ATTRITION AND COVID-19: TWO FACTORS THAT LIMITED THE ANALYSIS OF THE CALM CARPE DIEM GATEKEEPER TRAINING FOR COLLEGE PROFESSIONALS

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Abstract

The risk of suicide on college campuses has become a major concern among students and other college professionals in the United States. In response to the rise in suicidal thoughts and behaviors, colleges and universities have invested in different types of suicide prevention programs. The implementation of suicide prevention trainings that emphasize the importance of reducing access to lethal means is a relatively less common feature of suicide prevention programs. Means safety programs such as the Counseling on Access to Lethal Means (CALM) approach have been adapted to include a gatekeeper version CALM CARPE Diem, which is particularly well-suited for the university environment. CARPE Diem provides training in traditional suicide prevention concepts, but its signature feature is an emphasis on means safety. The CALM CARPE Diem Gatekeeper Training was evaluated in a national convenience sample of college professionals who are part of The JED Foundation online campus community. The JED Foundation, a non-profit human service organization, works to help universities evaluate and strengthen their mental health, substance abuse, and suicide prevention programs. Consenting participants were given access to an online CARPE Diem webinar training. Levels of knowledge and confidence in using suicide prevention and means reduction interventions were assessed via Qualtrics among 42 participants at baseline, post-training, and during follow-up. Though the baseline findings were similar to what has been observed in previous CALM studies, attrition rates were high at post-training and after a four-week follow-up. Though no firm conclusions can be made about this version of CALM due to these limitations in the data, there were some important methodological and practical insights gleaned from this study. Among the insights include the development of an online version of CALM CARPE Diem, a future method

of reaching a national sample of college professionals, and the benefits of directly experiencing the challenges researchers face during a global pandemic.

Keywords: suicide prevention, means reduction, CALM, CARPE Diem, gatekeeper, confidence

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CALM CARPE DIEM TRAINING FOR COLLEGE PROFESSIONALS

The risk of suicide is a prevalent concern in the university population and has been shown to impair individual academic performance. According to the Center of Disease Control (CDC), suicide is the 10th leading cause of death in the United States (2020). Suicide rates in the United States have risen nearly 30% since 1999, according to Stone (2018). Mental health conditions are one of several factors which contributes to suicidal behaviors and tendencies. Mental health and suicidality are a growing public health problem which affects individuals of all ages. In fact, suicide is the second leading cause of death for people 10 to 34 years of age in the United States (CDC, 2020). For many college-aged students, major psychiatric illnesses emerge during this time frame. According to the Association for University and College Counseling Center Directors, 95% of counseling center directors reported an increase in the severity of student psychopathology (Mistler, Reetz, Krylowicz, & Barr, 2012). Roughly one-third of college students experience symptoms of a mental health problem, including depression, anxiety, and suicidality (Lipson & Eisenberg, 2018). The risk of suicide on college campuses has become a major concern among students and other college professionals in the United States. Not only has there been an increase in suicide rates and mental health problems among college students in the United States, but also among college students in England, Australia, New Zealand, and Canada (Lipson & Eisenberg, 2018). Overall, suicide is the 14th leading cause of death worldwide and is projected to continue to increase in the future (Nock, Borges, Bromet, Cha, Kessler, & Lee, 2008).

In response to the rise in suicidal thoughts and behaviors, colleges and universities have invested in different types of suicide prevention programs. The JED Foundation, which was established in 2000, works to help schools evaluate and strengthen their mental health, substance

abuse, and suicide prevention programs. According to the JED Foundation, this organization develops expert resources and creates powerful partnerships to ensure more teenagers and young adults have access to the resources needed to navigate through mental health issues, suicidality, and other life's challenges. JED's programs are grounded in a comprehensive approach to mental health promotion and suicide prevention (The JED Foundation, 2020). In 2020, JED campuses that adopted this comprehensive model have increased student screening for suicidal ideation and mental health, increased campaigns that destigmatize mental health, and provide greater support for college counseling centers. Although the JED Program includes comprehensive components such as consultation, education, lethal means reduction, data collection, and referral, other suicide prevention programs serve the purpose as an educational tool. The purpose of suicide prevention education programs is to provide the general public or "gatekeepers" with information and resources on how to identify vulnerable individuals who may be at risk. Gatekeepers can be anyone who are strategically positioned to recognize and refer someone at risk of suicide. After learning how to properly identify those who might be at risk, gatekeepers will then offer referrals to healthcare providers and crisis services.

Existing Gatekeeper Training

Many programs have been developed that focus on improving the mental health of suicidal individuals, due to this critical public health issue. However, very few mental health professionals are educated on the skills used to discuss lethal means reduction with their clients (Sale, Hendricks, Weil, Miller, Perkins, & McCudden, 2018). Counseling on Access to Lethal Means (CALM) suicide prevention program was developed to address this concern. CALM was specifically designed for mental health and crisis intervention professionals. While most suicide prevention programs focus on increasing knowledge regarding the problem of suicide, the

CALM training program strengthens professional's abilities to counsel their clients to reduce the availability of lethal means if that individual is at heightened risk for suicide (Sale et al., 2018). Counseling at-risk patients about how to reduce their access to firearms and other lethal means is a recommended practice for emergency departments. One study conducted in 2018 revealed that many emergency department patients who were at risk for suicide did not have documented lethal means assessments (Betz et. al., 2018). According to Betz (2018), lethal means assessment was not routine; less than 50% of providers asked about their suicidal patients access to firearms. For those who did have documentation of discussing access to lethal means, the most commonly reported means for patients was firearms, generally for patients above age 60. Because of this, there is a particular focus on the reduction of firearms within the CALM training program. Making lethal means counseling a routine within emergency departments may help reduce the high and increasing numbers of deaths by suicide, therefore indicating a need for CALM training programs (Betz et. al., 2018).

There have been several studies published evaluating the effectiveness of CALM training among mental healthcare providers. A study conducted by Sale et. al. in 2011 offered mental health providers CALM training across the state of Missouri. While researchers believe training the mental health workforce alone is not sufficient, the focus of this study was on CALM's effectiveness as it pertained to the mental healthcare workers. Sale et. al. discovered that CALM is effective at providing mental health professionals with tools needed to discuss lethal mean restrictions with their at-risk clientele (2018). Data from this study demonstrated an increase in knowledge, comfort, and confidence among the participants when working with suicide-risk clients (Sale et. al., 2018). In addition, this CALM training encouraged mental health providers to increase the number of clients with whom they spoke to about access to lethal means. This

research by Sale et. al. provided information on the effectiveness of the CALM training and explained how expanding the number of diverse gatekeepers trained to address lethal means reductions is a critical next step.

Another study which examined the effectiveness of CALM training among mental health providers was by Johnson and colleagues (2011). The goal of this study was to encourage mental healthcare providers to talk with family members of at-risk youths, regarding their access to guns and medications in the home. It is important to note that CALM is not designed to discourage gun ownership and use, instead it works to inform participants about the importance of locking and storing away firearms and ammunition for firearms (Sale et. al., 2018). Johnson and colleagues (2011) found that participants thought the CALM workshop training was informative and necessary. The majority of participants agreed that "suicide can be prevented by restricting access to lethal means," and "it is important to talk to parents about reducing access to firearms" (Johnson, Frank, Ciocca, & Barber, 2011). In addition, the results also indicated that 86% of participants agreed they received concrete ideas for lethal means counseling, 89% agreed they would discuss means reduction in the future, and 84% believed that the CALM training program is a necessity in the mental health workforce (Johnson et. al., 2011). In the follow-up evaluation within this study, Johnson and colleagues (2011) discovered that 65% of participants reported that they had counseled parents of their clients about access to lethal means since the CALM training they had received. The evidence from these studies assessing the effectiveness of CALM has suggested that this prevention training is an effective method of means reduction for suicide prevention. The data also suggests that there is a need to further replicate these findings as well as show the durability of the training effects (Sale, Hendricks, Well, Miller, Perkins, & McCudden, 2018).

Another gatekeeper program worth noting is the Question, Persuade, Refer (QPR) suicide prevention training. QPR has become one of the most widely taught and distributed gatekeeper training programs in the world, according to Litteken and Sale (2017). According to the QPR Institute, over 5,000,000 people are QPR certified worldwide as of 2020. To become QPR certified, individuals are required to complete an hour-long evidenced-based and peer-reviewed training course. The goal of this program is to increase knowledge and dismantle myths regarding suicide and suicidal thoughts. Specifically, QPR aims to strengthen the ability of the gatekeeper to ask at-risk individuals about their suicidal thoughts and behaviors, persuade them to reach out for help, and direct them to the appropriate services and resources (Litteken & Scale, 2017). Gatekeepers who are properly trained in QPR are able to identify the warning signs of an individual in crisis and how to question, persuade, and refer that individual to a specialist (QPR Institute, n.d.).

Several studies have been conducted to test the effectiveness of QPR suicide prevention training. A longitudinal study by Litteken and Sale (2017) demonstrated how QPR can be effective in the short-term, as well as into the future. Researchers evaluated QPR's effectiveness by collecting data immediately prior to and after the training, and 2 years post-training. A total of 2,988 adults, all who worked serving youths aged 10 to 24 years, participated in this QPR training program. According to Litteken and Sale (2017), the QPR gatekeeper training program resulted in both immediate and long-term positive effects in suicide prevention knowledge, self-efficacy, and helping behaviors. The two-year follow-up study design is the longest QPR follow-up study to date and suggests evidence of effectiveness much longer than previous research has indicated (Litteken & Sale, 2017). Researchers also concluded that QPR training can be efficacious in a variety of settings. According to Litteken and Sale (2017), positive effects from

the QPR training were detected regardless of age, race, gender, and role. This program continues to be recommended in state suicide prevention plans as an effective gatekeeper training program which demonstrates long-lasting effects (Litteken & Sale, 2017).

Importance & Impact of Lethal Means Reduction

For an individual to die by suicide, that individual must have access the lethal means to do so. The potential impact of means restriction is greatest for firearm related suicide attempts. According to Bryan, Stone, and Rudd (2011), the fatality rate for death by firearms is 85% and accounts for over half of suicides in the United States. Additionally, the availability of firearms in the home doubles the odds of an individual to die by suicide. The premise in means reduction is that if the individual does not have access to the means to hurt or kill themselves, they are less likely to die by suicide (Wilson, 2020). Means restriction works by limiting or removing any access to potentially lethal means for suicide. Examples of removing access to these lethal means includes locking up medications, locking up firearms, or removing these firearms from the home (Suicide Prevention Resource Center, 2020). However, because of the general lack of available training and guidance, lethal means reduction continues to be infrequently used by clinicians and other healthcare providers. It is recommended that clinicians routinely ask their at-risk patients about firearm possession and engage them in a conversation about the risks of lethal means when suicidal thoughts and behaviors are present (Bryan, Stone & Rudd, 2011). The discussion initiated by the clinician regarding means reduction should entail presenting a menu of options for restricting access to lethal means. This way, the patient at-risk will feel a sense of control over the collaborative plan being implemented (Bryan, Stone, & Rudd, 2011). This conversation is to be framed so that all steps of means reduction are presented in a collaborative manner with the individual's understanding and consent.

Suicide attempts are strongly correlated with the individual's access to lethal mean weapons. Therefore, preventing individual's with suicidal ideation (suicidal thoughts) from getting access to the means for self-harm is a strong significant factor in preventing suicide (Schwartz, 2017). The duration between the first initial suicidal thought and the attempt or accomplishment of the suicidal act itself is known as the suicidal process. According to Deisenhammer and colleagues (2009), the suicidal process is a period consisting of three phases. The first stage of the suicide process is "consideration." The act of committing suicide is seen as a potential solution for the perceived problems at-risk individuals are facing. The second stage of the suicide process is described between the feelings of "ambivalence" and "confrontation." At this point, the at-risk individual may be having mixed emotions about attempting suicide, but if these thoughts continue, the individual with confront them and proceed with the act. The final stage of the suicide process is "decision making." This decision will lead the at-risk induvial to the complete the act of suicide. The length of the suicidal process greatly impacts the success of suicide prevention strategies, and therefore it is essential to know about the duration of this process (Deisenhammer, Ing, Strauss, Kemmler, Hinterhuber, & Weiss, 2009). One study interviewed survivors of lethal suicide attempts, ages 13-34 years old, about the duration of their suicidal deliberation (Simon, Swann, Powell, Potter, Kresnow, & O'Carroll, 2002). According to Simon et al. (2002), 24% of interviewers said their suicide deliberation took less than five minutes, another 24% said between five and 19 minutes, 23% said 20 minutes to one hour, 16% said between two and eight hours, and 13% said one day or longer. These findings indicate that 24% of survivors of suicide spent less than five minutes making the decision to attempt and actually going through with the act of suicide. This finding is consistent with other research on hospitalized survivors of suicide attempts (Simone, et al., 2009). Because the suicidal process is

often brief, creating a delay between impulse and action and reducing access to lethal means can be lifesaving.

A suicide prevention program in the Israeli Defense Force has shown that the reduction of lethal means can significantly reduce the rate of suicide. Among the soldiers in the Israeli military and other armies, suicide is not a rare occurrence (Shelef, Laur, Raviv, & Fruchter, 2015). One of the most critical contributing factors to suicide in the military is the high accessibility to weapons. Because of the stigma associated with seeking and receiving help, many soldiers neglect getting assistance, thus contributing to the high suicide rate among the military. Approximately 90% of deaths by suicide within the IDF are due to firearms (Lubin, Werbeloff, Halperin, Shmushkevitch, Weiser, & Knobler, 2011). Suicide Prevention Programs in the Israeli Defense Force modified weapon availability, so that accessibility of lethal weapons was reduced (Shelef, et al., 2015). One of the modifications included soldiers keeping their personal weapons locked in storage when on leave and during weekends. Suicide rates among soldiers decreased significantly by 40%, however, there were no changes in rates of suicide during weekdays (Lubin, 2011). Since the implementation of the Suicide Prevention Program in Israeli, the Israeli Defense Force has seen reduction in suicide rates by almost 50% from 2006 to 2014 (Shelef, 2015).

CALM CARPE Diem

CALM CARPE Diem includes empirically supported elements from both CALM and QPR suicide prevention programs. The CALM CARPE Diem suicide prevention program focuses on five steps that will help a clinician or other gatekeeper navigate a conversation regarding suicidal ideation. The following steps include *Connecting* with the at-risk individual, *Asking* that individual about their risk of suicide, *Reducing* access to lethal means, *Planning* for

the future in a collaborative manner with the at-risk individual, *Encouraging* hope, and doing so today, or *Diem*. The purpose of these steps is to train gatekeepers on the importance of reducing access to lethal means among at-risk individuals, as well as training the gatekeepers on how to effectively communicate with at-risk individuals and their family members regarding suicide. The role of these gatekeepers is extremely important in building trust and rapport with the individual who is experiencing suicidal ideation. Gatekeeper training programs are shown to be useful because the training consists of developing the knowledge, attitudes, and skills in order to identify people at risk, to assess the levels of risk, and to appropriately manage the situation by referring the at-risk individual when necessary. In one study, gatekeeper training programs had been proven to have a positive impact on the preparation of trainees in their ability to respond to a suicide related crisis as well as reduce suicidal ideation and behaviors (Isaac, et al., 2009).

The CALM program has been evaluated in both unpublished (Bianco, 2019; Wilson, 2020) and published studies, including a recent investigation by Rosen, Michael, and Jameson (2020) who trained a sample of college Residential Assistants (RAs) as gatekeepers. Rosen et al. evaluated whether a gatekeeper version of the CALM training was associated with increased knowledge and confidence in implementing traditional suicide prevention elements and means reduction interventions (Rosen et al., 2020). The results indicated that the RA’s felt more confident after the CALM training in regard to implementing suicide prevention and means safety interventions. According to Rosen and colleagues, there was a small decline of the training effects after a 30-day follow-up, but the levels of confidence remained higher than they were at baseline (2020). Bianco (2019) essentially found similar results to the Rosen et al. CALM gatekeeper study, but with a relatively small sample of college advisors. Wilson’s (2020) study was the first to evaluate CALM CARPE Diem and like the Rosen et al., Wilson reported

significant training effects for suicide prevention and means reduction principles among a sample of university RAs. In addition, the knowledge and confidence of means reduction principles was relatively lower than knowledge and confidence of more typical suicide prevention concepts at baseline across the studies. Finally, the participants in all three studies showed increases from their baseline scores in knowledge and confidence of suicide prevention and means reduction interventions to post-training and sustained this level of knowledge and confidence after a four to six-week follow-up (Bianco, 2019; Rosen et al., 2020; Wilson, 2020).

The Present Study

The current study was an effort to replicate the findings of Rosen et al. (2020), Bianco (2019), and Wilson (2020), using the recently developed CALM CARPE Diem gatekeeper training. However, instead of focusing only on local college advisors or residential assistants, the current study recruited a national sample of college professionals through The JED Foundation, including but not limited to educators, healthcare providers, mental health providers, residential life professionals, and university student development professionals. Given the similarities in the expected populations of participants, we expect to find similar results to the findings reported by outcomes to the research done by Rosen et al. (2020). Bianco (2019), and Wilson (2020). We hypothesized that our sample of college professionals would exhibit an increase of knowledge and confidence when implementing suicide prevention and means reduction practices immediately after the CALM CARPE Diem training and after a four-week follow-up. Moreover, we hypothesized that knowledge and confidence regarding the use of means reduction principles will be relatively lower than knowledge and confidence regarding more conventional suicide prevention principles. Appalachian State University’s Institutional Review Board approved this study (#19-0146) on December 14, 2020 (see Appendix A).

Methods

Participants

The CALM CARPE Diem Gatekeeper Training was evaluated in a national convenience sample of college professionals who are part of The JED Foundation online campus community. The participants in this study included a sample of 42 college professionals from different college campuses from across the United States. Participants were recruited through a series of emails sent by The JED Foundation (see Appendix B), a national nonprofit organization. The participants who received these emails are recognized as part of a JED college campus, a non-profit human service organization, works to help universities evaluate and strengthen their mental health, substance abuse, and suicide prevention programs. A JED campus encourages community awareness, understanding and action for young adult mental health. Training this population as gatekeepers can be a practical approach to reducing suicide and suicidal ideation on college campuses. These different college professionals often are one of the first lines of contact for college students living on campus. These college professionals, which include educators, students, college health professionals, residential life, student development, campus healthcare providers, and mental health providers, have a variety of resources to offer at-risk students. At these JED campuses, college professionals can receive training to support students who are experiencing a suicidal crisis. However, some of these college professionals connect at-risk students with other resources, so they may not be responsible for addressing suicidal ideation on their own or without consultation from higher level employees (i.e. administrators or mental health experts). It is important that these college professionals are trained in how to have a conversation regarding suicide prevention and means reduction practices. This sample of college professionals participated in the CALM CARPE Diem Gatekeeper Training in order to

further develop their knowledge, confidence, and comfort in discussing suicide prevention measures and means reduction practices. The participation in this study was voluntary and there was no compensation provided to the college professionals. When participants started the CALM CARPE Diem Gatekeeper Training, they provided consent within the survey.

Procedures and Measures

Participants received an email recruitment from The JED Foundation which included a description of the study and a link to the survey and virtual training video. Within the survey, participants gave their informed consent by agreeing to be a participant and providing their email address. Participation was voluntary and the participants had the opportunity to remove themselves from the study at any time. Participants emails were detached from their survey responses in order to maintain autonomy. Of the college professionals who received the link to the study and agreed to participate virtually, these participants filled out a baseline evaluation survey via Qualtrics (see Appendix C). The participants in this study completed a revised version of the *Suicide Prevention Training: Learning and Development Evaluation Form* that has been used in previous gatekeeper training studies in order to evaluate its effectiveness (Bianco, 2019; Rosen et al., 2020; Wilson, 2020). The baseline evaluation survey obtained basic demographic information about the participants, including their age, gender, occupation, number of years within their occupation, and any past experience with mental health training. The baseline evaluation survey also collected information regarding the participant’s confidence and knowledge in suicide prevention and means reduction techniques. To assess participant’s confidence and knowledge on suicide prevention and means reduction, we used a 1 (Strongly Disagree) to 5 (Strongly Agree) point Likert Scale. Of the Likert Scale questions, four of them

assessed the participant's confidence and knowledge on suicide prevention and three of the questions assessed participant's confidence and knowledge on means reduction.

After the completion of the baseline evaluation survey, participants were given the link to view the virtual CALM CARPE Diem Suicide Prevention Training video. This training video opened in a new tab on the participant's web browser. The training video consisted of an introduction given by Dr. Kurt Michael and the CARPE Diem curriculum being delivered by Dr. JP Jameson. Dr. Jameson presented PowerPoint slides along with an oral presentation discussing the importance of including means safety principles in suicide prevention programs. Following the training video, participants were asked to return to the survey tab to complete the next part of the study. Participants were asked to fill out the post-training evaluation survey which included the same questions from the baseline evaluation survey (see Appendix C). After completion of the post-test survey, participants were thanked for their time and were encouraged to reach out to the researchers with any questions, concerns, or additional support.

Four weeks following the completion of the pre-test baseline survey, training video, and post-test survey, participants were asked to complete a follow-up survey via Qualtrics. The purpose of this follow-up survey was to assess any changes in participants knowledge and confidence regarding suicide prevention and means reduction techniques acquired from the CALM CARPE Diem Suicide Prevention virtual training. The follow-up survey used the same questions from the pre-test baseline survey and post-test survey. Following the completion of all components of this study, demographic data from each survey was analyzed using descriptive data. The email addresses of the participants were deleted from our Qualtrics survey in order to ensure confidentiality.

Analysis

The original analytic plan was to run a repeated measures ANOVA but given the low response rate we revised this plan and instead relied upon a descriptive analysis of our findings. Descriptive data from the three different evaluation surveys (pre-test, post-test, and follow-up) were evaluated via Jamovi. A summary of the descriptive analysis of the demographic information can be seen in Table 1. The participants responses from the individual item statistics for suicide prevention items and means reduction items were conducted for the pre-test survey (baseline), post-test survey, and follow-up survey (see Table 2). Further, we analyzed the baseline mean scores from the current study and compared them to the baseline means of Rosen et al.'s study (2020). A summary of the descriptive analysis of the item means can be seen in Table 3.

Results

A total of 42 college professionals completed the pre-test survey, 4 of those participants went on to complete the CALM CARPE Diem training video and post-test survey, and 3 of those participants went on to complete the follow-up survey. Demographic information obtained from the participants of this study are summarized in Table 1. Out of the 42 college professionals who completed the baseline survey, each one provided consent by agreeing to proceed with the study as well as proving their email address. The participants ranged from ages 18 to 74, with the median age range being 35 to 44 years old. Of these college professionals, 83.3% identified as female (*n*=35), 11.9% identified as male (*n*=5), and 4.75% identified as non-binary or other (*n*=2). The college professionals described their occupation as an educator, college health professional, student development, or mental health provider, with the majority of college professionals describing themselves in terms of student development. When reporting the number of years within their occupation, 23.8% reported having 0 to 3 years of experience

(*n*=10), 14.3% reported having 4 to 6 years of experience (*n*=6), and 61.9% reported having 7 plus years of experience within their occupation (*n*=26). In addition to collecting demographic information, we also asked the college professionals who participated how many years of formal mental health training they have received. 58.5% of college professionals reported having 0 to 1 year of formal mental health training (*n*=24), 19.5% reported having 2 to 4 years of formal mental health training (*n*=8), 2.44% reported having 5 to 7 years of formal mental health training (*n*=1), and 19.5% reported having 8 plus years of formal mental health training (*n*=8).

In regard to the CALM CARPE Diem virtual training video, we had a total of 23 views. The total duration of the training video was 64 minutes and 24 seconds. Of this time, the participants spent an average duration of 11 minutes and 52 seconds viewing the training video. On average, viewers watched 18.4% of the CARPE Diem training and a total watch time of 4.9 hours.

After the baseline survey, there was a significantly high rate of attrition. Of the college professionals who completed the baseline survey (*N*=42), 9.52% participants went on to complete the post-training survey (*n*=4), and 75% of those participants completed the follow-up survey (*n*=3) via Qualtrics. Responses from the 42 participants were analyzed for the baseline evaluation, responses from the four participants were analyzed for the post-training survey, and responses from the three participants were analyzed after a 30-day follow-up. The means, standard deviations, and sample sizes for each of the suicide prevention and means reduction items at each interval are reported in Table 2.

We revised our original analytic plans due to the high attrition rate. Originally, we planned on conducting a repeated measures ANOVA, however, due to low response rate during post-training and follow-up, we opted to focus on the descriptive findings. With our descriptive

data from the baseline evaluations, we compared this data to the findings from Rosen et al. (see Table 3). Our mean baseline scores from our sample of college professionals (*N*=42) indicated similarities between the mean baseline scores from Rosen et al.'s sample of RA's (*N*=141). The variability appears to be larger within the current study's sample compared to Rosen et al.'s findings (see Table 3). This can be due to the fact that this sample size was much smaller than the sample analyzed by Rosen et al. (2020). Overall, the baseline findings from this study are similar to the baseline data from the Rosen et al. (2020) study with university residential assistants (2020).

Discussion

The college professionals surveyed in this study evidenced roughly equivalent levels of knowledge and confidence in both suicide prevention and means reduction principles at baseline when compared to the findings from previous CALM studies (Bianco, 2019; Rosen et al., 2020; Wilson, 2020). Though the attrition rates after baseline were very high, from a qualitative standpoint, the pattern of responses over time from the limited number of participants who completed the post-training and follow-up assessments were in a positive direction.

The findings regarding means reduction among a national sample of college professionals mirror another aspect of the results of Bianco (2019), Rosen et al. (2020), and Wilson (2020) studies with university advisors and residential assistants. That is, across all previous CALM studies and the current investigation, knowledge and confidence in using means reduction principles was, on average, lower at baseline than average levels of knowledge and confidence regarding more traditional suicide prevention concepts. This relative average difference between theoretical aspects of suicide prevention principles may be partially explained by participants having less prior exposure to the construct of means safety in general.

Although we found some support for our hypotheses in terms of baseline findings, there were several limitations that impacted our study. Regrettably, our overall response rate and sample size was small, and we experienced a high attrition rate from baseline to post-test to follow-up evaluation. This limitation may be due to the fact that the entirety of our study was conducted online during a global pandemic. The participants were encouraged to take the surveys and watch the virtual training video on their own time. Viewing the training video was also not contingent upon participants completing the surveys. Attrition rates during post-training and follow-up assessments were high which limited our capacity to interpret these data over time reliably. In addition, the training video was approximately one hour in length which required the participants to dedicate a time to view the video and respond to the surveys. The training video metrics suggest that that majority of the participants did not watch the training video in its entirety. It is conceivable that the length of the training video might have been perceived as too time consuming or inconvenient for some of the participants. Or, it is possible that because the completion of the surveys and watching the video required the use of separate internet browser tabs, the tasks were not yoked sufficiently or conveniently enough to encourage completion. Another obvious limitation was the challenge of conducting research during the COVID-19 pandemic. In previous studies assessing the CALM CARPE Diem Suicide Prevention Training's effectiveness, the evaluations were completed in-person and the training was a live oral presentation. However, due to COVID-19 safety precautions, we made the decision to move the study to an online format. The college professional participants who started the study were possibly grappling with Zoom and webinar fatigue due to many of these professionals working remotely and attending meetings virtually. Because of the restricted opportunities of hosting an in-person training, we believe this was a crucial factor that contributed to the low response rate.

In the future, conducting the training either in-person of via a live webinar will assist in increasing response rate. If conducting the evaluation and training through an online format, we suggest making technical changes that we noticed from our study that may have inhibited response rate. In the current study, following completion of the baseline evaluation survey, participants were redirected to a new tab where they were to view the training video. However, in order to complete the study (i.e. the post-training survey), the participants were expected to return to the previous tab and continue responding to the surveys. We believe this may have caused participants to accidentally exit-out of the tab that contained the evaluation surveys and therefore creating confusion on how to complete the remaining portions of the study. In future studies, we also recommend assessing other gatekeeper groups and reporting how these different groups respond and grow from this training and whether it is associated with actual changes in behavior. It is important to continue educating college professionals, as they can be the first line of contact for college students, a population who is at high risk for suicidal thoughts and behaviors. Because of the evidence from this study and past studies, suicide prevention trainings that include means reduction principles such as CALM should be used to train college professionals in order to assist them in supporting the college students who are experiencing acute suicidal crises.

Though no firm conclusions can be made about this version of CALM due to these limitations in the data, there were some important methodological and practical insights gleaned from this study. Among the insights include the development of an online version of CALM CARPE Diem, a future method of reaching a national sample of college professionals, and the benefits of directly experiencing the challenges researchers face during a global pandemic.

In conclusion, this study demonstrates that the CALM CARPE Diem Suicide Prevention Training shows promise in improving confidence and knowledge levels of suicide prevention and means reduction implementation among college professionals. This population of professionals are regularly expected to serve as either gatekeepers or interventions for students in crisis. Consequently, it is crucial that these college professionals have an understanding of why suicide prevention is important and why means reduction practices serve as a key feature in helping prevent death by suicide. The results of this study, paired with the findings from Bianco (2019), Rosen et al. (2020), and Wilson (2020) demonstrate that the CALM CARPE Diem gatekeeper trainings are a reasonable and efficient method of improving the knowledge and confidence in implementing suicide prevention interventions for college students. It is important to continue to study the impacts of the CALM CARPE Diem Suicide Prevention Training in order to increase our understanding of the training's effectiveness. When training gatekeepers in a suicide prevention program that has an emphasis on means reduction, we have a realistic opportunity to reduce the number of deaths by suicide at universities and colleges across the United States.

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Appendix A: IRB

To: Abigale Wiggins

Psychology

CAMPUS EMAIL

From: Nat Krancus, IRB Administration

Date: 12/14/2020

RE: Notice of Exempt Research Determination

STUDY #: 19-0146

STUDY TITLE: CALM Carpe Diem Gatekeeper Training for College Professionals

Exemption Category: 1. Educational setting

This study involves no more than minimal risks and meets the exemption category or categories cited above. In accordance with the 2018 federal regulations regarding research with human subjects [45 CFR 46] and University policy and procedures, the research activities described in the study materials are exempt from IRB review. If this study was previously reviewed as non-exempt research under the pre-2018 federal regulations regarding research with human subjects, the Office of Research Protections staff reviewed the annual renewal and the initial application and determined that this research is now exempt from 45 CFR 46 and thus IRB review. If you have any questions, please contact the IRB Administrator at (828) 262-4060.

Best wishes with your research.

CC: John Jameson, Psychology

Appendix B: Email Recruitment

CALM CARPE Diem Suicide Prevention Virtual Training

By Appalachian State University (JED Campus alumnus)

In alignment with this month's Connection Call theme, Appalachian State University (App State) has created a research study to evaluate the effects of a suicide prevention virtual training. We are sharing this with JED Campuses on behalf of App State as a **free online gatekeeper training**, with means to evaluate its efficacy.

"The benefits of participation are improving our generalized understanding of suicide prevention programs. By participating in this survey, you will be able to learn more about suicide prevention within your position as a college professional. There will be no direct compensation provided to you as a participant. Participation is voluntary and declining to participate will involve no loss of benefits, and you may discontinue participation at any time. Following the informed consent procedure, participants who agree will take a (1) ***3-4 minute baseline survey****. Immediately after the (2)* ***60-minute recorded training****, participants will (3)* ***3-4 minute post-survey*** *which will conclude the initial phase. Approximately one month after the training, an email invitation to (4)* ***complete a 3-4 minute follow-up survey*** *will be sent."*

If you have any questions about the training, its surveys, or the research itself, please reach out to Abigale Wiggins (wigginsac@appstate.edu).

PARTICIPATE IN THE TRAINING

Appendix C: Evaluation Survey

Welcome! Thank you for taking the time to participate in our survey. The purpose of this research survey is to evaluate whether the CARPE Diem means safety virtual training has an effect on participants' knowledge or perceptions regarding suicide prevention interventions. The benefits of participation are improving our generalized knowledge about suicide prevention programs but there will be no direct compensation given to you as a participant.

Participation is voluntary and declining to participate will involve no penalty/loss of benefits, and you may discontinue participation at any time. If you do not feel comfortable answering specific demographic questions, there will be no penalty against you.

To begin the survey, please click on the arrow below.

Age
- Under 18
- 18 - 24
- 25 - 34
- 35 - 44
- 45 - 54
- 55 - 64
- 65 - 74
- 75 - 84
- 85 or older

Gender
- Male
- Female
- Non-binary or Other

Describe your occupation/role within the educational setting (e.g. student, professor, K-12 teacher, etc.)
- Student
- Educator
- College Health Professional
- Residential Life
- Student Development
- Healthcare Provider (e.g. nurse)
- Mental Health Provider

Q11 Number of years within your occupation/role
- 0 - 3 years
- 4 - 6 years
- 7 + years

Q12 Do you have any formal mental health training?
- 0 - 1 year
- 2 - 4 years
- 5 - 7 years
- 8 + years

Q1 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
I feel I can accurately identify situations where a person is at risk of suicide	•	•	•	•	•

Q2 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
I know how to approach and question people at risk of suicide	•	•	•	•	•

Q3 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
I feel comfortable assessing someone for suicide risk	•	•	•	•	•

Q4 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
I know how to refer people at risk of suicide to the services most appropriate to their needs and level of risk	•	•	•	•	•

Q5 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
I am familiar with means reduction approaches to suicide prevention	•	•	•	•	•

Q6 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
Suicide can be prevented by reducing access to lethal means	•	•	•	•	•

Q7 Please indicate how much you agree or disagree with this statement by checking the box provided

	1 Strongly Disagree (1)	2 Disagree (2)	3 Neither agree nor disagree (3)	4 Agree (4)	5 Strongly Agree (5)
I am confident in my ability to talk to people about reducing access to lethal means	•	•	•	•	•

Table 1
Demographics: Age, Sex, and Number of Years as a College Professional

Demographics	*n*	Percent (%)
Participant Age		
18-24	1	2.38%
25-34	9	21.43%
35-44	13	30.95%
45-54	10	23.81%
55-56	8	19.05%
65-74	1	2.38%
Participant Sex		
Female	35	83.33%
Male	5	11.90%
Non-binary or Other	2	4.75%
Occupation		
Educator	13	31.715%
College Health Professional	3	7.32%
Student Development	18	43.90%
Mental Health Provider	7	17.07%
Years within Occupation		
0-3 years	10	23.81%
4-6 years	6	14.29%
7 + years	26	61.90%
Years of Mental Health Training		
0-1 Year	24	58.54%
2-4 years	8	19.51%
5-7 years	1	2.44%
8 + years	8	19.51%

Table 2
Item Means (Standard Deviations)

Items	Baseline (*n* = 42)	Post-Training (*n* = 4)	Follow-Up (*n* = 3)
Suicide Prevention Items			
"I feel I can accurately Identify situations where a person is at risk of suicide."	3.41 (1.01)	4.00 (0.71)	4.33 (0.94)
"I know how to approach And question people at risk of suicide."	3.66 (1.10)	4.50 (0.50)	4.33 (0.94)
"I feel comfortable Assessing someone for suicide risk."	3.12 (1.19)	3.75 (1.09)	4.00 (0.82)
"I know how to refer people at risk of suicide to the services most appropriate to their needs and level or risk."	3.98 (0.92)	4.00 (0.71)	4.00 (0.82)
Means Reduction Items			
"I am familiar with means restriction approaches to suicide prevention."	3.12 (1.17)	4.50 (0.50)	4.33 (0.47)
"Suicide can be prevented by restricting access to lethal means."	3.80 (1.04)	4.75 (0.43)	5.00 (0.00)
"I am confident in my ability to talk to people about reducing access to lethal means."	3.10 (1.16)	4.50 (0.50)	4.00 (0.82)

Note: All items were presented on a Likert Scale where higher scores were suggestive of more confidence (1 = Strongly Disagree, 5 = Strongly Agree)

Table 3
Item Means

Item	Wiggins Baseline Means (*SD*)	Rosen et al. Baseline Means (*SD*)
Suicide Prevention Items		
"I feel I can accurately identify situations where a person is at risk of suicide."	3.41 (1.01)	4.04 (0.56)
"I know how to approach and question people at risk of suicide."	3.66 (1.10)	3.83 (0.87)
"I feel comfortable assessing someone for suicide risk."	3.12 (1.19)	3.64 (0.95)
"I know how to refer people at risk of suicide to the services most appropriate to their needs and level or risk."	3.98 (0.92)	4.16 (0.82)
Means Reduction Items		
"I am familiar with means restriction approaches to suicide prevention."	3.12 (1.17)	3.30 (0.99)
"Suicide can be prevented by restricting access to lethal means."	3.80 (1.04)	3.25 (0.99)
"I am confident in my ability to talk to people about reducing access to lethal means."	3.10 (1.16)	3.38 (0.93)

Note: SD = Standard Deviation