

CALM CARPE DIEM  
GATEKEEPER TRAINING FOR RESIDENT ASSISTANTS

by

Michaela Wilson

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Kurt Michael, Ph.D., Thesis Director

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Shannon Jordan, Ed.D., Second Reader

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Andrew Smith, Ph.D., Departmental Honors Director

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Jefford Vahlbusch, Ph.D., Dean, The Honors College

### Abstract

Suicide prevention has become a focal point on college campuses as the concept of suicide prevention is more widely understood and epidemiological findings suggest that the rates of suicidal thoughts and behaviors among this population are increasing. The implementation of suicide prevention trainings including practices to reduce access to lethal means, “means reduction,” gives individuals, called gatekeepers, the skills to intervene during a suicidal crisis. CALM CARPE Diem is a suicide prevention gatekeeper training that includes information intended to inform participants about why suicide prevention is necessary, give them the skills to implement suicide prevention, and teach about means reduction methods. The effectiveness of the CALM CARPE Diem Gatekeeper Training was assessed in this study by measuring Resident Assistants’ (RAs) perceptions of confidence when learning of students living in the residence halls who might be experiencing a suicidal crisis. CALM CARPE Diem gatekeeper training was delivered to 17 RAs at a medium sized comprehensive university in the southeastern U.S. Confidence in suicide prevention and means reduction strategies was assessed at pre-training, post-training, and after a four week follow-up via Qualtrics. Results revealed a significant increase in knowledge and confidence in means reduction principles from baseline to post-training, gains that were sustained at follow-up. These results suggest that CALM CARPE Diem may have comparable effects to other suicide prevention trainings, and may indicate a benefit to using this training for RAs and other gatekeeper populations.

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

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### **CALM CARPE Diem Gatekeeper Training for Resident Assistants**

Over the last 15-20 years, the risk of suicide on college campuses has become a major concern among students, faculty, administrators, and residence life staff. Most college students are also living in a time when their risk of mental impairments is high, given that approximately half of mental disorders develop by the age of 14, and three quarters emerge by the mid-twenties (Lipson & Eisenberg, 2018). Suicidal thoughts and behaviors are unfortunately quite common among college students and the rates of suicidal thoughts and behaviors among this population are increasing (Schwartz, 2017). Roughly one third of college students experience symptoms of mental health disorders, including depression, anxiety, and suicidality (Lipson & Eisenberg, 2018). Suicide is the second leading cause of death among individuals aged 10 to 34 in the United States, causing 14,827 deaths in this age group in 2018 alone (CDC, 2018). Suicide rates increased significantly in 44 states from 1999 to 2016, including increases higher than 30% in 25 states (Stone et al., 2018). These increases in suicide rates and mental health challenges among college students are demonstrated in the United States, but also among students in England, Australia, New Zealand, and Canada (Lipson & Eisenberg, 2018). Worldwide, overall suicide rates are increasing, and are projected to continue increasing in the future as well (Nock, Borges, Bromet, Cha, Kessler, & Lee, 2008). These increases are a part of a trend of increasing rates of death by suicide among the adolescent population in the United States dating back more than ten years, in which rates of death by suicide have increased by more than 50% (Jameson, 2020).

In light of these data, colleges and universities have invested in several types of suicide prevention programs (Litteken & Sale, 2018). For example, the JED foundation, which began in 2000, has developed campus suicide prevention programs aimed at destigmatizing the discussion of suicide and mental health among young adults. Their campaign “Seize the Awkward” encourages students to start conversations about mental health with friends who they believe may be struggling. The program provides resources to support student mental health, reduce substance misuse, and reduce rates of suicide, recognizing mental health as an important component of general health and wellness (The JED Foundation, n.d.). Though the JED Program often includes comprehensive components (consultation, education, lethal means reduction, data collection, referral), some suicide prevention programs are primarily educative in nature. Suicide prevention education programs are designed to provide the general public or “gatekeepers” with information on how to identify those who might be at risk and then offer referrals to healthcare providers and crisis services.

### **Existing Gatekeeper Programs**

Counseling on Access for Lethal Means (CALM) suicide prevention training has quickly become one of the most prevalent suicide prevention programs. CALM is a suicide prevention training program for mental health providers that is focused on lethal means reduction as a method of reducing suicide risk. While most health providers undergo mental health related training, very few undergo specific suicide prevention and means reduction training (Sale, Hendricks, Well, Miller, Perkins, & McCudden, 2018). A study conducted in 2018 revealed that while emergency room guidelines recommended asking patients who

presented with suicidal ideation about their access to lethal means, only 18% of emergency room patients in this study had documentation of these conversations, and only 8% of these included documentation of conversations to create an action plan to reduce access to lethal means. 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. The utilization of means reduction practices in healthcare settings may help reduce the high and increasing numbers of deaths by suicide, indicating the necessity for the CALM training program (Betz et al., 2018).

Another study by Johnson and colleagues (2011) evaluated the effectiveness of CALM training among community mental health providers to work with clients experiencing suicidal ideation and their families. The results of this study indicated increases in knowledge of suicide prevention practices, specifically related to means reduction principles, after participating in the training. They found that participants reported lethal means reduction to be important and believed that reducing access to lethal means helped to prevent death by suicide. 86% of participants reported that they learned about counseling about access to lethal means in their training, and 89% of participants reported that they would use the techniques they learned in their CALM training in the future when working with their clients. The results revealed a significant increase in confidence and knowledge of lethal means reduction skills. At follow-up evaluation, 65% reported that they had used the lethal means reduction skills that they learned during the training with their clients (Johnson et al., 2011)

The CALM training program includes statistical information on suicide, types of lethal means, and effective lethal means reduction tactics. Importantly, CALM trains

participants on how to discuss reducing access to lethal means, focusing on the impact that temporarily reducing access to lethal means has on an individual's safety (Sale, Hendricks, Well, Miller, Perkins, & McCudden, 2018). Since the majority of deaths by suicide in the United States are attributable to firearms, CALM has a specific focus in educating participants about reducing access to firearms (Johnson et al., 2011). Research on CALM conducted by Sale et al. (2018) evaluated knowledge of means reduction, confidence, and comfort discussing means reduction and demonstrated that all three measures increased significantly from pre- to post-test, but knowledge and comfort in means reduction attenuated at follow-up assessment. Overall, the evidence to date suggests that CALM is an effective method of means reduction training for suicide prevention, but there is a need to further replicate these findings as well as demonstrate the sustainability of the training effects (Sale, Hendricks, Well, Miller, Perkins, & McCudden, 2018).

Another gatekeeper program is Question, Persuade, Refer (QPR). The mission of QPR is to “reduce suicidal behaviors and save lives by providing innovative, practical and proven suicide prevention training” (QPR Institute, n.d.). QPR has become one of the most popular suicide prevention training programs worldwide. More than 1,000,000 individuals have been trained in QPR as of 2017 (QPR Institute, n.d.). QPR is an hour-long training program that focuses on providing in-depth information about suicide and suicidal behaviors to help debunk popular myths about suicide, as well as providing information on warning signs and resources for follow-up support. Individuals in the program are trained on how to have conversations about suicide, in which they “question” those experiencing suicidal ideation about what they are experiencing, “persuade” them to access resources, and “refer”

them to the appropriate resources for support (Litteken & Sale, 2017). QPR emphasizes the importance of early recognition of warning signs and a quick, positive response, in order to prevent the necessity for further intervention in the future if resources and support are provided early (QPR Institute, n.d.).

A study by Litteken and Sale (2017) on the effectiveness of QPR demonstrated positive effects on knowledge, self efficacy, and helping behaviors. In this study, a total of 2988 adults, most of whom worked serving youth aged 10 to 24, participated in QPR training. Participants were evaluated before training, immediately after training, and after a two year follow-up period to assess knowledge of suicide prevention, self-efficacy, and helping behaviors. Data following these evaluations demonstrated immediate and long-term sustained increases in knowledge of suicide prevention, self-efficacy, and helping behaviors. Analysis specifically related to self-efficacy demonstrated that participants felt more comfortable, prepared, and confident about having conversations with individuals experiencing suicidal ideation (Litteken & Sale, 2017).

Means reduction principles have also been utilized internationally as a method of reducing deaths by suicide. In 1995, Sri Lanka reported suicide rates among the highest in the world. 79% of deaths by suicide in Sri Lanka were due to ingesting toxic pesticides, which were readily available until a series of restrictions and bans were instituted to reduce access to pesticides by the World Health Organization beginning in 1984. Further regulations on pesticides were enacted from 2004 to 2008, and a complete ban on the most toxic pesticides, paraquat, dimethoate, and fenthion, was enacted in 2011. Following these restrictions, the percentage of deaths by suicide dropped to 48% in 2010 (Knipe, 2014).



Worldwide, prior to these changes in policy, pesticide self-poisoning was responsible for approximately 30% of deaths by suicide each year. Reduction in deaths by suicide due to pesticide self-poisoning was attributed to the restriction of pesticide purchasing, safe storage of pesticides for those in rural communities, and improvement in accessibility of care for those who have ingested toxic pesticides (Gunnel, 2007).

Another example of international means reduction principles impacting the frequency of deaths by suicide can be seen in the Israeli Defense Force (IDF). The majority of the soldiers in the IDF are adolescents, which contributes to the suicide rates among this population as they are in a time period of identity formation. Soldiers are also under a great deal of stress, experience a stigma that reduces help seeking behaviors, and most significantly, have ready access to the most lethal means of suicide, firearms. The IDF created a Suicide Prevention Program (SPP) that includes psychoeducation, guidance, supervision, mental health resources, and most significantly, reduced access to firearms (Shelef, 2015). Approximately 90% of deaths by suicide within the IDF are due to firearms (Lubin, 2011). The most significant difference has been reduced access to firearms on weekends. Prior to this policy change, soldiers were able to take their service weapons home over the weekend. The policy mandated that when soldiers left the base over the weekend, they were required to leave their weapons (Lubin, 2011). There were no significant differences in suicide rates on weekdays, but there was a significant decline in the rates of suicides by firearm on weekends. Since the implementation of this program, the IDF has seen a decrease in suicide rates by nearly 50% (Shelef, 2015).

**Importance & Impact of Means Reduction**

In order to die by suicide, an individual must have access to the lethal means to do so. Thus, 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. Means reduction is used in suicide prevention as a risk management and safety planning process in which the suicidal individual or another trusted party is encouraged to promote better environmental safety measures (e.g., temporary storage of firearms out of the home), thereby reducing access to lethal means of suicide. The act of removing means itself is not part of the role of the gatekeeper for safety and legal purposes, but it is important to include a plan to enact means reduction within the conversation and help them to facilitate the plan themselves or with a trusted third party. Means reduction typically involves a conversation about the individual's access to means of self-harm or suicide and how to reduce their access prior by enacting a tangible safety plan to do so. This conversation is framed so that all steps of means reduction are presented in a collaborative manner with the individual's understanding and consent (Bryan, Stone, & Rudd, 2011).

Availability of means has a high correlation with the lethality of a suicide attempt because most attempts that progress from suicide ideation to action escalate quickly, often in less than five minutes (Deisenhammer, et al., 2009). Having limited access to means makes it more likely that the individual will be out of this period of highest risk before they are able to access their means and act on their thoughts. However, the level of intent to die by suicide in an acute crisis is not a good predictor of death by suicide, if the means chosen are not highly lethal. On the other hand, firearms have an 85% fatality rate and are responsible for 50% of

suicides in the United States, making it especially critical to reduce access to firearms in means reduction conversations. Incidentally, in rural areas, firearm deaths are overwhelmingly (about 80%) determined to be suicides (CDC Wonder, 2018). On a positive note, approximately 90% of individuals who attempt suicide do not go on to die by suicide later on, meaning that death by suicide is far from an inevitable outcome. For the 20-25% of individuals who do not die by suicide that do eventually make a later attempt, this second attempt is also not likely to be fatal (Bryan, Stone, & Rudd, 2011). This suggests that reducing access to the most lethal means of suicide is instrumental in helping the individual survive a first attempt will lead to a much higher likelihood of survival in the future.

Along with facilitating conversations about suicidal thoughts and behaviors, CALM CARPE Diem is unique in that it incorporates means reduction as well. The key concept of means reduction is reducing a suicidal individual's access to lethal means in order to increase their safety. Means reduction has been shown to be an effective element of any suicide prevention program, including the CARPE Diem version of CALM, especially when combined with other interventions (Yip et al., 2012). Despite means reduction being a scientifically supported suicide prevention strategy, it is not commonly put into practice in clinical settings due to factors such as lack of training and lack of focus within the suicide prevention guidelines and clinical literature (Bryan, Stone, & Rudd, 2011). The primary aim of this study is to evaluate the effectiveness of this particular gatekeeper means reduction training.

### **CALM CARPE Diem**

CALM CARPE Diem focuses on the five steps of navigating a conversation regarding suicidal ideation, beginning with *Connecting* with the individual, *Asking* about suicide risk, *Reducing* access to lethal means, *Planning* for the future, *Encouraging* hope, and doing so today, or *Diem*. These steps are designed to walk the gatekeeper through the conversation in a natural way that builds their confidence and allows them to complete all of the necessary steps in the conversation, while also building trust and rapport with the individual who is experiencing suicidal ideation. The CALM CARPE Diem includes key, empirically supported elements from CALM and QPR which have been compiled to create a suicide prevention gatekeeper training program that we hypothesize will lead to increased knowledge and confidence in utilizing effective suicide prevention techniques and means reduction practices.

The CALM CARPE Diem Gatekeeper Training is designed to help individuals who are working with those who may be experiencing suicidal thoughts or behaviors, referred to as “gatekeepers,” lower their risk of suicide by helping gatekeepers have a plan for conversations about suicide prevention and reducing access to lethal means. In a study by Isaac and colleagues, researchers found that gatekeeper trainings have been implemented across a diverse population of groups, and have been shown to have a positive impact on the preparation of trainees in their ability to respond to a suicide related incident and have had a positive impact as well on the reduction of suicidal ideation and behaviors (2009).

The effectiveness of a CALM Gatekeeper training for RAs has been supported by a recently published study (Rosen, Michael, Jameson, in press). The current study is an effort

to replicate these findings, using a CALM based gatekeeper training, CARPE Diem (Jameson, 2019). In the Rosen (2019) study, a CALM training was delivered to a large sample of RAs at a medium sized comprehensive university in the southeastern U.S. The CALM training resulted in increased confidence and knowledge in using traditional suicide prevention and means reduction principles, which were understood to lesser degree at pre-training. Further, in another replication of the CALM training, Bianco (2019) reported significant increases in confidence levels using the same principles among a sample of academic advisors. Based on these studies, we hypothesize that the current study of the CALM CARPE Diem training will be associated with increased knowledge and confidence implementing suicide prevention and means reduction principles immediately after training and after a four week follow-up.

## **Methods**

### **Participants**

The participants in this study included a sample of 17 RAs at a medium sized comprehensive university in the southeastern U.S. Participants were recruited through a series of three emails that was sent to all RAs ( $n=140$ ) by the Director of Residence Life. RAs are often one of the first lines of contact for college students who live on campus, so training RAs as Gatekeepers could be a practical approach to reducing suicide on college campuses. RAs often serve as a mediator between individual students and university, and have a variety of resources to offer students in need. RAs are trained to support residents in moments of suicidal crisis while connecting them with other resources such as higher level employees in University Housing and the Counseling Center, so they are never responsible

for addressing suicidal ideation on their own or without consultation from administrators or mental health experts. However, as the first line of contact for these residents experiencing suicidal ideation, it is important that they are trained in how to have conversations about suicide prevention and means reduction practices. RAs have previously been educated on suicide prevention policies and have an emergency suicide ideation procedure in place, so this training served as a supplement to their existing training requirements. RAs participated in the CALM CARPE Diem Gatekeeper Training in order to further develop their confidence in suicide prevention measures and means reduction practices. Participation in the study was voluntary, with no compensation provided for the RAs. All participants provided consent via an informed consent form prior to the start of the gatekeeper training.

### **Measures and Procedure**

Upon arrival to the training, all participants were presented with an informed consent form which included a description of the study, including any foreseeable risks. The participants had the opportunity to opt out of the study and not sign the informed consent documents. Participants provided a signature to indicate their consent, and an email address in order to participate in the follow-up assessment via Qualtrics. Participant names and emails were detached from their completed surveys in order to maintain their confidentiality, and their evaluations were subsequently only associated with a participant identification number for later data evaluation.

Following the informed consent, participants filled out a baseline evaluation form. Participants in the study completed a revised version of the *Suicide Prevention Training: Learning and Development Evaluation Form* that has been used in previous studies to

evaluate the effectiveness of gatekeeper trainings (Bianco, 2019; Rosen et al., in press). The form included basic demographic information about the participant, including their age and gender, their college major, the number of years they worked as a RA, and any past experience with suicide prevention or mental health training including details about these trainings and approximate hours of participation in other relevant trainings. The form also assesses the participant's confidence and knowledge in suicide prevention, as well as confidence and knowledge in means reduction using 1 (Strongly Disagree) - 5 (Strongly Agree) Likert Scales for each item. The form included four questions to assess suicide prevention confidence and knowledge, and three questions to assess means reduction confidence and knowledge.

Following the completion of the informed consent and baseline assessment, participants participated in the CALM CARPE Diem Training facilitated by Michaela Wilson with the supervision of Dr. Kurt Michael. The training consists of PowerPoint slides, oral presentation, role play, and questions and conversations about suicide prevention and means reduction. Immediately following the training, participants were asked to fill out the post-training evaluation with the same questions included in the baseline evaluation form. Once all of the assessments were collected, there was a debriefing period, in which resources for follow-up and support were offered if requested.

Participants completed a Qualtrics-based follow-up training via email between 16 to 34 days ( $M=25.06$ ,  $SD=5.98$ ) after their training to assess any changes in knowledge and confidence in suicide prevention and means reduction practices learned in the CALM CARPE Diem training using the same questions from the baseline assessment and the

follow-up assessment. Following the final assessment, demographic data from the baseline, post-training, and follow-up evaluations was assessed via SPSS, version 26. Only random identification numbers were used in the analysis, as emails and names were deleted from the spreadsheets.

### **Analysis**

Data from the three time points (pre-, post-, follow-up) were evaluated via SPSS. Descriptive and frequency analyses of demographic information were conducted via Google Sheets (see Table 1). Chronbach's Alpha reliability statistics and individual item statistics for suicide prevention items and means reduction items were conducted for baseline (T1), post-training (T2), and follow-up (T3) participant responses. Paired samples t-tests were computed between baseline (T1) and post-training (T2), and between post-training (T2) and follow-up (T3) to assess for changes in knowledge and confidence about suicide prevention and means reduction principles over time. Composite means for suicide prevention and means reduction items at baseline (T1), post-training (T2), and follow-up (T3) were used to calculate weighted mean difference effect sizes (Cohen's *d*) including the computation of 95% confidence intervals.

### **Results**

The participant demographics are summarized in Table 1. Out of the 17 RAs who participated in the training, 100% provided informed consent to participate in the study. Participants ages ranged from age 19 to 21 ( $M=20.24$ ,  $SD=0.831$ ). Of the 17 RAs, 52.9% self identified as male ( $n=9$ ), 41.2% self identified as female ( $n=7$ ), and 5.88% self identified as non-binary ( $n=1$ ). RAs reported a wide range of college majors. RAs ranged from 1 to 3



years of applied experience in their position ( $M=1.59$ ,  $SD=0.712$ ). 100% of RAs present reported 1 to 3 years of previous suicide prevention training. 41.18% of RAs also reported other relevant mental health training experience. Other experiences in suicide prevention training reported included an online suicide prevention training and an on campus volunteer training.

All participants completed the baseline and post-training evaluation measures and approximately 94.12% ( $n=16$ ) of the participants completed the follow-up measure via Qualtrics. Responses from 17 participants were analyzed for baseline and post-training evaluations, thus there was a 100% response rate for these assessments. Responses for 16 participants (94% response rate) were analyzed for the follow-up evaluation. Means, standard deviations, and sample sizes for each evaluation can be referenced in Table 2.

Cronbach's Alpha coefficients were computed to evaluate the internal consistency of the assessment items for suicide prevention and means reduction at baseline, post-training, and follow-up evaluation assessments. Suicide prevention items indicated moderate to high internal consistency whereas Cronbach's alpha was .694 at baseline evaluation, .777 at post-training evaluation, and .875 at follow-up evaluation. Means reduction items revealed varied levels, ranging from low reliability with a Cronbach's alpha of .381 at baseline evaluation, to higher levels of reliability at post-training evaluation (.853), and a relatively low reliability of .563 at follow-up.

Composite means for suicide prevention (SP) and means reduction (MR) items at baseline, post-training, and follow-up evaluations were computed via SPSS. These data are summarized in Figure 1. Overall, RAs demonstrated increases in knowledge and confidence

from baseline to post-training and maintained those increases to follow-up for both SP and MR composites. For SP items, RAs demonstrated relatively high levels of knowledge and confidence at baseline ( $M=15.31$ ,  $SD=2.24$ ), with an increase in knowledge and confidence at post-training evaluation ( $M= 18.94$ ,  $SD=1.48$ ), increases that were maintained at follow-up ( $M=18.5$ ,  $SD=1.79$ ). For MR items, RAs demonstrated lower levels of knowledge and confidence at baseline evaluation ( $M=9.44$ ,  $SD=1.55$ ), increase in knowledge and confidence at post-training ( $M=14.13$ ,  $SD=1.2$ ), increases that were sustained at follow-up ( $M=14.25$ ,  $SD=0.93$ ).

Paired samples t-tests were conducted to test whether there were significant differences in composite means for confidence and knowledge levels for SP and MR across baseline, post-training, and follow-up assessments. Statistical significance was indicated by  $p<0.0125$  after accounting for a Bonferroni correction. With the exception of the paired comparison of MR composite scores from baseline to post-training, which was statistically significant ( $p=0.010$ ), the remaining paired comparisons were not statistically significant. That is, the comparison of SP composite scores from baseline to post-training ( $p=0.064$ ), as well as the comparison of SP scores from post-training to follow-up ( $p=0.517$ ) were not statistically significant. The comparison of MR scores from post-training to follow-up ( $p=0.069$ ) was also not statistically significant. These results are summarized in Table 3.

Finally, mean difference effect sizes (Cohen's  $d$ ) were analyzed between baseline, post-training, and follow-up evaluations. These results are summarized in Table 3. Though the SP composite comparison from baseline to post-training revealed a large effect size ( $d=1.89$ ,  $95\% CI=1.08-2.7$ ), it was not statistically significant ( $p=.064$ ). The SP comparison

from post-training to follow-up revealed a small effect size ( $d = -0.4$ , 95% CI=-1.09-0.29) that was also not statistically significant ( $p = .517$ ). Though neither of these differences were significant, the increases were sustained at follow-up. The MR comparison from baseline to post-training demonstrated a large effect size ( $d = 4.29$ , 95% CI=3.07-5.52) and it was statistically significant ( $p = 0.010$ ). The MR comparison from post-training to follow-up showed a small effect size ( $d = 0.06$ , 95% CI=-0.62-0.74) and it was not statistically significant ( $p = .069$ ). The statistically significant gains in MR from baseline to post-training were sustained at follow-up.

### **Discussion**

The results from this study revealed a large and statistically significant training effect for means reduction principles among a sample of university RAs, a finding that was sustained after a four-week follow-up. The data regarding the CALM CARPE Diem gatekeeper training and MR items in particular, replicate the results from two similar studies (Bianco, 2019; Rosen et al., in press). Though there were also observed increases in knowledge and confidence about SP concepts overall, the comparisons were not statistically significant. The RAs showed increases from their baseline scores in knowledge and confidence of MR to post-training, and sustained those increases after a 25 day follow-up. The insignificant increases in SP knowledge may be due to RAs' relatively high pre-existing levels of confidence and knowledge prior to the training, as all RAs ( $n = 17$ ) indicated they had previous SP training and many ( $n = 7$ ) also indicated they have relevant previous mental health training. Thus, at least for these principles, there was a potential ceiling effect. Another plausible explanation is that the RAs also had prior experience as RAs that gave

them greater insights about SP principles based on existing residence life protocols with which they had some exposure. At the same time, RAs reported lower baseline levels of confidence and knowledge regarding MR practices, likely because MR is not currently an explicit part of the RA suicide prevention protocol. Consequently, there was higher room for increases regarding MR confidence and knowledge.

As mentioned above, the findings regarding MR mirror the work with RAs by Rosen (2019) and Bianco's (2019) study with academic advisors. These studies both indicated that larger increases in MR confidence and knowledge may be due to lack of previous experience in MR, while lesser increases in SP confidence and knowledge may be due to high baseline levels. In the present study, participants included 17 out of 140 RAs, a small sample among a much larger population that took part in our study. However, the inherent limitation of a small sample size is tempered somewhat since the data presented here closely align with the findings of Rosen (2019) that included 167 RAs. The response rate in the present study (94.12%), compared to a 66.4% response rate for Rosen (2019) and a 62.5% response rate in the Bianco (2019) study, was a strength in that we were able to measure the vast majority of the group's changes in confidence and knowledge levels over time.

While only our hypothesis about MR concepts was fully supported, we did receive some modest support for relative increases in knowledge and confidence regarding SP principles. In addition, our findings need to be contextualized in light of the study's limitations. Unfortunately, our sample size was small, thus rendering the effects tentative. This limitation is mitigated somewhat by the fact that the means and standard deviations of the composite variables closely mirrored those reported by Rosen et al. Another limitation

pertains to the COVID-19 Pandemic, as during the final stages of this research, the follow-up data collection and analysis of the data occurred after the University transitioned to online instruction. RAs were likely under increased stress and strain during the data collection period due to working remotely with residents, so they also may have had less sustained knowledge and confidence in SP and MR because of these changes to their working conditions. It is important to analyze how participation in the training impacts RAs behavior change in working with residents to implement SP and MR principles, but there were probably restricted opportunities to put these principles into real-time practice.

In the future, implementing this training as RAs primary SP training may allow researchers to see more clearly the effects that CALM CARPE Diem has on RAs knowledge and confidence in SP. Based on the findings of this study, RAs who are trained in CALM CARPE Diem SP and MR practices demonstrate increases in knowledge of MR practices, but future studies in which CALM CARPE Diem is the primary source of SP training for RAs may demonstrate increases in both SP and MR. Implementing the CALM CARPE Diem training at the beginning of the year rather than later in the semester may also give RAs more opportunity to use this training in their roles. It is important in the future to continue educating RAs in SP and MR, as they are the first line of contact for college students, a population who is at high risk for suicidal thoughts and behaviors. Since evidence clearly demonstrates the impact that MR practices within a SP conversation has on reducing risk for individuals experiencing suicidal ideation, SP trainings that include MR principles such as CALM CARPE Diem should be used to train RAs to help them in supporting their residents who are experiencing the acute effects of suicidal ideation.

Overall, this study indicates that the CALM CARPE Diem shows promise in improving confidence and knowledge levels of SP and MR implementation among RAs. For a population who is responsible for caring for residents on campus, it is important to have an understanding of why SP is important, and why MR is a key feature in helping to prevent death by suicide. The results of this study, paired with the results of Rosen's (2019) and Bianco's (2019) studies indicate that CALM gatekeeper trainings are feasible and efficient methods of improving the knowledge and confidence in implementing suicide prevention interventions for college students. Continuing to study the impacts of CALM and CALM CARPE Diem will provide further insight into the effectiveness of these trainings, and based on the findings in these studies, will continue to increase the knowledge and confidence in SP and MR for gatekeepers. Indeed, sustaining gatekeeper education programs that emphasize means safety has the potential to reduce the number of deaths by suicide at universities and colleges in the United States.

## References

- Betz, M. E., Kautzman, M., Segal, D. L., Miller, I., Camargo, C. A., Boudreaux, E. D., & Arias, S. A. (2018). Frequency of lethal means assessment among emergency department patients with a positive suicide risk screen. *Psychiatry Research, 260*, 30-35. <https://doi.org/10.1016/j.psychres.2017.11.038>
- Bianco, A. N. (2019). *The Counseling on Access to Lethal Means (CALM) Gatekeeper Training Improves Confidence in Suicide Prevention Techniques Among a Sample of Academic Advisors*. [Undergraduate honors thesis, Appalachian State University].
- Bryan, C. J., Stone, S. L., & Rudd, M. D. (2011). A Practical, Evidence-Based Approach for Means-Restriction Counseling With Suicidal Patients. *Professional Psychology: Research and Practice, 42*, 339-346. DOI: 10.1037/a0025051
- Centers for Disease Control and Prevention. (2018). *CDC WONDER*. <https://wonder.cdc.gov>
- CDC. (2018). *10 Leading Causes of Death, United States* [Infographic]. <https://webappa.cdc.gov/cgi-bin/broker.exe>
- Deisenhammer, E. A., Ing, C. M., Strauss, R., Kemmler, G., Hinterhuber, H., & Weiss, E. M. (2009). The duration of the suicidal process: how much time is left for intervention between consideration and accomplishment of a suicide attempt?. *J Clin Psychiatry, 70*(1), 19-24. <https://doi.org/10.4088/JCP.07m03904>
- Gunnel, D., Eddleston, M., Phillips, M. R., & Konradsen, F. (2007). The global distribution of fatal pesticide self-poisoning: Systematic review. *BMC Public Health, 7*(357). <https://doi.org/10.1186/1471-2458-7-357>

- Isaac, M., Elias, B., Katz, L. Y., Belik, S., Deane, F. P., Enns, M. W., Sareen, J., & The Swampy Cree Suicide Prevention Team. (2009). Gatekeeper Training as a Preventative Intervention for Suicide: A Systematic Review. *Can J Psychiatry, 54*, 260–268.
- Jameson, J. P. (2019). *CARPE Diem: A Gatekeeper's Guide to Suicide Prevention*. [Powerpoint slides]. Appalachian State University.  
<https://docs.google.com/presentation/d/e/2PACX-1vSCsO24-A8C8nSjIwKbe8dwq7O3DgS0lQH81dK5H2Z9w6mwtaGpkYxPQUZ5SS3GSCM2PqBj0xRscib1/pub?start=false&loop=false&delayms=3000>
- Jameson, J. P. (2020). Responding to Adolescents at Risk of Suicide. *North Carolina Medical Journal, 81*(2), 106-110. <https://doi.org/10.18043/nmc.81.2.106>
- Johnson, R. M., Frank, E. M., Ciocca, M., & Barber, C. W. (2011). Training Mental Healthcare Providers to Reduce At-Risk Patients' Access to Lethal Means of Suicide: Evaluation of the CALM Project. *Archives of Suicide Research, 15*(3), 259-264.  
<https://doi.org/10.1080/13811118.2011.589727>
- Klonsky, E. D., May, A. M., & Saffer, B. Y. (2015). Suicide, Suicide Attempts, and Suicidal Ideation. *Annual Review of Clinical Psychology, 12*, 14.1-14.24.  
[doi://10.1146/annurev-clinpsy-021815-093204](https://doi.org/10.1146/annurev-clinpsy-021815-093204)
- Knipe, D. W., Metcalfe, C., Fernando, R., Pearson, M., Konradsen, F., Eddleston, M., & Gunnel, D. (2014). Suicide in Sri Lanka 1975–2012: age, period and cohort analysis of police and hospital data. *BMC Public Health, 14*(839).  
<https://doi.org/10.1186/1471-2458-14-839>



Lipsey, M. W., & Wilson, D. B. (2001). *Practical Meta-Analysis*. SAGE Publications.

Lipson, S. K., & Eisenberg, D. (2018). Mental health and academic attitudes and expectations in university populations: results from the healthy minds study. *Journal of Mental Health, 27*(3).

<http://dx.doi.org.proxy006.nclive.org/10.1080/09638237.2017.1417567>

Litteken, C., & Sale, E. (2017). Long Term Effectiveness of the Question, Persuade, Refer (QPR) Suicide Prevention Gatekeeper Training Program: Lessons from Missouri. *Community Mental Health Journal, 54*, 282–292. DOI:10.1007/s10597-017-0158-z.

Lubin, G., Werbeloff, N., Halperin, D., Shmushkevitch, M., Weiser, M., Knobler, H. Y. (2011). Decrease in Suicide Rates After a Change of Policy Reducing Access to Firearms in Adolescents: A Naturalistic Epidemiological Study. *American Association for Suicidology, 40*(5), 421-424.

<https://doi-org.proxy006.nclive.org/10.1521/suli.2010.40.5.421>

Nock, M. K., Borges, G., Bromet, E. J., Cha, C. B., Kessler, R. C., & Lee, S. (March 25, 2008). Suicide and Suicidal Behavior. *Epidemiologic Reviews, 30*, 133-154.

doi:10.1093/epirev/mxn002

QPR Institute. (n.d.) Question. Persuade. Refer. Retrieved 20 April, 2020 from

<https://qprinstitute.com/>

Rosen, M., Michael, K.D., & Jameson, JP (in press). CALM gatekeeper training is associated with increased confidence in utilizing means reduction approaches to suicide prevention among college resident assistants. *Journal of American College Health*.

- Sale, E., Hendricks, M., Well, M., Miller, C., Perkins, S., & McCudden, S. (2018). Counseling on Access to Lethal Means (CALM): An Evaluation of a Suicide Prevention Means Restriction Training Program for Mental Health Providers. *Community Mental Health Journal, 54*, 293-301.  
<https://doi.org/10.1007/s10597-017-0190-z>
- Schwartz, V. (2017). Suicide among college students: Risk and approaches to prevention and management. *Psychiatric Annals, 47*, 406-411.  
<http://dx.doi.org/10.3928/00485713-20170706-01>
- Shelef, L., Laur, L., Raviv, G., & Fruchter, E. (2015). A military suicide prevention program in the Israeli Defense Force: a review of an important military medical procedure. *Disaster and Military Medicine, 1*(16). <https://doi.org/10.1186/s40696-015-0007-y>
- Stone, D. M., Simon, T. R., Fowler, K. A., Kegler, S. R., Yuan, K., Holland, K. M., Ivey-Stephenson, A. Z., & Crosby, A. E. (2018). Vital Signs: Trends in State Suicide Rates — United States, 1999–2016 and Circumstances Contributing to Suicide — 27 States, 2015. *Morbidity and Mortality Weekly Report, 67*(22), 617-624.  
<http://dx.doi.org/10.15585/mmwr.mm6722a1>
- The JED Foundation. (n.d.) *Who We Are*. Retrieved April 20, 2020, from <https://www.jedfoundation.org/who-we-are/>
- Yip, P. S., Caine, E., Yousuf, S., Chang, S., Chien-Chang Wu, K., Chen, Y. (2012). Means restriction for suicide prevention. *Lancet, 379*, 2393-2399.

Appendix A: IRB

To: Kurt Michael

Psychology , Psychology

CAMPUS EMAIL

From: IRB Administration

Date: 12/04/2019

RE: Determination that Research or Research-Like Activity does not require IRB Approval

STUDY #: 19-0146

STUDY TITLE: Does the CARPE Diem Gatekeeper Training Improve Confidence in Suicide Prevention Techniques Among a Sample of Resident Assistants?

After a re-review of your activity and clarification from the PI, Office of Research Protections staff determined that the activity is program evaluation described in the study materials does not constitute research as defined by University policy and the federal regulations [45 CFR 46.102 (d or f)] and does not require IRB approval. This determination may no longer apply if the activity changes. IRB approval must be sought and obtained for any research with human participants. If you have any questions about this determination, please contact the IRB Administration at 828-262-4060 or [irb@appstate.edu](mailto:irb@appstate.edu).

Thank you.

CC: John Jameson, Psychology

Appendix B: Informed Consent

**CARPE DIEM WORKSHOP:  
EVALUATION AND INFORMED CONSENT**

Your feedback is important to us. The purpose of the research is to evaluate whether the CARPE Diem training has an effect on participants' knowledge or perceptions regarding suicide prevention interventions. We do not foresee obvious risks to you if you opt to participate beyond revealing your attitudes or beliefs about suicide prevention training programs. 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. Although completing the surveys will take approximately 2-4 minutes each (before, immediately after, and 1 month after the training), participation is voluntary, declining to participate will involve no penalty/loss of benefits, and you may discontinue participation at any time. You can attend the training without completing the surveys.

*I prefer not to participate in the study*

If you agree and sign below, you are providing your informed consent to participate in the study.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

We are asking for a mailing address so we can send you a follow-up evaluation form in one month.

Email address: \_\_\_\_\_

To ensure everyone's confidentiality, after you complete this form we will detach your name and email address from the completed surveys. Once you complete the email survey, we will shred the sheet containing your signature and email address. Do not write your name or initials on any pages other than the cover page.

Appalachian State University's Institutional Review Board has reviewed this study. Questions regarding the protection of human subjects may be addressed to the IRB Administrator:

Research Protections Appalachian State University, Boone, NC 28608  
(828) 262-2692  
irb@appstate.edu

**Thank you!**

Appendix C: Evaluation Form

<p><b>CARPE Diem</b></p> <p><b>Suicide Prevention Training</b></p> <p><b>Evaluation</b></p>	<p><b>Age:</b></p> <p><b>Gender:</b></p> <p><b>Number of years as RA:</b></p> <p><b>Major at ASU:</b></p>				
<p>Please indicate how much you agree or disagree with each statement by ticking the box provided</p>	1 Strongly agree	2 Agree	3 Neither agree nor disagree	4 Disagree	5 Strongly disagree
I feel I can accurately identify situations where a person is at risk of suicide					
I know how to approach and question people at risk of suicide					
I feel comfortable assessing someone for suicide risk					
I know how to refer people at risk of suicide to the services most appropriate to their needs and level of risk					
I am familiar with means restriction approaches to suicide prevention					
Suicide can be prevented by restricting access to lethal means					
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 Resident Assistant*

Demographics	<i>n</i>	Percent (%)
<u><i>Participant Age</i></u>		
19	4	23.53%
20	5	29.41%
21	8	47.06%
<u><i>Participant Sex</i></u>		
Male	9	52.94%
Female	7	41.18%
Non-Binary	1	5.88%
<u><i>Years as a Resident Assistant</i></u>		
1	9	52.94%
2	6	35.29%
3	2	11.76%

Table 2  
*Item Means and Standard Deviations*

Items	Baseline ( <i>n</i> = 17)	Post-Training ( <i>n</i> = 17)	Follow-Up ( <i>n</i> = 16)
<u>Suicide Prevention Items</u>			
“I feel I can accurately identify situations where a person is at risk of suicide.”	3.94 (.68)	4.71 (.47)	4.63 (.5)
“I know how to approach and question people at risk of suicide.”	3.88 (.72)	4.82 (.39)	4.63 (.5)
“I feel comfortable assessing someone for suicide risk.”	3.38 (.89)	4.59 (.62)	4.5 (.63)
“I know how to refer people at risk of suicide to the services most appropriate to their needs and level or risk.”	4.13 (.82)	4.82 (.39)	4.75 (.45)
<u>Means Reduction Items</u>			
“I am familiar with means restriction approaches to suicide prevention.”	2.81 (.98)	4.81 (.40)	4.63 (.5)
“Suicide can be prevented by restricting access to lethal means.”	3.69 (.6)	4.75 (.45)	4.94 (.25)
“I am confident in my ability to talk to people about reducing access to lethal means.”	2.94 (.68)	4.56 (.51)	4.69 (.48)

*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  
*Paired Samples T-Tests*

Composite	Interval Means ( <i>SD</i> )		<i>p</i> *	Cohen's <i>d</i>	95% CI
	<u>Baseline</u>	<u>Post-Training</u>			
Suicide Prevention	15.31 (2.24)	18.93 (1.52)	.064	1.89	1.08-2.70
Means Reduction	9.47 (0.89)	14.13 (1.25)	.010*	4.29	3.07-5.52
	<u>Post-Training</u>	<u>Follow-Up</u>			
Suicide Prevention	19.13 (1.31)	18.5 (1.79)	.517	-0.40	-1.09-0.29
Means Reduction	14.27 (1.1)	14.33 (0.89)	.069	0.06	-0.62-0.74

*Note: SD = Standard Deviation*

\*Significant levels based on Bonferroni corrections ( $p \leq .0125$ )



Figure 1

*Composite Means for Change in Confidence Over Time (higher scores reflect more confidence)*

