Evaluating the Use of Theatre to Decrease Depression and Anxiety Among Adolescents with Chronic Medical Conditions

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Abstract

Background: Adolescents with chronic medical conditions have higher rates of anxiety and depression than their peers, possibly due to maladaptive coping strategies. We have developed a role-play intervention based on Integrative Community Therapy that uses improvisational theatre to teach healthy coping strategies to adolescents with chronic medical conditions. To assess the appropriateness of this intervention for this population, we conducted a pre-intervention assessment of participants' quality of life and knowledge and utilization of coping strategies.

Methods: Participants were recruited from pediatric subspecialty offices, electronic medical records, and local high schools and middle schools. Pre-intervention variables were measured using both quantitative and qualitative methods. Participants were screened for major depressive disorder and generalized anxiety disorder using the Revised Children's Anxiety Depression Scale. Quality of life was assessed by the Pediatric Quality of Life Inventory. Knowledge and utilization of coping strategies were assessed using the KidCOPE questionnaire. Qualitative interviews were also conducted and coded using modified grounded theory.

Results: This pilot study consists of 3 participants between the ages of 15 and 17. No participant had a clinically significant score for either major depressive disorder or generalized anxiety disorder. On the Pediatric Quality of Life Inventory, emotional and school functioning were the most significantly affected categories, with median scores of 45/100 and 50/100 respectively. On the KidCOPE checklist, 2 out of the 3 participants scored less than 1, meaning they endorsed using more negative coping strategies than positive ones. In qualitative interviews, most participants endorsed significant emotional and functional effects of their illnesses on their everyday lives, corresponding with the domains indicated in the Pediatric Quality of Life Inventory. When presented with standard scenarios, most participants were more likely to use positive problem-based coping strategies when standing up for a friend to another peer. Additionally, participants were more likely to use maladaptive, avoidant behaviors when confronted with an authority figure.

Conclusion: This intervention is inexpensive and easy to administer. It uses improvisational theatre to teach healthy coping strategies to adolescents with chronic medical conditions. The pre-intervention assessment of participants in this pilot study indicates that this population is ideal for this intervention given the impact of their medical conditions on their everyday lives and their lack of utilization of positive coping strategies.

Introduction

Adolescents with chronic medical conditions (CMCs) are more likely to develop anxiety and depression than their peers without CMCs (1, 2). Research has shown that children with CMCs are more likely to have depressive symptoms as early as age 11 and to be diagnosed with anxiety by age 16. The number of depressive and anxious symptoms also increases with the number of CMC diagnoses in each patient (1). This increased risk may be due to maladaptive coping strategies (3). Additional risk factors for anxiety and depression in adolescents with CMCs are low self-esteem, peer problems, and emotional expression and regulation difficulties (4). This increased risk for anxiety and depression necessitates the development of a unique intervention strategy to help adolescents with CMCs.

The format of the intervention described here is based on integrative community therapy (ICT). ICT is a unique form of therapy that was developed to "integrate the knowledges developed by community members through their lived experiences" (5). Due to the peer interaction and sharing of local knowledge inherent in this type of practice, it is ideal for working with adolescents. Adolescent patients with CMCs value peer support as a fundamental aspect of their care (6). The most important aspect of peer support groups and mentoring relationships is having the opportunity to voice concerns and get advice (7, 8). Interventions with a peer support aspect have been shown to decrease anxiety and depression (9). Adolescents with CMCs clearly have a lot of local knowledge to share about disease management, and this knowledge has been shown to benefit others, making ICT an ideal format. ICT has also been shown to improve empowerment (10), which has in turn been shown to decrease anxiety, depression, perceived stress, and to improve disease outcomes (11).

The intervention described here also incorporates role-play. Whereas in traditional ICT, participants describe difficult situations they are struggling with, in this intervention, situations are discussed using role-play to increase anonymity. This is particularly important with this age group to increase openness and avoid embarrassment. Role-play interventions have been shown to have beneficial social emotional effects in both adults and children. In adults, role-play interventions increase people's abilities to recognize and express emotions (12, 13), increase insightfulness (14), and decrease aggressive behavior (15). In children, such interventions increase prosocial behavior (16–18), decrease aggression (16), and reduce depression (19).

Although there is good evidence for the use of role-play interventions, there are several gaps in the way they are typically studied. These interventions are often not based on

any underlying psychological framework, making them difficult to replicate or adapt to a new population. They can lack fidelity, as there are multiple facilitators with various levels of training. These studies are also limited by small sample size, lack of statistical analysis, and lack of a control group. Additionally, many studies for role-play interventions do not utilize mixed methods evaluation with quantitative and qualitative components. Most interventions of this type are studied in homogenous populations of patients with the same condition.

This study addresses many of these gaps. This intervention is based on ICT, an existing therapeutic technique that has been studied, allowing for replication and adaptation to other patient populations. Fidelity will be ensured by a facilitator guide and training that have been specifically developed for this intervention. We plan to implement this intervention alongside a control group, using improvisation as usual. We will also be utilizing mixed methods evaluation with both quantitative and qualitative measures. Finally, this study is unique because it will follow a heterogenous population of adolescents with different CMCs.

In this intervention, role-play is used with an ICT framework to facilitate the transfer of peer-to-peer knowledge regarding emotional regulation and navigation of difficult social situations. The goal is that this will prevent anxiety and depression and increase disease-related quality of life by increasing knowledge and utilization of different coping strategies and increasing empathy. Here, we describe this intervention and the pre-intervention assessment undergone by participants in the pilot study. We have conducted a pre-intervention assessment of quality of life and knowledge and utilization of coping strategies with 3 adolescents with CMCs, and we concluded that this is an appropriate target population for this intervention.

Methods

This is a program pilot study with Geisinger Commonwealth School of Medicine and the Geisinger clinical enterprise. The institutional review board at Geisinger reviewed and approved this study (protocol number: 2022-0322). This study was conducted in accordance with institutional review board guidelines and the Helsinki Declaration.

Recruitment

Inclusion in this study required that patients self-identify as having a CMC, which we defined as an ongoing medical issue that affects the patient's everyday life. Participants between the ages of 5 and 17 were recruited, but the intervention is planned to be completed with the age group from which the first 3 people responded that were aged within 3 years of each other. This was done to be responsive to the needs of the community while preventing a large developmental gap between participants. Other requirements were to be able and willing to participate in improvisational theatre in spoken English, and to be able to understand and answer standard questionnaires used for evaluation in English. No exclusion criteria were defined. Participants were recruited from subspecialty offices, from electronic medical records, and from local high schools and middle schools.

Participants for this study were recruited from pediatric subspecialty offices in the Scranton and Wilkes-Barre areas using a poster hung in clinical areas and waiting rooms (Figure 1). The poster invited participants to fill out a RedCap survey indicating their interest in the program and requesting their contact information. A medical student also sat in the waiting room of pediatric subspecialty clinics and invited patients to fill out the survey while they were waiting.

Electronic medical records were also used to recruit patients. Patient ages and contact information were obtained from

Improvisational theatre program for children and teens with chronic medical conditions

Topic: Theatre program interest survey
When: Right now!
Where: Two ways to access – scan the QR code or enter the link below:

https://redcap.link/e0y9oe8f

Children with chronic medical conditions who participate in theatre can avoid the anxiety and depression that can result from these conditions. Our medical students are creating an improvisational theatre program this summer that explores the unique experience of growing up with a chronic medical condition. Kids will learn the basics of acting, theatre, improvisation, teamwork, and coping strategies to deal with difficult situations.

Local kids and teens will benefit from this program, so they can tell us what they want! By filling out this survey, your child can let us know the best time/place/age group for this program. If they're not a theatre buff but want to help further our research, we'd welcome their input, too.

For more information, contact:
theatre-as-medicine@som.geisinger.edu

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Figure 1. Recruitment Poster. This poster was used to recruit participants from pediatric subspecialty offices, high schools, and middle schools.

electronic medical records for patients that attended a Geisinger outpatient clinic within 50 miles of Scranton, Pa., prior to June 1, 2022, who were between the ages of 5 and 17, lived within 50 miles of Scranton, Pa., and had English listed as their primary language. Patients were not contacted if they did not have an acute or chronic problem listed in their problem list. Emails advertising the study were sent to both patient and parent/guardian emails listed in electronic medical record.

Lastly, posters were given to officials at local high schools and middle schools, including principals, assistant principals, counselors, nurses, and performing arts instructors to hang in student areas to elicit interest.

Intervention

This intervention consists of ten 90-minute sessions held once per week. The intension is to have two arms, one consisting of the intervention and one consisting of improvisation as usual, to account for the beneficial effects of participation in the arts. The inclusion of a control arm has been limited by lack of participants.

The structure of sessions within this intervention is based on the structure of ICT sessions. This structure, developed by Adalberto Barreto, MD, PhD (5), consists of five stages: Welcoming and Warming Up, Selecting a Theme, Contextualizing the Theme – Linking Suffering, Sharing of Local Knowledge, and Closing Ritual. We have adapted these stages to incorporate the element of role-play. This allows adolescents at a tender stage to have a layer of anonymity when sharing local knowledge. Instead of analyzing and providing advice for a situation that they have been in, we analyze and provide advice for a fictional scene, which elicits the same feeling as a situation that they have been in. The stages for this intervention are described in detail below.

Stage One: Welcoming and Warming Up: Participants are welcomed as they come into the room. There is some form of formal welcome when the entire group gathers, such as everyone sharing a piece of good news from their day. Warming up consists of doing 1 to 2 improvisation warmups and 1 to 2 short-form games.

Stage Two: Selecting a Theme and Stage Three: Contextualizing the Theme – Linking Suffering: Stages two and three are performed together. Participants share either a specific story or they share a feeling that they've been experiencing lately. In ICT, the theme for the session is described as "the pebble in your shoe." Themes for this intervention should be somehow related to living with a CMC or symptoms that participants experience. As themes are suggested, if they are a story, the facilitator translates them into a universal feeling so that they are more widely applicable to all the participants. The group then votes on the theme that resonates with the most members and most members would like to explore.

Stage Four: Intervention Scenes and Stage Five: Sharing Local Knowledge: Stage four is specific to this intervention and does not occur in traditional ICT. Instead of analyzing one specific person's story, as is done in ICT, groups of about 4–5 people create an improvisation scene based on the chosen theme. The groups are given 5–10 minutes to discuss and prepare their scenes before performing them. Group leaders then facilitate an analysis of those scenes according to a standardized scene analysis guide (Figure 2). The analysis is considered stage five. The guide also provides an opportunity for participants to share their local knowledge if they have gone through a similar experience as one of the characters.

Stage Six: Closing Ritual: At least 10 minutes at the end of the group is reserved for a closing, and it is done the same way every time. One possible closing is "Wow, Pluses, and Deltas," in which participants share one thing that they learned or an insight they had (wow), what people did well either regarding acting or analyzing scenes (pluses), and what the group or individuals could improve for next time (deltas).

Evaluation

Participants will complete an evaluation assessment at the beginning of the intervention, immediately following the intervention, then 6 months and 12 months after the intervention. Each evaluation utilizes both quantitative and qualitative methods.

Quantitative Measures

Participants are assessed for major depressive disorder and generalized anxiety disorder using the Revised Children's Anxiety Depression Scale (RCADS). This is a validated self-report tool consisting of 47 scaled items, which can be scored according to unique subscales for specific disorders (20).

The Pediatric Quality of Life Inventory (PedsQL) is being used to assess patients' disease-related quality of life. This validated self-report tool consists of 23 items covering the domains of physical, emotional, social, and school functioning (21). Median measures of this tool are reported due to the nonparametric distribution of the results because of the low number of participants.

Knowledge and utilization of coping strategies are being evaluated using the KidCOPE checklist. Although this is not a validated questionnaire, it has been a widely used research instrument since its development in 1988. The instrument asks respondents to consider a difficult situation they had to cope with and reflect on how often they utilized each of 10 coping strategies, assigning a possible score of 0–3, and how effective each one was, assigning a possible score of 0–4 (22). The KidCOPE score is reported as the sum of the frequency of utilization of each strategy multiplied by its effectiveness, resulting in a maximum possible score of 120. We also report the ratio of positive to negative coping strategies used, which was calculated by summing the frequency of utilization of each positive coping strategy divided by the sum of the frequency of utilization of each negative coping strategy.

Additional Instruments

During the pre-intervention assessment, participants were also asked to fill out the Pediatric Adverse Childhood Events (ACE) and Related Life Events Screener (PEARLS) (23), a demographics form, and the Ask Suicide-Screening questions (24). ACE scores and demographic information were collected to assess for confounding effects, and the Ask Suicide-Screening questions were asked after qualitative interview to assess safety since sensitive topics were discussed, such as chronic disease, quality of life, and bullying.

This guide will help you lead participants through an analysis if they're seen. Feel free to use the questions out of order, or not at all as appropriate.

So, how would you describe the problem in the scene? (Ask the following questions about the person that the participants identify as the protagonist)

Okay, (to the person playing that character) how do you think this situation makes your character feel?

(to the group) how do you think this character would feel in this situation?

As a fun exercise, we're going to get an opportunity to ask this character some questions. So, (actor) you will have an opportunity to answer questions as your character. Now, this is all for fun, and you don't have to do it if you don't want to. We know you're not actually this character, so it's okay if you don't have an answer for every single question. The audience can ask questions about why you acted a certain way, how you felt at different points in the story, or anything else they would like to ask.

Awesome, thanks for playing along with that.

Can you think of a time when you felt similarly to this character? What did you do?

Repeat this series of questions for all characters that the participants mentioned as part of the problem (and other characters as time permits). The idea is to explore the feelings of different characters in the scene to build empathy, so you should especially try to ask about any characters that the participants identify as an antagonist in the story.

Okay, now that we've talked through some of the different points of view in this scene, let's talk through some different coping strategies that we saw used. To remind you, there are three different categories that coping strategies can fall into. The first is problem-based coping, where we deal directly with the problem. An example of this would be if your car broke down, and you took it to get fixed. The second is emotion-based coping. This is when we can't necessarily solve the problem, but we can still process our emotions about the situation. An example of this would be if a grandparent died and we went to the funeral and shared our loving memories about them with family members. The third category of coping strategies is avoidance, where we don't really cope at all, but we just try to avoid thinking about the stressor. This is not as effective as the other two categories, but it can sometimes be helpful temporarily. For example, if you have two school projects due back-to-back, you might choose to take an afternoon off in between the two and just watch TV. You're avoiding the stressor, but in this case, you could probably use a break and it would be helpful. However, if you watched TV until two hours second project was due and then tried to rush to get it done, that would be bad.

So, in the scene we just watched, what coping strategies that the characters use? Which category would these fall into?

Were these strategies effective?

What would you have done instead?

Okay, let's try improvising this scene again using a different coping strategy and see how it plays out.

How did that go differently? Did it work out better for the characters?

Now, life does not always work out ideally. What are some reasons that people wouldn't use the best coping strategy for their particular situation?

What are some ways we can overcome these barriers?

Figure 2. Facilitator Scene Analysis Guide. These questions are used by the facilitator to lead a discussion of the intervention scenes to analyze coping strategies and share local knowledge.

Social dynamic	Interview question
Peer-to-peer interaction antagonistic toward the patient	You are standing outside on the playground and someone in your class comes up to you and says your shoes are ugly. What are your thoughts about this situation? What do you do?
Peer-to-peer interaction antagonistic toward the particpant's friend	You are getting your coat after class and you're standing next to your best friend. Someone comes over and accuses your friend of stealing their favorite pencil case out of their desk. What are your thoughts about this situation? What would you do?
Interaction with an authority figure	You are sitting at your desk quietly doing work and you drop your pencil. You get up to get it, and your teacher yells at you for getting up while people are supposed to be quietly working. What are your thoughts and what do you do?

Table 1. Interview Guide Standard Scenarios. This table describes standard scenarios with various social dynamics described in participant interviews to elicit coping strategies participants would use in scenarios that will remain consistent between participants and over time.

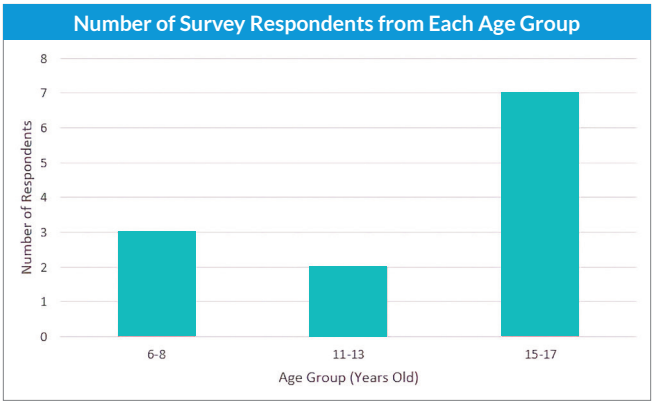

Figure 3. Number of Survey Respondents from Each Age Group. This figure shows the frequency of the ages recorded in each survey response. The responses are aggregated in groups of ages within 3 years of each other because that is who would be eligible to complete the program together, and individual responses are not reported for privacy.

Domain	Median Score
Physical	84.38
Emotional	45
Social	65
School	50

Table 2. Results of the Pediatric Quality of Life Inventory. This table shows the median scores of the 3 participants recruited for the pilot study on the Pediatric Quality of Life Inventory. A higher score indicates a better quality of life.

Qualitative Measures

Semi-structured qualitative interviews were conducted and coded using modified grounded technique. Interviews were conducted one-on-one with a study team member via Zoom or phone, and they were transcribed verbatim. Two study team members generated the codebook from the data and coded the interviews. Disagreements in coding were discussed, and the codebook was modified in an iterative process until all coding was unanimous.

Interview topics included the participants' feelings about the intervention, their CMC journey and quality of life, and some specific scenarios and how the participant would cope with them. The specific scenarios involved a peer-to-peer interaction antagonistic toward the participant, a peer-to-peer interaction antagonistic toward the participant's friend, and an interaction with an authority figure (Table 1). Whereas for the KidCOPE instrument, the participant thought of a stressor they recently experienced, the purpose of these questions was to ascertain what coping strategies the participant would use in standard scenarios with various social dynamics that would be consistent between participants and over time.

Results

Recruitment

A total of 12 unique responses were collected from the RedCap participant interest survey. The average age of respondents was 11, with most being from the 15–17 age group (Figure 3). The majority of respondents were either lost to follow-up, not interested in the intervention, or did not have a CMC. Of the 12 respondents, 3 were interested in and available to participate in the program, met the inclusion criteria, and were aged within 3 years of each other. Pre-intervention assessments were completed with these 3 participants, and the results are discussed below.

Summary Statistics

All 3 participants are female, age 15–17. Two suffer from CMCs involving mental health, while one has a condition involving physical health. The median age at CMC onset was 11 years of age, and the median length of time living with the condition is 7 years.

Pre-Intervention Quantitative Findings

RCADS scores were not clinically significant for generalized anxiety disorder or major depressive disorder. Scores were recorded for comparison post-intervention.

The PedsQL revealed moderate amounts of dysfunction in the emotional and school functioning domains, while physical and social functioning were less affected (Table 2). This corresponds with the qualitative interview findings, discussed below. The participant with a CMC affecting physical health did endorse a worse quality of life in the physical health category, perhaps unsurprisingly, but for privacy, individual results are not reported here.

The median score on the KidCOPE checklist was 34. Although the maximum possible score of this measure is 120, it is not a realistic score because the instrument includes both positive and negative comping strategies. If all positive coping strategies

Coping strategy	List item
Emotional regulation	Tried to calm myself by talking to myself, praying, taking a walk or just trying to relax
Problem-solving	I thought of ways to solve the problem; talked to others to get more facts and information about the problem and/or tried to actually solve the problem.

Table 3. KidCOPE Checklist Items Being Specifically Evaluated. This table shows list items on the KidCOPE Checklist that this intervention is specifically targeting for increased utilization. Please note that on the instrument itself, only the list items are shown, not what coping strategy they indicate.

assessed were endorsed with the maximum possible frequency and effectiveness, and no negative coping strategies were endorsed, the score would be 40. We will be evaluating for an increase in this overall score after the intervention. To provide a score that more accurately reflects positive and negative coping strategies used, we assessed the ratio of positive to negative coping strategies endorsed. Two out of the 3 participants had a score less than 1, indicating that they use negative coping strategies more often than positive ones.

All 3 participants endorsed using emotional regulation and problem-solving coping strategies (Table 3) infrequently, with no one endorsing a 0 (not at all) or 3 (almost all the time) for frequency on either of these list items. Increasing use of these specific strategies is one of the goals of this intervention.

Pre-Intervention Qualitative Findings

Participants expressed excitement for the activities of the intervention as they pertained to doing theatre, some connecting the intervention to previous positive experiences they had doing theatre in the past. In addition to excitement for the activities of the intervention, participants anticipated unintended benefits of the intervention, such as practice with public speaking and making friends.

When asked about their CMCs, participants described knowing about the condition long before they were able to obtain a formal diagnosis. Participants used phrases like, "As far back as I can remember..." or "I've always felt..." This led to complex feelings when a diagnosis was obtained. As one participant described, "At first I would say it was definitely a big relief, but it was also like pretty scary because we had never heard of it..."

Participants described ways in which their conditions affect their everyday lives both emotionally, by affecting their emotional outlook, and functionally, by affecting their ability to live life the way they want to. From an emotional aspect, one participant said, "I feel really alone, like I'm the only person in the world who has it even though I know that other people have it." Functionally, participants made comments like, "It's, like, hard to leave the house sometimes." These themes correspond to the PedsQL results, in which the most affected domains across the board were emotional and school functioning (Table 2).

Although participants discussed ways in which their conditions affect their everyday lives, typically negatively, an unexpected theme that emerged was strengths that participants feel they have in navigating their conditions. Participants described strengths such as participating in school-based programs, having the right medications, and having a good medical team. One participant said, "And so it took almost 5 years to really find a good medical team, so I would say in that point of view I am in the best, like, team and, like, treatment-wise as I have been."

We assessed participants' baseline knowledge of coping strategies at the start of the intervention both explicitly, by asking what coping strategies they were aware of, and implicitly, by presenting participants with scenarios and asking what they would do in those situations. Coping strategies were grouped by study team members as problem-based (attempting to address the source of stress), emotion-based (attempting to adapt to the source of stress), or avoidant (attempting to ignore the source of stress) (3).

When asked explicitly about coping strategies, participants only named emotion-based strategies and did not name any problem-based strategies. When asked implicitly, they named more problem-based strategies, but did not recognize them as "coping strategies." The most frequently named emotion-based coping strategy when asked explicitly was breathing techniques. One participant also endorsed using music and art for emotional regulation.

When asked about coping strategies implicitly, participants exclusively endorsed problem-based or avoidant coping strategies. In addition to identifying what participants would do, we tried to elicit their thought process. Themes identified in the scenarios portion of the interview are described in Table 4.

Interview Code	Description
Utilization of coping strategies	Naming coping strategies or avoidant behaviors that participants have used or would use during conflict
Emotion-based	Participant describes coping strategies they have used or would use to regulate their emotions and that do not actively try to control the stressor (they do not have to identify the coping strategy or even be aware that it is a strategy)
Problem-based	Participant describes coping strategies they have used or would use to actively try to control the stressor (they do not have to identify the coping strategy or even be aware that it is a strategy)
Avoidant	Participant describes a time that they either have or would avoid a stressor so they wouldn't have to cope with it
Awareness of other people's perspectives vs. Internalization	Any awareness or lack thereof that participants have of other people having different perspectives from them
Internalization of other people's opinions	Any time a participant allows another person's opinion to affect their opinion of themselves, or their emotional well-being
Recognition of the separateness of other people's opinions	Any time a participant recognizes that someone has a different opinion than them, but does not allow that to affect them

Table 4. Interview Themes Identified in Standard Scenarios. This table describes themes that were identified in participant responses to the standard scenarios described in Table 1.

For the first peer-to-peer interaction scenario (Table 1), most participants internalized the comments made by their peer and allowed it to affect their emotional well-being. Although participants were able to identify problem-based coping strategies that they could use in that situation, such as confronting the peer or telling a teacher, most stated that they would not take this action or would take action to escape the situation but that it would continue to affect them after leaving. In the second peer-to-peer interaction (Table 1), all participants were able to recognize that the antagonist had a different opinion from them without allowing it to affect their opinions or emotional well-being. All participants endorsed that they would employ a problem-based coping strategy, stating that they would listen to both sides of the story and try to act as a mediator.

In the interaction with an authority figure (Table 1), participants endorsed avoidant coping behaviors and internalizing thoughts. Participants stated that even though they realized the teacher was wrong to yell at them, they would not feel comfortable challenging an authority figure. The interaction would also affect their emotional well-being after it was over.

Discussion

These results demonstrate that adolescents with CMCs is an appropriate target population for this intervention, given the effect of their condition on their emotional and school functioning, their use of mostly negative coping strategies, their internalization of others' opinions, and their use of avoidant coping behaviors. The intervention is well-received by this population, who anticipate both intended and unintended benefits.

Quantitative analysis with RCADS revealed that these participants did not suffer from generalized anxiety disorder or major depressive disorder. If participants' scores were compared to those without CMCs, it's possible their individual scores may have been higher, but none reached a clinically diagnosable threshold. These scores also do not account for any current treatment for anxiety and depression being undertaken by participants, if any exists. Literature on the increased risk of anxiety and depression in those with CMCs faults maladaptive coping strategies, so we are hopeful that this intervention will decrease subclinical scores of depression and anxiety symptoms and/or prevent an increase in scores to a clinically significant level post-intervention.

Based on the PedsQL, quality of life was most severely affected in the emotional and school functioning domains. This makes sense, as 2 out of the 3 participants had disorders affecting their mental health. However, all participants had moderate distress in emotional functioning, demonstrating that even conditions affecting physical health affect emotional functioning. Additionally, all participants showed moderate distress in school functioning. During the interview, it was revealed that both mental health conditions and physical health conditions had functional effects on quality of life, preventing participants from doing activities they wanted to do. This supports the assertion in the literature that emotion-based coping techniques are most effective in adolescents with CMCs. Problem-based coping strategies may not be effective or appropriate in the face of a condition that cannot be changed, however, effective emotional regulation is important to deal with these challenges (3). Therefore, post-intervention, we hope to see an increase in the emotional quality of life of participants. It is also possible that we may see an increase in school functioning quality of life since mental health issues affect that domain in some participants, and it may be directly improved. Alternatively, if participants want to do some activities, perhaps this intervention will give them confidence for self-advocacy so that they can participate in activities in an alternative way or with accommodations.

Knowledge and utilization of coping strategies were limited in this population pre-intervention. The KidCOPE scores revealed that participants endorsed using more negative coping strategies than positive ones, and although they all endorsed using the individual list items for emotional regulation and problem-solving techniques, no one endorsed them with the maximum frequency or efficacy. Paired with the qualitative interview responses, it seems that participants are not explicitly aware of a large variety of coping strategies that span both the emotion-based and problem-based domains. Even when they are aware of them, they may not have the self-efficacy to employ them in difficult situations.

During the qualitative interview, participants showed a pattern of internalizing other people's opinions of them by both peers and authority figures. Participants made comments such as, "I'd probably get really anxious," suggesting that they would undergo a fight-or-flight response that may prevent higher-level cognitive analysis of the situation and analysis of options for action in the moment. This led to the use of avoidant coping behaviors in most of these situations. Interestingly, when participants were standing up for a friend to a peer, this fight-or-flight response did not seem to be present, and all participants were able to recognize that the antagonist in those situations had a different opinion from them without allowing it to affect them. This allowed all participants to employ a problem-based, rather than an avoidant coping behavior in this scenario. Our goal is to increase emotional regulation in participants, allowing them to analyze all options for action in all situations, and act on the best option.

This study describes an inexpensive intervention, that can be employed with limited time and resources, and has the potential to increase effective knowledge and utilization of coping strategies among adolescents with CMCs. The ultimate goal is to decrease development of anxiety and depression in this population. This study employs both quantitative and qualitative evaluation techniques, a standardized intervention protocol, and a long follow-up period. Weaknesses of this study are the small sample size and lack of a control group. We hope that based on the enjoyment of participants in this pilot study, information about this program may spread, and enough participants for a control group will be available in the future. This pilot study will serve as proof of concept for the anticipated effects of this intervention.

Adolescents with CMCs are an appropriate audience to teach effective coping strategies with a role-play intervention based on ICT with an added element of role-play. Future research will hopefully demonstrate that this teaching is effective and prevents anxiety and depression in this population.

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