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A Pilot Study on the Impact of the COVID-19 Pandemic on the Physical Activity and Well-Being of United States Military Veterans in Alaska

RESEARCH

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ABSTRACT

The COVID-19 pandemic and measures taken in response to the pandemic, including compulsory stay-at-home orders, have negatively impacted people's physical and mental well-being in the United States (US). These issues may be exacerbated in US military veterans; however, little to no research has examined the impact of compulsory stay-at-home orders on veterans. The goal of this pilot study was thus to examine the impact of the COVID-19 compulsory stay-at-home order in Alaska on physical activity and overall well-being of veterans living in Alaska. A total of 16 veterans living in Alaska completed an online survey that assessed their physical activity and overall well-being in the month prior to the compulsory stay-at-home order and in a month during the compulsory stay-at-home order. Results indicated a statistically significant decrease in the participants' physical activity and overall satisfaction with their health, as well as a borderline significant decrease in environmental well-being. These results, while limited in generalizability due to the small sample size, provide initial insight into the impacts of the compulsory stay-at-home order in Alaska on veterans and call for additional research and the creation of interventions to provide veterans with alternate methods to engage in physical activity and promote their overall well-being.

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The coronavirus disease 2019 (COVID-19) pandemic and measures taken in response to the pandemic have had a profound impact on people worldwide. The evolution of the pandemic is reported on several official websites, including COVID-19 tracking in real time on an interactive dashboard developed by the Johns Hopkins University Center for Systems Science and Engineering. Measures taken in response to the pandemic vary widely within the United States (US) and include detection and isolation of infected individuals, quarantine measures, compulsory stay-at-home orders, face mask ordinances, physical distancing, and mandated closures of schools and businesses deemed non-essential (Hartley & Perencevich, 2020). Within the state of Alaska, measures taken have included periods of diminished business accessibility and a compulsory stay-at-home order (Municipality of Anchorage, 2020).

Emerging evidence suggests the COVID-19 pandemic and measures taken in response have had detrimental impacts on physical activity (e.g., Jiménez-Pavón et al., 2020; Mattioli et al., 2020) and overall well-being, including environmental, physical, psychological, and social relations well-being (e.g., Ahorsu et al., 2020; Brooks et al., 2020; Center for Disease Control [CDC], 2020), which may be exacerbated in veterans (e.g., Marini et al., 2020). Veterans comprise approximately 7% of the population in the US overall, and Alaska has the highest proportion of veterans at almost 12% of the adult population (Harrington, 2019). Despite the high proportion of veterans living in Alaska, no studies have examined the impact of the COVID-19 pandemic and responses on their physical activity and overall well-being. The goal of this pilot study was to examine the impact of the COVID-19 compulsory stay-at-home order in Alaska on physical activity and overall well-being of veterans living in Alaska.

The first compulsory stay-at-home order in Alaska, coined "hunker down," began on March 22, 2020, mandating that non-essential businesses close their premises (including gyms and sporting goods stores), and residents must stay home as much as possible (Municipality of Anchorage, 2020). Jiménez-Pavón et al. (2020) reported that the initiation of a sudden stay-at-home order could lead to a radical change in the lifestyle of the population, including changes in activities that impact both physical activity and overall well-being.

Physical activity may be particularly important for veterans (Caddick & Smith, 2014). One systematic review of existing literature found that physical activity not only improves physical health outcomes in veterans, but also increases quality of life, including psychological and social well-being (Caddick & Smith, 2014). The physical health of veterans has also been found to be an independent predictor of quality of family functioning (Sullivan et al., 2016). Some initial research has also indicated that the COVID-19 pandemic may lead to decreased physical activity, as there was a 15% step count decrease after 15 days in the US after the COVID-19 pandemic declaration date of March 11, 2020 (Tison et al., 2020).

The compulsory stay-at-home order in Alaska may also impact aspects of veteran overall well-being, including environment, physical, psychological, and social relations well-being (see Group, 1996). Environmental well-being includes financial resources, physical safety, and participation in social and work activities (Group, 1996). Research suggests that the COVID-19 compulsory stay-at-home orders have negatively impacted personal finances (e.g., Mogaji, 2020) and drastically altered social and work environments (e.g., Avdiu & Nayyar, 2020). Emerging evidence also suggests that both the COVID-19 pandemic and responses have led to widespread negative impacts on psychological well-being, including stress, fear, anxiety, anger, and post-traumatic stress symptoms (Ahorsu et al., 2020; Brooks et al., 2020; CDC, 2020; Pakpour & Griffiths, 2020; Schimmenti et al., 2020). Social relationships may also be negatively impacted by both the COVID-19 pandemic and compulsory stay at home orders, as previous research has found that people have a fear of leaving the house and coming into contact with individuals infected with COVID-19 (Lin, 2020). These previous effects on have been noted in the general population. Marini et al. (2020) note that veterans with combat experience may face additional vulnerability to these negative impacts on overall well-being due to exacerbated feelings of powerlessness and loss; however, they may also have additional resilience, due to their enhanced ability to cope with adversity, that enables them to withstand these negative effects.

Significant work remains to be done in understanding the impact of the COVID-19 pandemic and responses to the pandemic on people's physical activity and overall well-being (Xiang et al., 2020), and, to date, no empirical evidence has been found that examines the impact of the COVID-19 compulsory stay-at-home orders specifically on veterans in Alaska. This pilot study provides an initial inquiry into the impact of the Alaskan COVID-19 compulsory stay-at-home order on the physical activity and overall well-being of veterans in Alaska.

METHODS

Gyms and veteran groups in Alaska were targeted for recruitment strategies using a snowball sampling method. Snowball sampling is a nonprobability method for recruitment often used for surveys where individuals who receive information for the study are asked to share

it with others who may meet participant inclusion criteria. After locating contact information for organizations via a Google search and on Facebook, an email was sent to over 15 organizations with information regarding the purpose of the study and a request to share the information on the study with a link to an online survey administered via Qualtrics.

In addition, members of the research team shared the study information and survey link via social media. Participants received a $10 Amazon gift card for their time. In order to participate in the study, participants had to agree to participate, self-identify as a veteran, live in Alaska, be over 17 years old, and disclose that they exercised for at least 180 minutes per week prior to the compulsory stay-at-home order in Alaska. The study was deemed exempt by the University of Alaska Anchorage's Review Board. Data was collected from May–June of 2020. IBM SPSS Statistics 26 was utilized to analyze the data.

MEASURES

Physical Activity

Frequency of physical activity was assessed for two different time periods: "prior to the hunker down" (i.e., before Alaska implemented a compulsory stay-at-home order) and "in the past month" (i.e., during the Alaska compulsory stay-at-home order). Participants self-reported how many days they engaged in physical activity per week during these time periods on a continuous scale of 1–7 days.

Overall Well-Being

The World Health Organization Quality of Life-BREF (WHOQOL-BREF; WHOQOL Group, 1996) is an abbreviated version of the WHOQOL. It contains 24 items that examine four domains of well-being: environment, physical health, psychological, and social relations. Two overall questions of well-being are also included, and each are examined separately. Those two questions are "how would you rate your quality of life?" and "how satisfied are you with your health?" Response choices utilize a Likert-type 5-point scale. For example, a question from the environment domain is "how healthy is your physical environment?" which is measured from 1 (not at all) to 5 (extremely); an example of a question from the psychological domain is "how much do you enjoy life?" which is measured from 1 (not at all) to 5 (an extreme amount).

Each well-being domain is scored separately. Three questions are negatively phrased and were therefore reverse coded prior to scoring. Previous studies have shown good reliability and validity of the measure with various populations, and, most recently, Guay et al. (2015) found it to be reliable and valid in a sample of veterans with internal consistency for each domain ranging from $\alpha = .86$ for physical health to $\alpha = .67$ for social relationships. Participants completed the WHOQOL-BREF for two different periods in time: (a) the 4 weeks prior to the compulsory stay-at-home order and (b) for the past 4 weeks (i.e., during the compulsory stay-at-home order).

DATA ANALYSIS

The data were analyzed using descriptive statistics and dependent samples t-tests. A statistical power analysis was performed for sample size estimation. This project was a pilot study, thus a small effect size (mean difference = 1) was used, as well as $\alpha = .05$ and power = .80. The projected sample size for the dependent samples t-test needed for this effect size is $N = 10$ (using R; see Institute for Digital Research and Education, 2020). This low sample size thus provides adequate statistical power for the data analysis for a pilot study; however, the results have limited generalizability.

RESULTS

DEMOGRAPHICS

Participants included 16 self-identified veterans who live in Alaska. Participants in this study were between the ages of 28–46 ($M = 34.6$, $SD = 6.1$). Half of the participants self-identified as male ($n = 8$, 50.0%); the remaining participants self-identified as female ($n = 7$, 43.8%) and preferred not to say ($n = 1$, 6.3%). A quarter ($n = 4$, 25.0%) of the participants self-identified as American Indian or Alaskan Native, 68.8% ($n = 11$) self-identified as White, and 6.3% ($n = 1$) self-identified as Hispanic. The majority of the participants reported that they were married ($n = 12$, 75.0%), and a majority also reported having children ($n = 11$, 68.8%). All branches of the US military were represented, and more than half of the participants had been deployed ($n = 10$, 62.5%). The small sample size limits the generalizability of the results; however, this preliminary data sheds important light on the potential impacts of the COVID-19 pandemic and responses on the veterans in Alaska who participated in this study, which can also facilitate additional research in these areas.

Physical Activity

Table 1 displays a summary of the results. The majority of the participants ($n = 10$, 62.5%) in this study reported a decrease in the number of days they engaged in physical activity; 25% ($n = 4$) of the participants reported no change, and 12.5% ($n = 2$) reported an increase of one day. The biggest change was seen in a participant who engaged in physical activity 6 days a week prior to the compulsory stay-at-home order and only one day per week in the past month (i.e., during the compulsory stay-at-home order).

N = 16	BEFORE *M (SD)*	DURING	RANGE	*DF*	*T*
Physical Activity					
Days of Physical Activity per Week	4.56 (1.79)[a]	3.38 (1.50)[b]	0–7	15	2.82*
WHOQOL-BREF					
Environmental Well-Being	16.09 (2.19)[a]	15.22 (2.40)[b]	4–20	15	2.10[†]
Physical Health	14.54 (2.96)[a]	14.37(2.85)[a]	4–20	15	.24
Psychological Health	14.96 (2.97)[a]	14.29 (3.10)[a]	4–20	15	.98
Social Relationships	14.08 (3.98)[a]	14.17 (3.74)[a]	4–20	15	–.07
How satisfied are you with your health?	3.81 (0.91)[a]	3.25 (1.13)[b]	1–5	15	2.33*

Table 1 Means and Standard Deviations for Veterans' Physical Activity and Well-Being Before and During the Compulsory Stay-At-Home Order.

Note: Within rows, means that have different superscripts are statistically significantly different at [†] $p = .05$ and * $p < .05$.

A paired samples t-test indicated that, overall, participants had a statistically significant decrease in the number of days they engaged in physical activity in the month prior to the compulsory stay-at-home order ($M = 4.56$, $SD = 1.79$) compared to the number of days they engaged in physical activity in the past month during the compulsory stay-at-home order ($M = 3.38$, $SD = 1.5$); $t(15) = 2.82$, $p < .05$.

Overall Well-Being

Overall, on the WHOQOL-BREF, there were no statistically significant changes in general quality of life or in the overall domains of physical health, psychological health, and social relationships. A paired samples t-test indicated a statistically significant change on the specific question assessing overall perception of health (i.e., "How satisfied are you with your health?"), such that participants reported statistically significantly higher scores for the month prior to the compulsory stay-at-home order ($M = 3.81$, $SD = .91$) compared to in the past month during the compulsory stay-at-home order ($M = 3.25$, $SD = 1.13$); $t(15) = 2.33$, $p = .034$. A paired samples t-test also revealed a borderline statistically significant change in the domain of environmental well-being from for the month prior to the compulsory stay-at-home order ($M = 16.09$, $SD = 2.19$) to in the past month during the compulsory stay-at-home order ($M = 15.22$, $SD = 2.40$); $t(15) = 2.10$, $p = .053$.

DISCUSSION

Previous work suggests that the COVID-19 pandemic and measures taken in response to the pandemic have negatively impacted physical activity levels (e.g., Jiménez-Pavón et al., 2020; Mattioli et al., 2020) and psychological well-being (e.g., Ahorsu et al., 2020; Brooks et al., 2020; CDC, 2020); however, significant work remains to be done in understanding the impacts of the pandemic and compulsory stay-at-home orders on physical activity and overall well-being of different populations where negative symptoms may be exacerbated, like veterans (Marini et al., 2020; Xiang et al., 2020). Given that Alaska has the highest proportion of veterans in the US (Harrington, 2019), the goal of this pilot study was to provide an initial examination of the impact of the Alaskan COVID-19 compulsory stay-at-home order on the overall physical activity and overall well-being of veterans living in Alaska. The small sample size limits the generalizability of the results; however, the results have important potential impact for future research into this important area of the COVID-19 pandemic and responses on veterans in Alaska.

The participants in this study reported a statistically significant decrease in the number of days they engaged in physical activity from a mean of 4.56 days per week for the month prior to the compulsory stay-at-home order to 3.38 days during the month measured during the compulsory stay-at-home order. These results align with studies showing decreases in physical activity across the US following the pandemic declaration date (Tison et al., 2020). Physical activity among veterans may be particularly important as physical activity has been shown to not only improve physical health, but also quality of life and quality of family functioning (Caddick & Smith, 2014; Sullivan et al., 2016). Future research is needed to corroborate these findings in a larger, more representative sample of Alaskan veterans.

Any decrease in physical activity within the veteran population is concerning, and, if additional research upholds these findings, significant efforts should be made to provide veterans in Alaska with information on alternative forms of physical activity. For example, Hammami et al. (2020) provide several practical recommendations for physical activity at home; including aerobic training on a

bike or rowing ergometer, bodyweight training, dance, and active video gaming. Dwyer et al. (2020) noted that specific recommendations for home-based physical activity are needed according to age, clinical conditions, and level of fitness to promote physical activity during the COVID-19 pandemic. Thus, physical activity at home programs designed specifically for the veteran population in Alaska may be the most efficacious.

The results also indicated that participants in this study were statistically significantly less satisfied with their health during the compulsory stay-at-home order in Alaska as compared to prior to the compulsory stay-at-home order. Telemedicine for veterans in the US has increased in recent years for a variety of health services, including sleep (e.g., Sarmiento et al., 2019), drug use (e.g., Brunet et al., 2020), and PTSD (e.g., Campbell et al., 2020). Additional telemedicine services for veterans have also emerged as a result of the COVID-19 pandemic, including, for example, an increase in behavioral health telemedicine (e.g., Shelton et al., 2020); however, additional research has noted the need for even more telemedicine services during the COVID-19 pandemic (Egede et al., 2020). Importantly, additional research is needed to corroborate these findings in a larger, more representative sample; however, these preliminary results may indicate that additional telemedicine services may be useful for veterans in Alaska when they are unable to seek in-person care, and efforts should be made to make these services known and available to veterans in Alaska.

In addition, while there were no evident changes in the overall domains of physical health, psychological health, and social relations well-being, the results of this study suggest a borderline statistically significant decrease in environmental well-being. This domain of the WHOQOL-BREF includes financial resources, physical safety, and participation in social and work activities. It is possible that these negative changes in the well-being of veterans may increase as the COVID-19 pandemic continues, and, if we do not intervene in immediate ways, there may be a ripple effect of negative outcomes. For example, veterans in Alaska could be encouraged to participate in social and work activities conducted outside where physical distancing is possible, as these activities will enable them to improve their environmental well-being while also mitigating the transmission of COVID-19.

LIMITATIONS

This study offers relevant information regarding the well-being of veterans living in Alaska during the COVID-19 pandemic, but the findings are limited in scope due to the small sample size and are not generalizable to all veterans living in Alaska. The recruitment methods may have also led to selection bias from those already engaged in physical activity. Additional research is needed to corroborate these findings in a larger, more representative sample of veterans in Alaska. Despite the small sample size, this study was able to assess veterans across gender, age, and military branches. The data was also self-reported and was collected at one point in time yet assessed two time periods. The information recalled may not have been completely accurate given the potential for recall bias. In the future, a longitudinal study with multiple time points may provide more accurate information on changes as a result of a pandemic.

CONCLUSION

The findings suggest that the veterans in Alaska who participated in this pilot study may be negatively impacted by the compulsory stay-at-home order issued in response to the COVID-19 pandemic, specifically with respect to physical activity and overall satisfaction with health. Efforts should be made to provide this population with the support they need to overcome these issues. This may include providing information on how to continue to be physically active at home, or a creation of a veteran specific physical fitness regimen that additional research can help inform. Overall, this study provides preliminary information on the potential negative impacts of the compulsory stay-at-home order on veterans living in Alaska and calls for additional research and the creation of interventions to help mitigate these issues.

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COMPETING INTEREST

The authors have no competing interests to declare.

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