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Themes and Findings of Recent Research Using Army STARRS Data

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Abstract

United States military service members and veterans are a group at high risk for suicide. The idea that service members survive the battlefield to return home and commit suicide stings of depressive irony but studies show that the majority of service members and veterans have been exposed to, or affected by, suicide and that the suicide rate among U.S. veterans is increasing, possibly due to numerous deployments and the high tempo operations of modern warfare. Amongst the most notable efforts to study suicide amongst service members in recent years has been the Study. To assess risk and resilience (STARRS) and the study to assess risk and resilience longitudinal study (STARRS-LS). A collaborative effort between the Department of Defense and several universities, STARRS and STARRS-LS constitutes one of the largest studies to date regarding suicide amongst service members. Additionally, the data collected for STARRS has facilitated a large amount of research since its conclusion in 2015. Most of this research has sought to characterize those soldiers most at risk for suicide or to create novel methods to predict suicide amongst soldiers. Our review sought to identify, summarize, and discuss themes amongst the most recent published research that utilized STARRS data to examine suicide. Accordingly, this study aimed to use a validated FE models of thoracolumbar junctional T11- T12 and T12-L1 functional spinal units (FSUs) validated under physiological loading modes: flexion, extension, lateral bending and axial rotation, and to compare the kinematics in terms of the locations and loci of instantaneous axes of rotation (IARs) .

Introduction

The prevalence of suicide amongst military members has been well above the national average for several decades [1]. Concurrent to the wars in Afghanistan and Iraq, rates of suicide and suicide attempts amongst service members increased significantly [2]. Mirroring the increase in suicides, suicide attempts have also risen sharply during this time. While rates of suicide and suicide attempts amongst members of all services increased during this time period [1], the Army experienced the largest increases [1]. In 2007, 2008, and 2009 the Army experienced record high numbers of suicides amongst its members (STARRS-LS, 2017). In response the Army, beginning in 2009, initiated a massive effort to study suicide amongst its members titled the "Study To Assess Risk & Resilience in Service Members" (STARRS).

To conduct STARRS, the Army assembled a multidisciplinary group of researchers to create and implement a comprehensive study to assist the Army in reducing suicides amongst its members. Initial data collected for STARRS was used to complete eight different studies (STARRS-LS, 2017). Examples of the types of data collected in these studies include administrative data, neurocognitive tests, blood samples, and questionnaires among others (STARRS-LS, 2017). The scope of STARRS was massive; administrative records representing 1.6 million active duty soldiers were compiled and examined in addition to data from over 100,000 active duty soldiers using questionnaires and neuro-cognitive tests (STARRS-LS, 2017). While STARRS concluded its initial collection of data in 2015, The Study To Assess Risk And Resilience Longitudinal Study (STARRS-LS) is ongoing until 2020 and aims to collect data from 72,000 soldiers who participated in the initial STARRS as they continue their careers in the Army or transition back into civilian life (STARRS-LS, 2017). The data gathered from both STARRS and STARRS-LS has and continues to be used by researchers seeking to understand suicide better. Since 2012, data from the eight original studies collected for STARRS has been utilized to create over 50 new studies (STARRS-LS, 2017). Research utilizing STARRS data has encompassed a broad variety of research questions. Much of the research has centered on identifying demographic traits and experiences of individuals in the Army who have committed suicide [3-5]. Additionally, STARRS data has been used in research aimed at creating algorithms to predict suicidal behavior amongst soldiers [6-8].

Methods

The topic was chosen from Healthy People 2020 list of leading health indicators. A broad, scoping search was undertaken to

identify key terms, assess the depth and availability of literature, and establish a structure for the review. The amount of research regarding suicide and the military is vast and required that the search strategy be refined in order for this literature review to be manageable. STARRS and STARRS-LS were utilized to ensure that that information reviewed was recent and relevant to military suicides. While this still produce a very large amount of studies it helped to refine the search. Further inclusion criteria was developed and applied, studies must have been published within the past five years and must have been cited by another source at least one time. This helped to ensure both recent and quality research was being reviewed. Fifteen studies were found that met the stated inclusion criteria and were chosen to be reviewed; this was agreed to be enough data to ensure a thorough review of literature from different viewpoints. All studies were read and keywords, demographic information, trends, treatment options, and prevention strategies were extracted. "Keywords" were defined as words or phrases that appeared in multiple papers and had significance to the study or its results. Similarities and differences between studies and outcomes were identified. Thirteen, of these studies utilized quantitative methods of research which allowed for the study of large numbers of participants and the ease of comparing numeric data outcomes. The remaining two studies focused on using qualitative methods which allowed for a deeper look at cause and effect as well as the examination of the effect of multiple variables.

The established research objectives were to identify, if any, trends in suicidality among active duty military persons and/or combat veterans, identify barriers to support and treatment options that may reduce suicidal ideations and behaviors among this population, and to explore the effectiveness of different treatment options in reducing suicide or suicidal ideations among this population.

Findings

As previously mentioned, the bulk of research being conducted using STARRS data can be categorized as either research which seeks to identify demographic traits and experiences of individuals in the Army who have committed suicide or research intended to create methods for predicting suicidal behavior amongst soldiers. This dichotomy is reflected in our findings.

Characterizing soldiers most at risk

Higher rates of suicide amongst soldiers within their first four years of service, was observed across a variety of studies utilizing STARRS data. Ursano et al. [5] observed that soldiers were at highest risk of committing suicide during their second month of service. One study also observed higher rates of suicidal ideation amongst new soldiers [5], while another observed higher rates of non-fatal suicidal behavior amongst new soldiers [1].

Research which examined risk factors related to suicide in several studies observed stronger positive correlations amongst new soldiers and suicide. For example, Stein et al. [3] found that associations between simultaneous, comorbid alcohol abuse and mental disorders and suicidal ideation were stronger amongst new soldiers. Examining a possible relationship between exposure to improvised explosive devices (IEDs) and suicide rates. Ursano et al. [4] observed a positive correlation between IED exposure and suicide attempts across all participants. The correlation, however, was stronger amongst soldiers within their first two years of enlistment [4].

The variety of studies which have observed an elevated risk of suicide amongst new soldiers has encouraged additional research on suicide amongst new soldiers. Although not yet published, three upcoming studies listed on the STARRS-LS website examine new-soldier specific research questions (STARRS-LS, 2017).

Deployment

The relationship between deployments to Afghanistan or Iraq and the prevalence of suicide before, during, and after for those deployed was another theme observed during our review. During deployments, some soldiers may face a variety of stressors and traumatic experiences that he or she may have never before experienced. For many soldiers, the traumatic experiences they endured while deployed has left them with both physical and psychological damage [9,10].

The relationship between deployments and suicide varies widely between military occupational specialty (MOS) [9] and gender [10]. The variety of MOSs and the types of duty they entail correspond to an equally wide variety of experiences for soldiers prior to, during, and after deployments. While deployed, those soldiers in a combat related MOS (infantrymen and combat engineers) are more likely to sustain traumatic brain injuries [9] which have been associated with elevated rates of suicide and Post-Traumatic Stress Disorder [3]. Kessler et al. [9] observed elevated suicide rates amongst soldiers in a combat related MOS. However, these soldiers had significantly lower suicide rates during deployments as opposed to before and after deployments. Conversely, an increased suicide rate amongst soldiers not in a combat related MOS that were currently deployed or previously deployed was observed [9]. Amongst those not in a combat related MOS, females presented an even higher rate of suicide during deployments [11].

Street et al. [11] presented four hypothesis's potential explanations for the elevated rates of suicide amongst female soldiers during deployments. If elevated rates of suicide amongst women could be attributed to their MOS not their gender, whether females in the Army receive less social support than males, sexual assault victimization during deployment, and whether female soldiers are less resilient then their male counterparts to deployment stressors were all examined as plausible explanations [11]. Their analyses, however, did not find any statistically significant correlations to validate any of their hypotheses.

Predicting Suicide

The immense amount of data collected during both STARSS and STARRS-LS presents a rare opportunity for researchers to spot trends amongst those who have committed suicide. The timing of suicides, as well as the demographic traits, clinical data of, and conditions experienced by those who have committed suicide have been analyzed by researchers utilizing STARRS data [5,8,9,11].

These studies will hopefully allow researchers to tailor suicide intervention strategies to various stages of a soldier's career and in preparation and response to events which increase the risk of suicide amongst soldiers [12]. Delivering and identifying soldiers who need these interventions, however, constitutes a potentially large expense for the Army. Targeting interventions towards soldiers most at risk using predictive algorithms presents an opportunity for the Army to circumvent this expense [7,12]. These algorithms, referred to as risk models, could plausibly be used in conjunction with electronic medical records to automatically identify soldiers at risk for suicide based on data present in a soldier's medical record in real-time [7,12].

Kessler et al. [12] applied algorithms to administrative data from non-deployed soldiers who had visited a mental health specialists. Their method, specifically their application of their algorithm, was able to consistently predict suicide amongst their sample [9]. To improve the accuracy as well as the consistency of such predictions, Kessler et al. [12] recommended the inclusion of more detailed clinical information within the health records of soldiers.

Street et al. [7] utilized self-reported claims of sexual assault victimization amongst female soldiers and administrative records to analyze the predictive validity of their algorithm. Their use of administrative records centered on known predictors of suicide such as prior mental illness and involvement in crime amongst those who have self-reported victimization of sexual assault [7]. Similar to Kessler et al. [12], Street et al. [7] found their algorithm was able to predict suicides. Lastly, Street et al. [7] suggested more that more comprehensive and detailed electronic record keeping could increase the predictive validity of their algorithm.

Limitations

Some themes were expanded and elaborated upon by studies that did not utilize STARRS data. These studies, while not meeting our inclusion criteria, could have strengthened our findings. Additionally, some studies using the STARRS data, while intriguing, did not pertain to suicide, and thus were not included in our review.

Conclusion

Suicide will likely remain a major cause for concern in the fields of psychiatry and mental health. The fact that the suicide a rate among veterans and active duty service persons has increased is a cause for alarm, not just among those associated with the military but for public health in general. While veterans and active duty military are a unique demographic, much of the research done on this topic is transferable to other members of society such as individualize suffering from Post-Traumatic Stress Disorder [3].

The screening and treatment for suicidality and suicidal behavior among military personnel is complex because, while all participants have the common connection of the military, they differ greatly in other areas such as age, time of service, combat experience, gender, prior mental health diagnosis, and alcohol and other drug use or abuse [5]. While the literature reviewed shows that many of these variables are compounding factors for suicidality further research would be beneficial into each variable and what role it plays in suicidal ideations and behavior. Some variables are more difficult than others to remove or change but would early intervention and treatment into a soldier's alcohol use disorder greatly reduce or eliminate his/her suicidality without treatment targeted to that issue?

Much of the literature was in agreement that newer service members, those with an alcohol or other drug problem, and female service members with a past history of sexual assault are at a greater risk for suicide [5,7,9]. Further research looking into the traumatic experiences that these three factors can cause may illuminate why they are prevalent risk factors for suicide and give a clearer view into how they can be compounded with battlefield experience or other traumatic events to increase the likelihood of suicidality by an even greater margin.

Finally, the research reviewed showed that many service members who had committed suicide had recently been seen by health care providers and no distressing warning signs were observed [13]. This is possibly showing that many healthcare providers are not trained or familiar with signs and symptoms of suicidal persons or that the screen tools being used and either not effective or not being properly implemented [13]. Consistency in training and use of screening tools to assess suicidality could reduce the number of military suicides. Another factor that may reduce the risk of suicide is the availability and accessibility of health care providers to service members and veterans. More research is needed in this area to determine the most effective procedures.

Suicide remains a serious cause of mortality worldwide and a grave concern among American veterans and service members. Unfortunately, not all suicides are preventable but a methodical approach to suicide risk assessment can enable healthcare providers to manage the individuals who are at risk of committing suicide. Comprehensive risk assessment helps healthcare providers reduce their liabilities. The further study of identifying trends among those at high risk for suicide can help to intervene with a suicidal service member and allow for changes in both military and public policy to reduce and limit risk factors that can create or compound suicidal behaviors.

References

1. Ursano RJ, Kessler RC, Stein MB, Naifeh JA, Aliaga PA (2015) Suicide Attempts in the US Army During the Wars in Afghanistan and Iraq, 2004 to 2009. JAMA Psychiatry. 72(9): 917-926.
2. Zoroya G (2016) U.S. military suicides remain high for 7th year. In USA Today.
3. Stein MB, Campbell-Sills L, Gelernter J, He F, Heeringa SG, et al. (2017) Alcohol Misuse and Co-Occurring Mental Disorders Among New Soldiers in the U.S. Army. Alcohol Clin Exp Res 41: 139-148.
4. Ursano RJ, Kessler RC, Naifeh JA, Mash HH, Fullerton CS, et al. (2017) Frequency of Improvised Explosive Devices and Suicide Attempts in the U.S. Army. Military Medicine 182(3/4): 1697-1704.
5. Ursano RJ, Kessler RC, Stein MB, Naifeh JA, Aliaga PA, et al. (2016) Risk factors, methods, and timing of suicide attempts among US Army soldiers. JAMA psychiatry 73(7): 741-749.

6. Rosellini AJ, Street AE, Ursano RJ, Chiu W T, Heeringa SG, et al. (2017) Sexual Assault Victimization and Mental Health Treatment, Suicide Attempts, and Career Outcomes Among Women in the US Army. American Journal Of Public Health e1-e8.

7. Street AE, Rosellini AJ, Ursano RJ, Heeringa SG, Hill ED, et al. (2016) Developing a risk model to target high-risk preventive interventions for sexual assault victimization among female US Army soldiers. Clinical psychological science 4(6): 939-956.

8. Zoroya G (2016) U.S. military suicides remain high for 7th year. In USA Today.

9. Kessler RC, Stein MB, Bliese PD, Bromet EJ, Chiu WT, et al. (2015) Occupational differences in US Army suicide rates. Psychological Medicine 45(15): 3293-3304.

10. Stein MB, Ursano RJ, Campbell-Sills L, Colpe LJ, Fullerton CS, et al. (2016) Prognostic indicators of persistent post-concussive symptoms after deployment-related mild traumatic brain injury: a prospective longitudinal study in US Army soldiers. Journal of neurotrauma 33(23): 2125-2132.

11. Street AE, Gilman SE, Rosellini AJ, Stein MB, Bromet EJ, et al. (2015) Understanding the elevated suicide risk of female soldiers during deployments. Psychological Medicine 45(4): 717-726.

12. Kessler RC, Stein MB, Petukhova MV, Bliese P, Bossarte RM, et al. (2017) Predicting suicides after outpatient mental health visits in the Army Study to Assess Risk and Resilience in Service members (Army STARRS). Molecular Psychiatry 22(4): 544–551.

13. Ribeiro JD, Gutierrez PM, Joiner TE, Kessler RC, Petukhova MV, et al. (2017) Health care contact and suicide risk documentation prior to suicide death: Results from the Army Study to Assess Risk and Resilience in Servicemembers (Army STARRS). Journal Of Consulting And Clinical Psychology 85(4): 403-408.

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