



# Understanding Suicidal Behavior among US Army Soldiers: Intent, Lethality, and their Prediction



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## BACKGROUND



The US Army suicide rate has sky-rocketed over the past decade, yet our understanding of suicidal behaviors among Soldiers remains very limited. The Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS; www.ArmystARRS.org)<sup>1</sup> is a multicomponent epidemiological and neurobiological study designed to generate actionable, evidence-based recommendations to reduce Army suicides and increase knowledge about risk and resilience factors for suicidality.\*

- This is the first report on Soldier Health Outcomes Study-A (SHOS-A), an Army STARRS case-control study of Soldiers hospitalized due to a suicide attempt. We examined the severity and predictors of suicide intent and medical lethality among recent Army suicide attempters using data from a structured clinical interview.
- Prior studies have reported conflicting findings regarding the association between suicide intent and lethality, with some studies finding a strong correlation (i.e., the greater the intent to die, the more lethal the attempt)<sup>2</sup> and others finding no such association.<sup>3</sup> One reason for this divergence of findings could be problems in the measurement of these constructs.

## METHOD

### Sample:

Army suicide attempters (N=120) were recruited from psychiatric inpatient units at five military treatment facilities in the continental US. Patients were excluded based on active psychosis or medical incapacity, as determined by the attending physician.

Cases were predominantly male (82%), White Non-Hispanic (56%), at least high school educated (87%), married (59%), and with a mean age of 28-years-old.

### Measures:

**Suicide attempt history & characteristics:** An adapted version of the **Self-Injurious Thoughts and Behaviors Interview (STBI)**<sup>4</sup> was used to assess the number of previous suicide attempts and the characteristics of the most recent attempt (i.e., the attempt that precipitated current hospitalization). Here we examined STBI items assessing method of actual or attempted injury, the circumstances reported as contributing to the attempt, alcohol or illicit drug use in the week prior to hospitalization, and number of alcoholic drinks in the 24 hours prior to attempt.

**Suicide intent:** Level of suicide intent (i.e., intent to die) was assessed using the **Suicide Intent Scale (SIS)**<sup>5</sup> based on behaviors before, during, and after the most recent suicide attempt. The SIS was modified for administration as a structured interview. The interviewer rated each of the 15 items on a 0-2 scale, with a higher summary score indicating greater suicide intent.

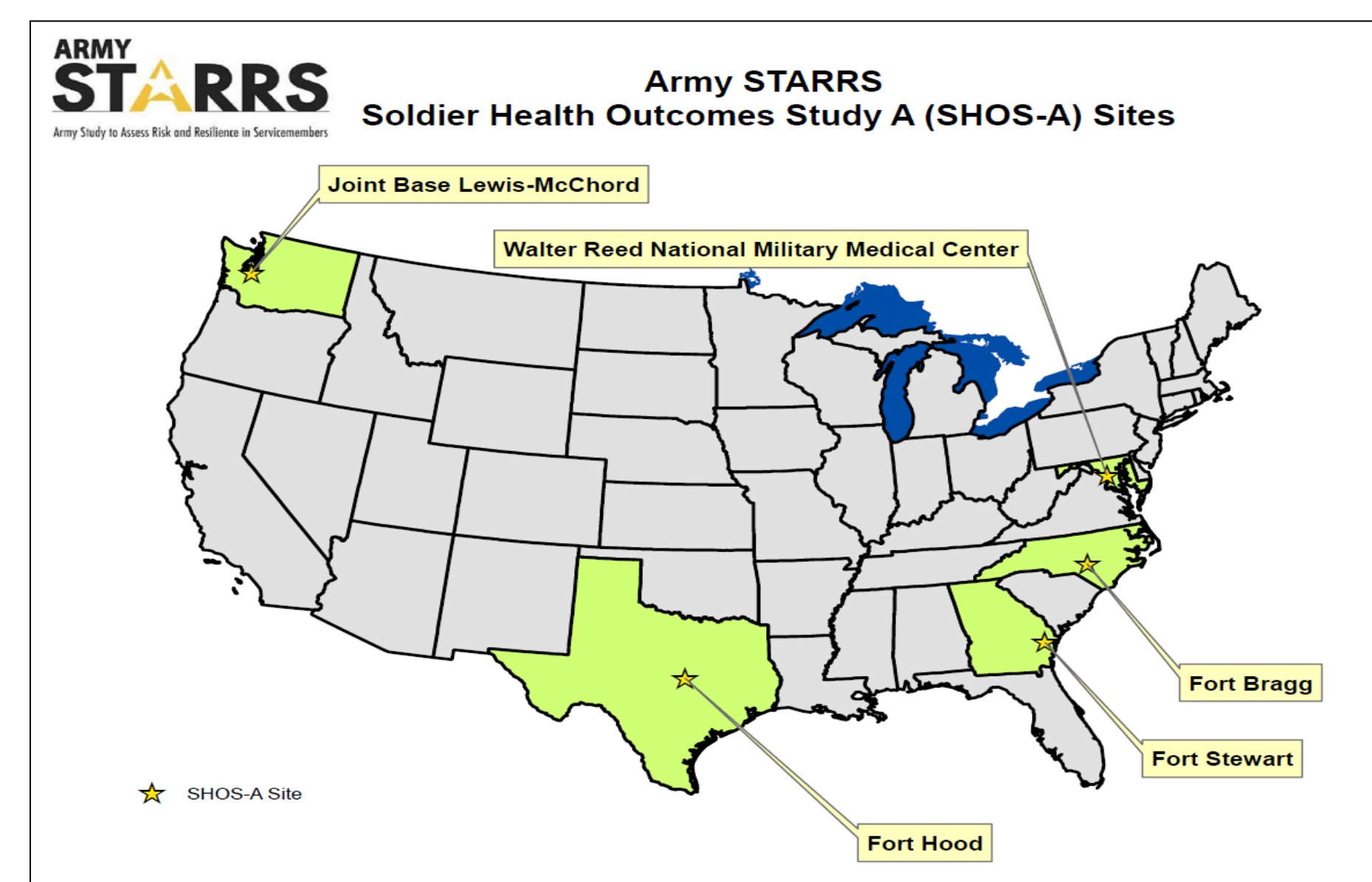
**Lethality:** Level of medical lethality (i.e., danger to life) resulting from the recent suicide attempt was assessed using the **Beck Lethality Scale (LS)**.<sup>6</sup> The interviewer rated lethality on a 0-10 scale in one of 8 categories (corresponding to method of attempt) based on participant-reported injuries and medical treatment, with a higher score indicating greater medical lethality. When multiple methods were used, lethality was determined based on the category with the highest score.

### Interrater Reliability:

To assess interrater reliability, interviewers at each study site took turns administering the interview via teleconference to actors trained to simulate psychiatric symptoms. During each teleconference, interviewers at the other sites listened silently and independently coded the responses (coding decisions were not discussed). Average interrater reliability (Cohen's Kappa) for the 8 simulated interviews was 0.82 for items assessing alcohol/drug use (STBI), 0.54 for items assessing method and circumstances (STBI) and lethality (LS), and 0.57 for items assessing suicide intent (SIS).

### Analyses:

Analyses were conducted using SAS version 9.3. Missing SIS values were imputed using the modal response for that item within the sample. The single participant missing data on other variables was excluded. Predictors of suicide intent and lethality were examined in univariate and multivariate ordinary least squares regression models.

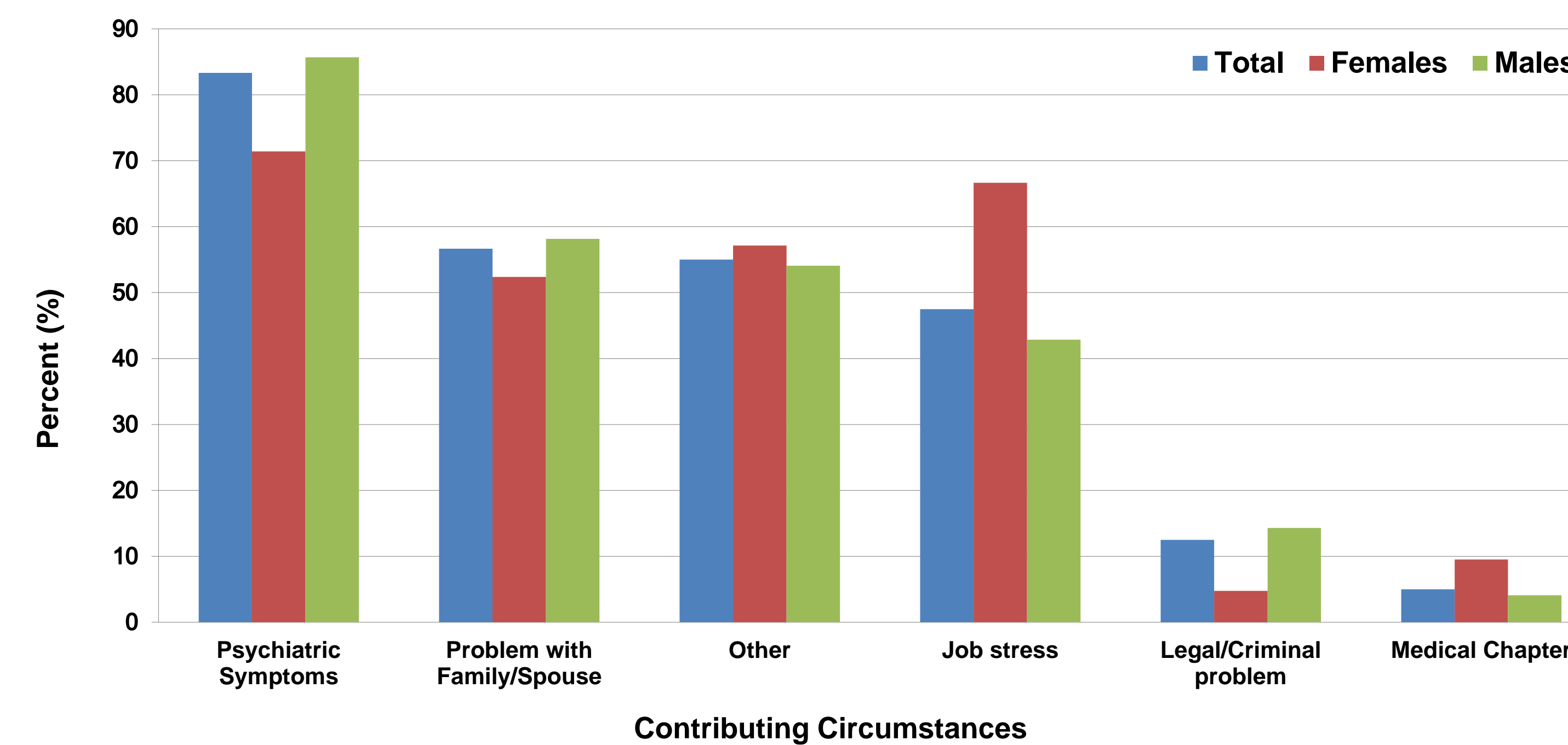


## RESULTS

### I. DESCRIPTIVE STATISTICS

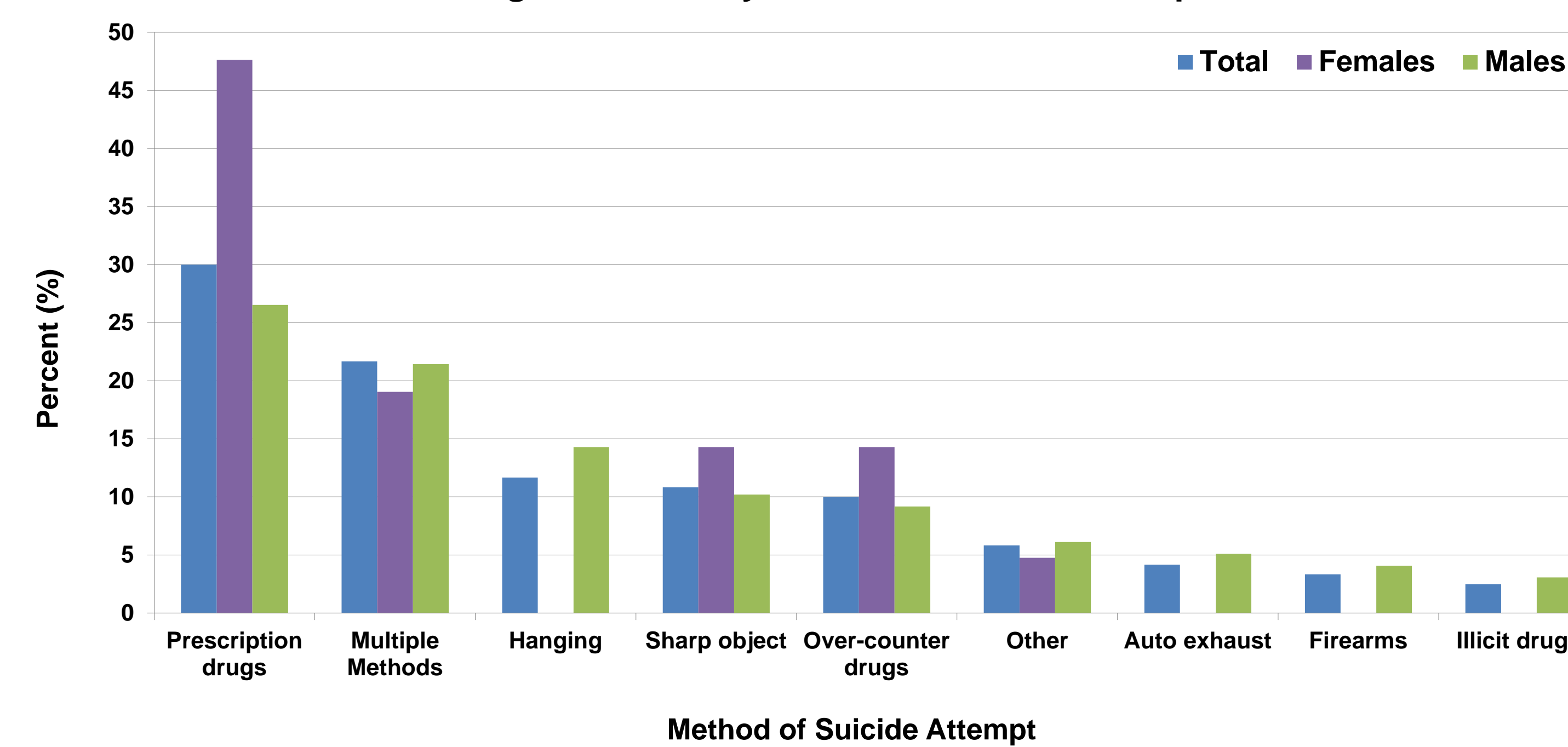
- Suicide attempt history:** Over 51% of cases reported 2 or more lifetime suicide attempts, with 26% reporting 3 or more.
- Recent substance use:** 57% reported use of alcohol and/or illicit drugs within a week of hospitalization, and 30% reported consuming at least 4 alcoholic drinks in the 24 hours prior to attempting suicide.
- Reported contributing circumstances:** Psychiatric symptoms were the most frequently reported contributing circumstances among both males (86%) and females (71%). Job stress (including bullying) was the second most frequently reported circumstance among females (67%), whereas family or spouse problems was the second most common among males (58%) (Figure 1).

Figure 1. Circumstances reported as contributing to the suicide attempt<sup>1,2</sup>



1. Participants may be counted in more than one category (i.e., categories are not mutually exclusive).

Figure 2. Primary method of suicide attempt<sup>1,2</sup>



1. Method categories are mutually exclusive.  
2. Other includes: poisoning, jumping from height, train/car, and alcohol.

**Method of attempt:** Prescription drug use was the most common method of suicide attempt overall (30%), although a greater proportion of females (48%) than males (27%) reported prescription drugs as their method. The most common multiple method used was alcohol and prescription drug use (Figure 2).

### II. PRIMARY OUTCOMES

- Predictors of suicide intent:** None of the predictor variables considered here were associated with suicide intent in either univariate or multivariate analyses.
- Predictors of lethality:** In univariate regression models, Soldiers who reported 3 or more lifetime suicide attempts had a less lethal recent attempt than those for whom the current attempt was their first (B=-1.21, p=0.03). There was a marginal association between consuming 2 or more alcoholic drinks versus none in the 24 hours prior to attempt with higher lethality (B=0.87, p=0.09). Suicide intent was not associated with lethality at the univariate level (B=0.04, p=0.39).
- In a multivariate regression model, having 3 or more lifetime suicide attempts remained a significant predictor of lethality (B=-1.19, p=.04) when controlling for gender, suicide intent, any alcohol or illicit drug use in the week prior to hospitalization, and number of alcoholic drinks in 24 hours prior to attempt.

Characteristics	N	Suicide Intent (SIS score)		Lethality (LS score)	
		Mean	(SD)	Mean	(SD)
<b>Gender</b>					
Female	21	15.3	(4.4)	4.2	(2.0)
Male	98	17.2	(5.0)	4.3	(2.8)
<b>Method of Attempt</b>					
Own prescription drugs	36	16.0	(4.7)	5.1	(2.4)
Illicit drugs <sup>1</sup>	3	19.7	(9.5)	6.3	(0.6)
Over-counter drugs	12	17.0	(6.2)	4.6	(3.1)
Firearms	4	18.0	(4.8)	0.0	(0.0)
Hanging	14	17.0	(5.2)	2.1	(1.7)
Sharp object	13	16.5	(3.7)	4.5	(1.7)
Auto exhaust	5	20.4	(3.2)	4.6	(3.2)
Multiple Methods	26	17.0	(5.8)	4.6	(2.5)
Other <sup>2</sup>	7	16.0	(2.2)	3.2	(3.0)
<b>Primary Circumstance of Attempt<sup>3</sup></b>					
Job stress	18	16.6	(5.4)	4.2	(2.3)
Problem with family/spouse	26	16.4	(4.7)	3.5	(2.6)
Psychiatric symptoms	56	17.8	(4.0)	4.5	(2.6)
Legal/criminal problem	6	15.0	(9.1)	5.7	(2.5)
Army medical chapter	5	14.0	(5.4)	6.6	(2.8)
Other <sup>4</sup>	9	15.6	(6.9)	2.9	(2.3)

1. Illicit drugs include someone else's prescription drugs.

2. Other method includes: poisoning, jumping from height, train/car, alcohol.

3. Participants were categorized based on the contributing circumstance they identified as *primary* (i.e., categories are mutually exclusive).

4. Other circumstances include: financial problems, health problems (self), health problems/death (other), and unknown.

## CONCLUSIONS

- Consistent with some prior civilian studies,<sup>3</sup> but not with others,<sup>2</sup> we found no association between suicide intent and medical lethality in this sample of hospitalized US Army suicide attempters. It is important to continue to work on resolving this complex relationship, as evidence clearly demonstrates that both suicide intent and lethality play a critical role in understanding and preventing suicide.
- The finding that more lifetime suicide attempts was associated with a less lethal most recent suicide attempt conflicts with evidence from civilian research indicating repeated suicide attempts tend to increase in severity.<sup>7</sup> This discrepancy may be due to sociodemographic, psychological, and environmental exposure characteristics that differentiate Soldiers from the civilian population. It may also be due to recall and reporting bias in the assessment of lethality among SHOS-A cases, as the civilian findings were based on lethality ratings derived from medical records. It would likely be informative for future Army studies to examine the correspondence between self-reported and administrative indicators of lethality.

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