Suicide and Life-Threatening BEHAVIOR

Depression, suicide risk, and declining to answer firearm-related survey items among military personnel and veterans

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Abstract

Objectives: To describe the characteristics of military personnel and veterans who decline to answer survey items asking about firearm availability at home, and to determine how these characteristics compare to those of military personnel and veterans who answered these items.

Methods: Self-report surveys were administered to 2025 military personnel and veterans visiting a primary care clinic located at five military installations across the United States for a routine visit. Multinomial logistic regression was used to identify factors that distinguished participants with firearms at home, participants without firearms at home, and participants who declined answering.

Results: In univariate analyses, participants who selected "refuse to answer" in response to an item asking about firearm access at home did not differ demographically from participants who selected "yes," but were significantly more likely to screen positive for depression and recent thoughts of death or self-harm. These differences were not statistically significant in multivariate analyses, however. Participants who selected "refuse to answer" or "yes" were significantly more likely than participants who selected "no" to be male, white, and previously deployed.

Conclusions: Military personnel and veterans who decline answering firearm-related survey items are indistinguishable from those who report having a firearm at home. Declining to answer firearm-related items is more common among those who screen positive for depression or recent thoughts of death or self-harm, but this association is statistically accounted for by demographic factors (i.e., male gender, white race).

1 | INTRODUCTION

Suicides among U.S. military personnel and veterans have increased steadily over the past decade, rising faster than the U.S. general population suicide rate (Stone et al., 2018). In the United States, military personnel and veterans are approximately 21% more likely to die by suicide than the general population (Department of Veterans Affairs 2016). One possible contributor to this discrepancy involves differences in firearm availability. Military personnel and veterans are more likely than nonveterans to report living in homes with firearms than nonveterans (Bryan et al., 2019; Centers for Disease Control & Prevention, 2005; Cleveland et al., 2017), and individuals living in a home with a firearm are significantly more likely to die by suicide than individuals living in a home without any firearms (Miller et al., 2012). Consistent with this pattern, approximately 66% of suicides among military personnel and veterans result from self-inflicted gunshot wounds as compared to 50% of suicides in the general population (Department of Veterans Affairs 2016; Stone et al., 2018).

The heightened risk for suicide among residents of households with a firearm could potentially be offset when firearms are stored with a locking device such as a safe or gun lock (Cummings et al., 1997; Shenassa et al., 2004), a strategy that aligns with the concept of *means restriction*. Means restriction involves limiting an individual's access to potentially lethal methods for attempting suicide, thereby placing sufficient time and distance between an acutely distressed individual and a highly lethal method to allow the acute crisis to pass without action (Barber & Miller, 2014). Although means restriction is an empirically supported public health strategy for reducing suicide mortality in the United States, our understanding of its potential impact is limited by the fact that some people are unwilling to answer questions about firearm ownership, access, and/or storage methods.

The percentage of survey respondents who decline to answer any questions about firearms is typically small—usually ranging from 4 to 9% across studies (Bryan et al., 2019; Cleveland et al., 2017)—but this subgroup of respondents may nonetheless differ from other respondents in important ways (Cook & Ludwig, 1997). For example, previous research has found that respondents are more likely to decline to answer a survey item when they perceive that honest self-disclosure will result in negative consequences (Shoemaker et al., 2002; Tourangeau and Yan, 2007). Although the specific motives cannot be fully understood for each respondent, declining to answer a question can nonetheless reveal information about the respondent's "true" response and/or potential motives underlying the decision to decline answering. For instance, declining to answer a sensitive question is less probable when the topic does not apply to the respondent (Tourangeau & Yan, 2007). Consistent with this possibility, Podlogar et al. (2016) found that individuals who declined to answer survey items asking about suicidal thoughts and behaviors have been found to report significantly elevated levels of emotional distress and suicide risk indicators. Similar patterns have been observed in military samples (Anestis & Green, 2015; Vannoy et al., 2017). As applied to firearms, gun-owning respondents may be more likely to decline answering firearm-related survey items because they are more likely to perceive such items as personally relevant and potentially intrusive or threatening (Bryan, Wood, Applegarth, & Bryan, 2019; Hoge et al., 2004).

To our knowledge, no studies have examined the characteristics of individuals who decline to answer firearm-related survey items. Because honest self-disclosure of firearm availability is an important condition for implementing suicide prevention strategies like lethal means counseling, additional research aimed at understanding the correlates of declining to answer firearm-related questions is warranted. Identifying the ways in which this subgroup of respondents is similar to—and differ from—other respondent subgroups may provide clues for developing and implementing public health strategies designed to encourage means restriction practices. In the present study, we sought to characterize U.S. military personnel and veterans who declined to answer firearm-related survey items. We hypothesized that participants who declined to answer a survey item about firearm access would be demographically similar to participants reporting a firearm in or around their home, but would significantly differ from participants reporting no firearms at home. We further hypothesized that declining to answer questions about firearm access would be positively correlated with emotional distress and suicide risk.

2 | METHODS

2.1 | Participants

Participants included 2025 primary care patients (*n* = 1301, 64.2% male; *n* = 709, 35.0% female; *n* = 15, 0.7%, other or prefer not to answer) ranging in age from 18 to 89 (M = 38.8, SD = 19.2) years who were currently serving in the U.S. military (*n* = 1600, 79.0%) or had retired from military service (*n* = 425, 25.0%). Self-identified race and ethnicity were 67.3% (*n* = 662) white, 19.5% (*n* = 394) black, 4.2% (*n* = 85) Asian, 4.7% (*n* = 95) Native American, 1.5% (*n* = 30) Pacific Islander, 11.1% (*n* = 224) other, and 16.9% (*n* = 342) Hispanic. Branch of service included 10.4% (*n* = 211) Air Force, 19.2% (*n* = 389) Army, 0.1% (*n* = 3) Coast Guard, 13.9% (*n* = 281) Marines, and 56.3% (*n* = 1141) Navy. Nearly two-thirds (*n* = 1304, 64.4%) had deployed at least once during their military service.

2.2 | Procedures

The present study entails a subanalysis of data collected as part of the PRimary care Screening Methods (PRISM) study. A full description of the parent study's procedures can be found in Bryan et al. (2019), but in short, primary care patients were invited to complete self-report measures during routine visits to a primary care clinic. Interested patients approached a research associate located at a table in the clinic waiting room. The research associate answered their questions and completed the informed consent process with the patient. Patients who provided informed consent then completed self-report measures on a laptop or tablet computer. Because the purpose of PRISM was to collect data under conditions that mirrored typical practice in primary care, participants were asked to provide their name and contact information when completing the survey. Participant identifiers were stored separate from survey responses, however, to preserve confidentiality. The present study was approved by the Naval Health Research Center's Institutional Review Board.

TABLE 1 Results of univariate multinomial regression analyses predicting firearm endorsement group

	Firearm in or around home			OR (95% CI)		
	No (n = 1093)	Yes (n = 790)	Refuse (n = 142)	Refuse vs. No	Refuse vs. Yes	Yes vs. No
Age, M (SD)	36.5 (18.6)	41.0 (19.5)	43.9 (19.8)	**1.02 (1.01-1.03)**	1.01 (0.998-1.02)	**1.01 (1.01-1.02)**
Male, %	59.8$_{ab}$	69.9$_a$	73.4$_b$	**1.85 (1.25-2.75)**	0.41 (0.79-1.78)	**1.58 (1.28-1.90)**
White, %	58.3$_{ab}$	78.5$_a$	74.6$_b$	**2.11 (1.42-3.13)**	0.81 (0.53-1.22)	**2.61 (2.12-3.21)**
Veteran, %	16.7$_{ab}$	25.3$_a$	29.6$_b$	**2.09 (1.41-3.10)**	1.24 (0.84-1.84)	**1.69 (1.35-2.11)**
Previously Deployed, %	58.2$_{ab}$	71.0$_a$	75.4$_b$	**2.20 (1.47-3.28)**	1.25 (0.83-1.88)	**1.76 (1.45-2.14)**
Probable Depression, %	24.7	20.4$_a$	31.0$_a$	1.37 (0.94-2.00)	**1.75 (1.18-2.61)**	0.78 (0.63-0.97)
Probable PTSD, %	21.0	21.3	26.8	1.38 (0.92-2.07)	1.35 (0.89-2.05)	1.02 (0.81-1.28)
Lifetime Ideation, %	27.7	30.9	28.6	1.05 (0.71-1.55)	0.90 (0.60-1.33)	1.17 (0.95-1.43)
Lifetime Attempt, %	8.6	7.3	11.6	0.85 (0.60-1.19)	1.66 (0.92-2.98)	1.40 (0.80-2.46)
Recent Ideation, %	10.6	8.4$_a$	14.8$_a$	1.46 (0.89-2.41)	**1.90 (1.12-3.23)**	0.77 (0.56-1.05)

Within each row, values that share subscript letters statistically differ from each other at $p < 0.05$. Odds ratios in bold are statistically significant at $p < 0.05$.

2.3 | Measures

Availability of firearms in the home was assessed with the following question from the Behavioral Risk Factor Surveillance System (Centers for Disease Control & Prevention, 2005): "Are any firearms now kept in or around your home?" Participants were allowed to answer *yes*, *no*, *I don't know*, or *refuse to answer*. Probable depression was defined as a total score of 10 or higher on the Patient Health Questionnaire depression subscale (PHQ-9; Kroenke et al., 2001). Recent thoughts of death or self-harm were defined as a non-zero response on the ninth item of the PHQ-9, which asks respondents to report the frequency of "thoughts that you would be better off dead, or of hurting yourself" during the past two weeks. Probable posttraumatic stress disorder (PTSD) was defined as a total score of 3 or higher on the Primary Care PTSD Screen (PC-PTSD; Cameron & Gusman, 2003). Lifetime suicidal thoughts and behaviors were assessed with two items from the Self-Injurious Thoughts and Behaviors Interview (SITBI; Nock et al., 2007): "Have you ever had thoughts of killing yourself?" and "Have you ever made an actual attempt to kill yourself in which you had at least some intent to die?".

2.4 | Data analytic approach

We used multinomial logistic regression to examine differences between firearm response groups. Multinomial logistic regression is a method that generalizes logistic regression to models with three or more outcome groups. In the present study, participant response to the firearm availability item served as the outcome variable, yielding three possible groups: those with a firearm in or around the home (selecting "yes"), those with no firearms in or around

the home (selecting "no"), and those who selected "refuse to answer." Gender (male versus female)[1], race (white versus non-white), military status (active duty versus veteran), history of deployment, probable depression, probable PTSD, lifetime history of suicide ideation, lifetime history of suicide attempts, and recent thoughts of death or self-harm were selected as predictor variables. Univariate models were first constructed to test each predictor as an independent correlate of firearm response group. A series of multivariate models were then constructed to assess the relatively contribution of each predictor variable when controlling for other variables. All analyses were conducted using SPSS version 25 and used a two-tailed alpha<.05 as the threshold for statistical significance.

3 | RESULTS

Seven hundred ninety (37.6%) participants reported having a firearm in or around their home, 1093 (52.0%) reported no firearms in or around their home, and 142 (6.8%) selected "refuse to answer." Differences in demographic and clinical variables across groups are summarized in Table 1. Participants with firearms and participants who declined to answer were demographically similar on most variables: Approximately 70–73% were male, 75–79% were white, and 71–75% had previously deployed. Participants who declined to answer were also significantly older in age than participants with firearms, although this difference was not large in magnitude: 43.9 versus 41.0 years. Both of these groups were significantly more likely to be male, white, previously

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[1]Only 15 (0.7%) participants self-identified their gender as "other" or "prefer not to answer." Due to the low number of these responses, we treated these responses as missing values rather than excluding these cases completely.

TABLE 2 Results of multivariate multinomial regression analyses predicting firearm endorsement group

	AOR (95% CI)			AOR (95% CI)		
	Refuse vs. No	Refuse vs. Yes	Yes vs. No	Refuse vs. No	Refuse vs. Yes	Yes vs. No
Age	1.01 (0.999-1.02)	1.01 (0.995-1.02)	1.00 (0.998-1.01)	1.01 (0.999-1.02)	1.01 (0.994-1.02)	1.00 (0.998-1.01)
Male	**1.56 (1.03-2.37)**	1.25 (0.82-1.90)	**1.25 (1.02-1.55)**	**1.53 (1.01-2.31)**	1.21 (0.79-1.84)	**1.27 (1.03-1.56)**
White	**2.26 (1.49-3.43)**	0.88 (0.57-1.36)	**2.56 (2.07-3.18)**	**2.21 (1.46-3.36)**	0.85 (0.55-1.31)	**2.60 (2.10-3.23)**
Veteran	1.53 (0.93-2.51)	1.08 (0.66-1.76)	**1.42 (1.07-1.90)**	1.55 (0.94-2.54)	1.08 (0.66-1.76)	**1.44 (1.08-1.92)**
Previously Deployed	**1.67 (10.8-2.58)**	1.02 (0.65-1.59)	**1.63 (1.31-2.03)**	**1.69 (1.10-2.62)**	1.04 (0.66-1.62)	**1.63 (1.31-2.03)**
Probable Depression	1.38 (0.93-2.06)	**1.71 (1.14-2.57)**	0.81 (0.64-1.02)	–	–	–
Recent Ideation	–	–	–	1.25 (0.74-2.12)	**1.80 (1.05-3.10)**	**0.70 (0.50-0.97)**

Adjusted odds ratios in bold are statistically significant at $p < 0.05$.

deployed, and veterans no longer in active military service than participants without firearms.

Of the three firearm response groups, participants who declined to answer had the highest rates of probable depression (31.0%), probable PTSD (26.8%), lifetime suicide attempts (11.6%), and recent thoughts of death and self-harm (14.8%). Participants who declined to answer had significantly higher rates of probable depression and recent thoughts of death or self-harm than participants with firearms (see Table 1). Participants who declined to answer did not significantly differ from participants without firearms on any clinical variable. Participants with firearms also did not significantly differ from participants without firearms on any clinical variable.

Probable depression and recent thoughts of death or self-harm continued to be significantly elevated among participants who declined to answer as compared to participants with firearms when controlling for age, gender, race, veteran status, and deployment history, and were the only variables that significantly distinguished these two groups (see Table 2). When probable depression and recent thoughts of death or self-harm were included in the same model, however, neither variable was statistically significant, suggesting that probable depression and thoughts of death or self-harm accounted for a comparable amount of variance in distinguishing firearm response group.

4 | DISCUSSION

Although the number of survey respondents who decline to answer firearm-related questions is typically small (i.e., <10%), little is known about how this subgroup differs from other survey respondents. In the present study, we hypothesized that military personnel and veterans who declined to answer firearm-related questions would be demographically similar to participants who reported having a firearm at home, but would be more likely to screen positive for depression, PTSD, and/or recent thoughts of death or self-harm. Our results supported these hypotheses. Consistent with expectations, military personnel and veterans who declined to answer were demographically similar to participants with firearms with respect to demographics; both groups were predominantly white men who had previously deployed. These two groups also differed in demographically similar ways from participants without firearms. Overall, this suggests that participants who declined to answer are much more similar to participants who reported firearm availability than participants who denied firearm availability, a pattern that aligns with previous research suggesting that individuals are more likely to decline answering a sensitive survey if the item is personally relevant (Tourangeau & Yan, 2007).

Although participants who declined to answer and participants with firearms were demographically indistinguishable from each other, participants who declined to answer had significantly higher rates of probable depression (31% versus 20%) and recent thoughts of death or self-harm (15% versus 8%). Military personnel and veterans with probable depression and/or thoughts about death or self-harm are therefore less likely to answer questions about firearm availability, potentially because questions about firearm access are perceived as more intrusive or threatening to individuals experiencing heightened emotional distress. This suggests that higher risk individuals with access to firearms may be less likely to self-disclose this access. From a public health perspective, this implicates the importance of encouraging means restriction methods at a broad population level, not just among those who voluntarily disclose firearm access. Our results may further implicate the need for developing and testing alternative public health messages to different subgroups of the population. Specifically, individuals experiencing heightened emotional distress who are willing to disclose firearm availability versus those who are unwilling to disclose firearm availability may respond to different types of messages focused on means restriction, safe firearm storage, and suicide prevention in general.

From a clinical perspective, our results also suggest that military personnel and veterans who decline to answer questions about access to firearms may be experiencing higher levels of emotional distress and/or high-risk thoughts. Declining to answer firearm-related questions may therefore serve as an indicator of elevated suicide risk. Additional research conducted in clinical settings is required to further assess this possibility.

Finally, the present results also suggest that published rates of firearm ownership and access among military personnel and veterans (and potentially other populations) may underestimate the true rates of firearm availability, although probably by only a few percentage points. Although we cannot know for sure if the participants who declined to answer actually had firearms in or around their homes, our results suggest this is more likely than not to be the case. From a public health perspective, the present results implicate the potential value of research using strategies designed to increase honest self-disclosure of sensitive topics, such as the item count technique (Chaudhuri & Christofides, 2007) or the randomized response technique (Warner, 1965), and are needed to further understand how individuals who decline to answer firearm-related questions may be different from (or similar to) other subgroups.

Conclusions based on these results should be made cautiously in light of several limitations, however. First, the cross-sectional design restricts our ability to understand directional effects among predictor variables and outcomes. It seems likely that elevated emotional distress and suicide risk are correlated with an increased tendency to decline answering, but it is also possible that the correlations among emotional distress, suicide risk, and willingness to answer firearm-related questions are explained by other, unmeasured variables. Second, our sample was restricted to military personnel and veterans; the generalizability of findings to non-veterans is therefore unknown. Third, there is no way for us to confirm the accuracy of participant responses. For instance, some participants with a firearm at home may have selected the "no" option as a function of the item's perceived sensitivity instead of the "refuse to answer" option. Finally, it is possible that active duty living on-base was less willing than active duty participants living off-base to disclose having a firearm in or around the home due to policies that limit firearm possession and storage on military installations. Despite these limitations, the present study provides novel information about response patterns associated with firearm-related survey items and suggests there may be value in further research focused on the factors that influence an individual's decision to disclose firearm access.

DISCLAIMER

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