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Prevalence and correlates of alcohol misuse among returning Afghanistan and Iraq Veterans

Inger Burnett-Zeigler [a,b,*], Mark Ilgen [a,b], Marcia Valenstein [a,b], Kara Zivin [a,b], Lisa Gorman [c], Adrian Blow [c], Sonia Duffy [c], Stephen Chermack [a,b]

[a] VA Ann Arbor Healthcare System, VA Serious Mental Illness Treatment Research and Evaluation Center (SMITREC)/Health Services Research and Development (HSR&D), Ann Arbor, MI, USA
[b] University of Michigan Medical School, Department of Psychiatry, Ann Arbor, MI, USA
[c] Michigan State University, East Lansing, MI, USA

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ABSTRACT

Objective: Several studies have reported high rates of alcohol misuse and low rates of substance use treatment among OEF/OIF military service members. This study assessed the prevalence and correlates of alcohol misuse and the factors associated with treatment utilization among recently returned National Guard service members.

Methods: The sample included 585 members of the National Guard who volunteered to complete an anonymous survey assessing mental health and substance use problems, functional status, and past treatment experiences. Bivariate and multivariate logistic regression analyses were performed examining the significance of associations between alcohol misuse and mental health service use as outcomes and demographic variables, mental health symptoms, and military service characteristics as predictors. Barriers to treatment and factors facilitating treatment were also examined.

Results: Thirty-six percent of the service members met criteria for alcohol misuse. Of those misusing alcohol, 31% reported receiving any mental health treatment and 2.5% reported receiving specific substance use treatment in the past year. The barrier to treatment most commonly endorsed by those misusing alcohol was concern that the information about treatment would appear in their records. Among those misusing alcohol who had received services, spouses were most commonly endorsed as facilitating the pursuit of care.

Conclusions: Rates of alcohol misuse are high and rates of substance use treatment are low among National Guard service members. Additional research is needed to identify means of overcoming barriers to care and establish more effective approaches to facilitate linkage to care and receipt of appropriate interventions.

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1. Introduction

Over 1.6 million military service members have served in the ongoing conflicts in Afghanistan and Iraq, referred to as Operation Enduring Freedom (OEF) and Operation Iraqi Freedom (OIF) (Tanielian & Jaycox, 2008). Several studies have reported that OEF/OIF service members experience high rates of mental health and substance use problems upon their return from Afghanistan and Iraq (Hoge, 2006; Jacobson et al., 2008; Seal et al., 2009). Estimates of alcohol misuse among OEF/OIF service members range from 12% to 40% (Calhoun, Elter, Jones, Kudler, & Straits-TrÃster, 2008; Hoge et al., 2004; Milliken, Auchterlonie & Hoge, 2007; Wilk et al., 2009) with those who are younger, White, unmarried, with mental health problems, and more combat experiences having an increased risk for alcohol misuse (Calhoun et al., 2008; Wilk et al., 2009). Past studies that have attempted to estimate alcohol misuse among the OEF/OIF veteran population have differed in the alcohol assessment measures used (TCIS vs. AUDIT), the timing of the assessment, and the military components studied (National Guard and Reserve vs. Active Duty), which may contribute to the varying estimates of alcohol misuse. It is important to obtain a better understanding of the extent of alcohol misuse among returning National Guard service members, indicators of risk of alcohol misuse, and clinical correlates of alcohol misuse.

The majority of OEF/OIF service members with mental health and substance use problems report they have not received treatment (Calhoun et al., 2008; Hoge et al., 2004; Milliken et al., 2007). Only 31% of OEF/OIF service members receiving services in the VA who met criteria for risky drinking had been advised to drink less or stop drinking by a VA provider in the past 12 months (Calhoun et al., 2008). Although OEF/OIF veterans endorse alcohol problems at rates similar to other mental health concerns, they are referred to alcohol treatment at lower rates (Milliken et al., 2007). Less than 1% of Active

* Corresponding author. 2215 Fuller Road (11H), Ann Arbor, MI 48105, USA. Tel.: +1 734 845 5892; fax: +1 734 845 3249.
E-mail address: ingerebz@med.umich.edu (I. Burnett-Zeigler).

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Duty and National Guard and Reserve service members are referred to substance abuse treatment (Milliken et al., 2007). Untreated alcohol problems are a cause for concern as they can lead to an exacerbation of mental health symptoms, problems in daily functioning, and interpersonal difficulties. Stigma has been cited as a reason why many veterans fail to seek treatment (Stecker, Fortney, Hamilton, & Ajzen, 2007); however, other factors such as assessment practices, referrals, and barriers to treatment such as lack of information, time, and transportation are also important (Milliken et al., 2007). Given that the majority of OEF/OIF veterans screening positive for alcohol misuse do not receive treatment, it is important to examine not only rates of substance use treatment, but also barriers to treatment, and factors facilitating treatment.

The National Guard and Reserve service members are a critical component of the U.S. military; they represented 38% of the total U.S. forces deployed to Afghanistan and Iraq between September 2001 and November 2007 (Waterhouse & O'Bryant, 2008). The literature suggests that there are higher rates of mental health problems among members of the National Guard and Reserve as compared to Active Duty service members, with estimates as high as 42% for members of the National Guard and Reserve compared to 20% for Active duty service members (Milliken et al., 2007; Seal et al., 2009; Tanielian & Jaycox, 2008). However, the literature on the prevalence of alcohol misuse in the National Guard and Reserve as compared to Active duty is mixed, with some studies indicating that Active duty service members have higher rates of alcohol misuse (Calhoun et al., 2008; Seal et al., 2009), and several other studies reporting that National Guard and Reserve service members have higher rates of alcohol misuse (Jacobson et al., 2008; Milliken et al., 2007). Among National Guard and Reserve service members, deployment with combat exposures is associated with new onset prevalence of heavy drinking, binge drinking, and alcohol-related problems. Additionally, new onset prevalence of heavy drinking, binge drinking, and alcohol-related problems is highest among those who are younger, Marines, with PTSD symptoms, PTSD and depression symptoms, and a history of potential alcohol dependence (Jacobson et al., 2008).

The National Guard service members may be particularly vulnerable to developing mental health and substance use problems. While several studies have examined mental health and substance use problems in OEF/OIF military service members generally, to our knowledge, no studies have examined the prevalence of alcohol misuse, substance use and mental health treatment, potential barriers to treatment, and factors facilitating treatment among recently returned members of the National Guard. Research in this area is needed to inform the assessment of alcohol misuse and the development of alcohol screening, linkage, and treatment interventions for National Guard service members once they return to their home states.

In this study, we examine the proportion of recently returned National Guard service members who reported misusing alcohol and the associations between demographics, mental health symptoms, years in the military, number of deployments, and recent combat exposure with alcohol misuse. Additionally, we examine the proportion of National Guard service members who reported receiving mental health and substance use services, concerns affecting their decision to receive care, and factors facilitating their pursuit care. The data used in this study was collected from an anonymous survey in an effort to minimize concerns about stigma and military consequences.

2. Methods

2.1. Data source and participants

Study participants were members of the National Guard from a Midwestern state, attending a mandatory Reintegration Reunion Workshop approximately 45–60 days following their demobilization from active duty deployment. National Guard service members were recruited at reintegration weekends between February 2009 and September 2009 to complete anonymous surveys that assessed mental health and substance use problems, functional status, and past mental health treatment experiences. The survey took approximately 45–60 minutes to complete and following completion each participant received a $25 gift certificate.

2.2. Measures

2.2.1. Alcohol misuse

The primary outcome variable of interest was alcohol misuse. Alcohol misuse was assessed using the Alcohol Use Disorders Identification Test (AUDIT) screen for alcohol-related problems and hazardous drinking. This 10-item instrument is scored on a 5-point Likert scale, with total scores ranging between 0 and 40. An AUDIT score of 8 or higher indicates alcohol misuse. The instrument has good internal consistency, with a Cronbach's alpha of 0.80–0.88 (Allen, Litten, Fertig, & Babor, 1997; Barry & Fleming, 1993; Saunders, Aasland, Babor, & de la Fuente, 1993). The AUDIT, using a cut-off score of 8–11, has sensitivity ranging between 0.46 and 0.84, and specificity ranging between 0.71 and 0.90 for alcohol use disorders as defined by the Diagnostic and Statistical Manual for mental disorders (Barry & Fleming, 1993; Bohn, Babor, & Kranzler, 1995; Saunders et al., 1993).

2.2.2. Mental health and substance use services

The secondary outcome variable of interest was receipt of any mental health service in the past year and was constructed based on answers to nine survey items asking about receipt of mental health services from various types of service providers (i.e., general medical doctor, mental health professional, clergy). Receipt of substance abuse treatment was measured by endorsement of "substance abuse treatment" in response to the item "What types of service did you receive?" Other variables pertinent to mental health service use explored were concerns affecting the decision of service members to receive mental health services and factors facilitating the pursuit of care among service members who were already receiving services (Internet, chaplain, spouse).

2.2.3. Demographics and characteristics of military experience

Service member characteristics included sex, age (18–30, 31–60), race (White, Other), marital status (never married, partnered, divorced/separated), years of education ($\leq$12, >12), income ($\leq$$30,000, >$30,000), suicidal ideation (yes/no), symptoms consistent with depression, post-traumatic stress disorder (PTSD), anxiety, years in the military (0–4, 5–10, 10+), number of deployments (1, $\geq$2), and recent combat exposure (yes/no). Recent combat exposure was defined based on responses to the survey items "How many times were you in serious danger of being injured or killed?" and "How many times did you engage the enemy in a firefight?" with service members being categorized as having had recent exposure if they responded "often" or "constantly" to either of these items. Service members were also categorized as having had recent combat exposure if they responded "yes" to survey items "Did you know someone who was seriously injured or killed?" "Were you directly responsible for the death of an enemy combatant?" or "Were you wounded or injured?"

2.2.4. Mental health symptoms

Depression symptoms were assessed using the *Patient Health Questionnaire (PHQ-9)*, a self-report instrument that assesses 9 DSM-IV symptoms of depression over a 2-week period, with total scores ranging from 0 to 27 (Kroenke, Spitzer, & Williams, 2001). Cut off scores of 10 or higher were used to indicate significant depressive symptoms. The PHQ-9 has acceptable reliability, validity, sensitivity, and specificity. PHQ-9 scores$\geq$10 have a sensitivity of 88% and a

specificity of 88% for major depression (Lowe, Kroenke, Herzog, & Grafe, 2004).

PTSD symptoms were assessed using the *Post-Traumatic Disorder Checklist-Military Version (PCL-M)*, a self-report measure of DSM-IV symptoms of PTSD. Respondents rated how much they were bothered by the specified problem on a 5-point scale [ranging from 1 ("not at all") to 5 ("extremely")] in response to stressful military experiences. A stringent cut-off score of 50 was used for likely PTSD. The PCL-M has been shown to have excellent internal consistency in Vietnam and Persian Gulf Veterans (ranging from $r=.94$ to $r=.97$) (Weathers, Herman, Huska, & Keane, 1993). In several studies, the PCL-M is significantly correlated with other measures of PTSD (ranging from $r=.77$ to $r=.93$) (Orsillo, 2001).

Anxiety was assessed using the *Penn State Worry Questionnaire (PSWQ)*, a self-report measure that assesses worry. This 16-item instrument is scored on a 5-point scale ("not at all typical of me" to "very typical of me") with total scores ranging from 16 to 80 (Meyer, Miller, Metzger, & Borkovec, 1990). The PSQW has a good internal consistency, with a Cronbach's alpha ranging from 0.91 to 0.95, high degree of test–retest reliability (ranging from $r=.92$ to $r=.93$), and good stability over time (ranging from $r=.75$ at 2 weeks to $r=.74$ at 4 weeks) (Meyer et al., 1990).

2.3. Analysis

Descriptive summary statistics were completed to describe the characteristics of the sample. Bivariate analyses were performed examining the significance of associations between the primary outcome of alcohol misuse and each of the independent variables using chi-square tests for dichotomous variables and *t*-tests for continuous variables (e.g., *PSQW score*). Multivariate logistic regression analyses were performed to calculate odds ratios (ORs) with 95% confidence intervals (CIs) associated with each independent variable for alcohol misuse, adjusting for sex, age, race, and other variables that were significant in the chi-square tests and *t*-tests. We also completed descriptive summary statistics for service utilization among those who met criteria for alcohol misuse. Because so few service members ($N=5$) reported receiving substance use treatment, our assessment of treatment was focused on past year mental health service use generally, rather than substance use treatment specifically. Bivariate analyses were performed that examined the significance of associations between the secondary outcome of "any mental health service use in the past year" and each of the independent variables using chi-squared test for dichotomous variables and *t*-tests for continuous variables (e.g., *PSQW score*). Multivariate logistic regression analyses were not performed with this outcome variable due to a limited sample size. Finally, descriptive summary statistics were completed to describe the concerns affecting the decision of service members misusing alcohol to receive mental health services and the factors facilitating the pursuit of care among those misusing alcohol who did receive services in the past year.

3. Results

3.1. Sample description

The study sample included 585 recently returning Michigan Army National Guard service members (60% of those attending the reintegration weekends) who completed the survey. The majority of the study participants were White (75%), male (87%), between 18 and 30 years old (58%), and partnered (63%). Most of the participants had more than a high school education (60%), and an income of $30,000 or more (55%). More than half of the participants (55%) were in the military five years or more, 38% reported two or more deployments, and 41% reported recent combat exposure.

3.2. Alcohol misuse

Thirty-six percent of the recently returned National Guard service members met criteria for alcohol misuse according to the AUDIT. In unadjusted bivariate analyses (see Table 1), service members who were younger with lower incomes (<$30,000), and without partners (e.g., never married, divorced/separated) were more likely to be misusing alcohol. Service members who reported serious thoughts of suicide, symptoms of depression, PTSD, and anxiety were also more likely to be misusing alcohol. Service members who had been in the military 4 years or less were more likely to report misusing alcohol than those who had been in the military 5 years or more. Sex, race/ethnicity, education, number of deployments, and combat exposure were not significantly associated with alcohol misuse in unadjusted analyses. In the multivariate logistic regression analysis (see Table 2), service members who were male, younger, and reported symptoms of depression, and PTSD were at increased odds of meeting criteria for alcohol misuse.

3.3. Service utilization

Of the National Guard service members who met criteria for alcohol misuse, 31% reported receiving any mental health services in the past year and 2.5% reported receiving specific substance abuse treatment. Service members misusing alcohol were most likely to report receiving services from a general physician at a military facility

Table 1
Bivariate analysis of factors predicting alcohol misuse among recently returning OEF/OIF National Guard service members ($N=562$).

	Yes		No		*p*
	N	(%)	*N*	(%)	
Sex					0.066
Male	182	37	306	63	
Female	14	23	47	77	
Age					0.000
18–30	144	45	178	55	
31+	57	24	181	76	
Marital status					0.013
Never married	60	44	77	56	
Engaged, cohabitating, married	113	31	246	69	
Divorced, separated, other	25	45	31	55	
Race/ethnicity					1.000
White	154	37	267	63	
Other	26	36	46	64	
Education					1.000
HS or less	66	35	120	65	
Some College +	130	36	232	64	
Family Income					0.034
<$30,000	103	41	147	59	
>$30,000	99	33	206	68	
Suicidal ideation					0.009
Yes	27	53	24	47	
No	174	34	334	66	
Depression (PHQ)					0.000
Yes	72	53	64	47	
No	130	31	295	69	
PTSD (PCL)					0.000
Yes	44	60	29	40	
No	154	33	311	67	
Anxiety (PSQW)					0.000
Years in Military					0.000
0–4	94	45	113	55	
5–10	47	34	90	66	
10+	45	26	127	74	
# of Deployments					0.137
1	120	39	189	61	
>2	68	32	144	68	
Recent combat exposure					0.121
Yes	93	40	142	60	
No	96	33	196	67	

Table 2
Multivariate analyses of factors predicting alcohol misuse among OEF/OIF National Guard Members ($N=422$).

	OR	95% CI	p
Sex			0.007
Female	1.00		
Male	4.10	1.46–11.53	
Age			0.003
18-30	1.00		
31+	0.32	.15–.68	
Marital Status			0.138
Never Married	1.00		
Engaged, Cohabitating, Married	0.71	.42–1.20	
Divorced, separated, other	1.32	.59–2.95	
Race/ethnicity			0.959
White	1.00		
Other	1.02	.55–1.88	
Family Income			0.369
<$30,000	1.00		
>$30,000	1.26	.76-2.10	
Depression (PHQ)			0.008
No	1.00		
Yes	2.22	1.23–3.99	
PTSD (PCL)			0.004
No	1.00		
Yes	2.81	1.39–5.66	
Anxiety (PSQW)	1.00	.98–1.02	0.930
Years in military			0.332
0–4	1.00		
5–10	0.77	.43–1.36	
10+	1.33	.56–3.99	

(16%), a general physician at a civilian facility (13%), a military chaplain (12%), or a mental health professional at a military facility (10%) (see Table 3). In unadjusted bivariate analyses, those who were partnered, and those who reported serious thoughts of suicide were significantly more likely to report using mental health services in the past year (data not shown).

Concerns affecting the decision to receive mental health treatment most commonly endorsed by service members misusing alcohol were not wanting this information to appear in their records (30%), concern that they would be seen as weak (24%), concern that the unit leadership might treat them differently (22%), and concerns about embarrassment (22%) (see Table 4). Service members misusing alcohol who had received a mental health service in the past year most commonly indicated that their spouse, non-military friend or family, civilian physician, in unit military peer, and military physician influenced them to pursue care (see Table 5).

Table 4
Concerns affecting the decisions National Guard service members misusing alcohol to receive mental health care ($N=202$).

	Agree, N (%)
I don't trust MH professionals	29 (14.4)
I don't know where to get help	19 (9.4)
I don't have adequate transportation	16 (7.9)
It's difficult to schedule an appointment	16 (8)
Difficulty getting time off work	18 (8.9)
MH care costs too much money	42 (20.8)
It might harm my career	33 (21.2)
It would be too embarrassing	44 (21.7)
I would be seen as weak	48 (23.7)
MH care doesn't work	18 (8.9)
Members of unit might have less confidence	42 (20.8)
Unit leadership might treat me differently	44 (21.8)
My leaders would blame me for the problem	27 (13.4)
I don't want it to appear on my records	61 (30.2)
No providers in my community	13 (6.5)
Drive great distances to receive quality care	17 (8.4)

4. Discussion

This is one of the first studies to examine alcohol misuse, substance use treatment, barriers to treatment, and factors facilitating treatment among recently returning OEF/OIF National Guard service members. This study used anonymous survey data, to minimize concerns about stigma and military consequences, and included several well validated mental health and alcohol use measures. We found that 36% of National Guard service members met criteria for alcohol misuse according to the AUDIT. Service members who were male, younger, and had symptoms of depression, and PTSD were more likely to be misusing alcohol. While 31% of those misusing alcohol reported receiving mental health treatment generally in the past year, only 2.5% reported receiving specific substance abuse treatment. Past research has found high rates of mental health problems among OEF/OIF service members with members of the National Guard being more likely to have mental health problems than Active Duty service members. This study found that rates of alcohol misuse are also high among members of the National Guard and highlights the important link between mental health problems and alcohol misuse in this population. A prior study reported that PTSD symptoms, PTSD and depression symptoms, and combat exposure were associated with new onset prevalence of heavy drinking, binge drinking, and alcohol-related problems (Jacobson et al., 2008). Similarly, our study found that those reporting symptoms of PTSD and depression were more likely to be misusing alcohol; however we did not find a relationship

Table 3
Characteristics of service utilization among OIF/OEF National Guard Service Members Misusing Alcohol ($N=202$).

	N (%)
Any past year mental health service	62 (30.7)
Medication	21 (10.4)
Individual therapy	33 (16.3)
Group therapy	9 (4.5)
Substance abuse	5 (2.5)
MH pro at Military Facility	21 (10.4)
General MD at Military Facility	32 (15.8)
MH services from Military Chaplain	24 (11.9)
MH services from MH pro at civilian facility	19 (9.4)
MH services from General MD at Civilian Facility	26 (12.9)
MH services from Civilian Clergy	14 (6.0)
Military services from Military One Source ref	16 (7.9)
Military services from Vet Center	
Readjustment Counselor	12 (5.9)
MH services from TRICARE referral	17 (8.4)
MH services from Other Source	6 (3)

Table 5
Factors that influenced National Guard service members misusing alcohol who received services in the past year to pursue care ($N=62$).

	% Yes
TV ad	4.8
Internet ad	3.2
Other media source	1.6
Unit level training	6.5
In-unit military peer	12.9
Out-of-unit military peer	8.1
Spouse	17.7
Non-military friend or family	14.5
Non-commissioned officer	3.2
Commissioned officer	4.8
Commanding officer	1.6
Chaplain	4.8
Civilian physician	14.5
Military physician	11.3
Civilian psychologist/social worker	4.8
Military psychologist/social worker	6.5

between combat exposure and alcohol misuse. It is possible that for more general measures of current alcohol misuse such as those used in this study, it is the evidence of poor response to trauma (i.e., symptoms) that is more closely linked to alcohol misuse than exposure to the trauma itself.

Although a third of service members reported receiving treatment for mental health problems, which may be related to their alcohol misuse, very few reported receiving specific substance use treatment. This emphasizes the importance of mental health treatment as a potential entry point for addressing substance misuse issues. It is unclear if these low rates of treatment are due to gaps in substance use assessment, referrals to treatment, subjective service member characteristics (perceived need for treatment, concerns about stigma), or barriers to accessing treatment. Other studies have reported that less than half (38–45%) of those with a mental health problem have an interest in receiving help, very few are referred to mental health treatment with estimates ranging from 2.0% to 15.9% (Hoge, 2006; Milliken et al., 2007), and even fewer are referred to substance abuse treatment (Milliken et al., 2007). There have been no studies to date of which we are aware that have attempted to estimate rates of past year substance use treatment (as opposed to referrals to treatment) among members of the National Guard.

In exploring factors related to use of mental health treatment, we found that service members commonly reported concerns related to stigma as barriers to treatment, particularly concerns related to their military career, functioning, and relationships with command and peers. Other more concrete barriers such as difficulty with transportation, getting time off work, and scheduling were reported less frequently. Interventions focused on reducing stigma may be one step toward increasing service utilization. However, it is important to note that service members may be correct that receiving some forms of substance use treatment could negatively impact their career. It is likely that efforts to end stigma will be most successful if they address both individual and system-level factors that discourage the use of substance use services. A system-level initiative providing psychoeducation to superiors about steps they can take to minimize the concerns that service members have about embarrassment, being seen as weak, leadership treating them differently, and leadership having less confidence in them would likely increase the rates of utilization of substance use treatment services. Those who were receiving mental health treatment most commonly indicated that their spouse, non-military friend or family, and civilian physician were the factors facilitating their pursuit of care, suggesting that civilians play an important role in linking military service members to treatment. Outreach programs that include psychoeducation and social support for spouses and other civilians may also be an important component in efforts to increase substance use treatment.

The results of this study highlight that alcohol misuse is common among the recently returned OEF/OIF National Guard service members, however this study had some limitations. While a fairly comprehensive sample of a Midwestern state's National Guard service members was approached about the survey, only 60% completed a survey and there may have been some biases arising from the service member decisions about participating versus not participating. Additionally, this was a cross sectional study, and without baseline measures the rates of alcohol misuse pre-deployment are unknown. As this was a relatively small, homogenous sample that was recruited entirely from the Midwest, it may be that this sample is not representative of recently returned National Guard service members across the U.S. Study participants provided self-reports of their alcohol use, mental health symptoms, and military service experiences thus it is possible that the data study participants provided were not entirely accurate due to poor memory and/or concerns about stigma.

Even with these limitations, this is one of the first studies to report not only the high rates of alcohol misuse in OEF/OIF National Guard service members, but also rates of mental health and substance use treatment, and factors (barriers to care and facilitating factors) related to treatment utilization. Furthermore, these data indicate that younger, male service members with symptoms of depression, and PTSD are most likely to be misusing alcohol and most of those misusing alcohol are not receiving specialized substance use treatment or mental health treatment. Further studies are needed to investigate groups of OEF/OIF service members that might be particularly vulnerable to developing alcohol problems. Early outreach, interventions, and social support for veterans as well as their civilian friends and family may be important in improving linkage to care.

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Contributors

Marcia Valenstein, M.D., M.S. designed the Welcome Back Veterans study from which the data for this study was acquired. Inger Burnett-Zeigler, Ph.D. conducted literature searches, conducted statistical analysis, and wrote the first draft of the manuscript. All authors contributed by providing guidance related to the research questions, analyses, interpretation of the results, and editing the manuscript. All authors have approved the final manuscript.

Conflict of interest

All authors declare that they have no conflicts of interest.

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