COVID-19 is novel. Related to this limitation was the

high attrition rate. The COVID-19 pandemic began in the middle of this intervention and the study was extended due to participants not being able to return to campus thus delaying the ability to conduct post-testing. Many participants dropped out of the study for reasons related to the pandemic or the extension of the study including graduation, not returning to campus, or passively withdrawing from the intervention. In addition, the generalizability of the findings may be limited due to not only these challenges but that the study was conducted at one university among a mostly white, all female sample. Generalization is also limited due to the control group being electronic education and human interaction wasn't present, unlike the intervention group. It cannot be ruled out that the differences in experiences between groups could be attributed to the human interaction or lack thereof.

Future Research

While the situation of this intervention may not be replicable due to the unique timing of the initial emergence of COVID-19, it does appear that with the arrival of the Delta variant, this pandemic will continue to linger on for an extended period. Future interventions would build upon the limitations of this study by addressing the sample size. Increasing the sample size and perhaps being able to better address retention would give many more experiences and propel the literature base forward. Future interventions would also greatly benefit the literature by increasing diversity among the sample so that researchers have a better understanding of differences based on race, gender, geographic location, etc. More research is needed to validate the findings regarding the participant experiences and MI in this context. It would also benefit the literature to investigate the experiences of participants with other methodologies for weight management as well. Finally, future investigators may further explore weight-related struggles during the pandemic and influences on other health behaviors. Health professionals could potentially use this information to impact multiple health behaviors.

Conclusion

The COVID-19 pandemic had an impact on college students trying to manage their weight. Within this sample, the loss of a fitness facility, the loss of their structured way of life, and boredom/emotional eating were large barriers to their behavior. It also appears that the lockdown taxed the participants mentally and was often noted as the largest struggle during COVID-19. Participants reported MI as being more effective than the electronic education (especially during COVID-19), the autonomy supportive nature of MI being enjoyable, and described feeling comfortable discussing weight-related topics and trusting of the MI interventionist. MI has demonstrated potential among college students for weight management, even during a global pandemic. This qualitative analysis provides information for future researchers regarding the impact of COVID-19 on overweight, college students trying to manage their weight. Future researchers may also benefit from employing a flexible, empathetic, and autonomy-driven solution among college students, especially while COVID-19 is still impacting America.

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