Evidence Profile

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Abbreviations

aHR	Adjusted hazard ratio
AIHW	Australian Institute of Health and Welfare
aOR	Adjusted odds ratio
BMI	Body mass index
BRFSS	Behavioural Risk Factor Surveillance System: representative survey with repeated waves of data collection (USA)
CDC	(US) Centers for Disease Control
CI	Confidence interval (usually expressed as 95% CI)
DSM	Diagnostic and Statistical Manual
DVA	(Australian) Department of Veterans' Affairs
HCV	Hepatitis C virus
ICF	International classification of Functioning, disability and health
IQR	Inter-quartile range (i.e., from 25th to 75th percentile)
N	Number (of participants)
OR	Odds ratio
PTSD	Post-traumatic stress disorder
SD	Standard deviation: a measure of spread of values
SF-36	Measure of health-related quality of life
SMR	Standardised mortality ratio
Statistics F, p	F-value, p-value (usually statistically significant at p < .05)
T1, T2	Time 1, Time 2
VA	(US) Veterans' Affairs
VHA	(US) Veterans' Health Administration

Challenges

Challenges: Younger groups aged < 65

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Ben-Shalom et al. (2016)	Cross-sectional survey (national)	US	2002–2013 data from the Current Population Survey (monthly survey by US Census Bureau)	N = 28,000+ Age range: 18–64 years Sex: no information provided	Non-veterans within the same national survey N = 330,000+ Age range: 18–64 years Sex: no information provided	Disability Work compensation, Disability Insurance (DI), or Social Security Income (SSI) program participation
Findings: The rate of veterans reporting they receive VA disability compensation increased substantially from 2002 to 2013 and was especially notable for the 18–39-year age group and the 50–64-year age group. From 2002 to 2013, scores on the 6-Question Sequence on disability (6QS) rose slightly for the 55–64-year age group of veterans and more substantially for the 18–39-year age group of veterans (from 2.3% to 4.2%) more than non-veterans. Disability included problems related to deafness and serious difficulty hearing, walking or climbing. Work disability increased for veterans aged 18–39 and most notably for 55–64 years, but not for non-veterans between 2002 and 2013. From 2002 to 2013, the number of veterans in the 55–64-year age group who were on Social Security Disability Insurance (DI) and Supplemental Security Income (SSI) increased more than non-veterans.						
Blosnich et al. (2013)	Cross-sectional survey (national)	US	2010 Behavioural Risk Factor Surveillance System (BRFSS)	N = 53 (sexual minority female veterans, lesbian/bisexual) Mean age: 54.0 [SD 1.58] Sex: 100% women	Non-veterans in BRFSS N = 1,010 (sexual minority female non-veterans, lesbian/bisexual) Mean age: 48.8 [SD 0.51] Sex: 100% women N= 845 (female heterosexual veterans) Mean age: 58.2 [SD 0.60] Sex: 100% women	Sexual identity (i.e. lesbian/bisexual or heterosexual) Mental health Physical health Current smoking Body mass index (BMI)

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Findings: Sexual minority women veterans were significantly older than sexual minority non-veterans (54.0 years vs. 48.8 years). They had higher mental distress (OR: 3.03, 95% CI: 1.61–5.70) and smoking rates (OR: 2.31, 95% CI: 1.19–4.48) than heterosexual women veterans. After adjusting for sociodemographic characteristics, sexual minority women veterans had greater mental distress (OR: 2.78, 95% CI: 1.46–5.32), and poorer physical health (OR: 3.01, 95% CI: 1.51–5.99) than sexual minority non-veterans; and had greater mental distress (OR: 3.03, 95% CI: 1.61–5.70), lower satisfaction with life (OR: 2.95, 95% CI: 1.25–6.94), and poorer physical health (OR: 2.83, 95% CI: 1.44–5.66) than heterosexual veterans.						
Buckley et al. (2004)	Cross-sectional interview + survey	US	US Veterans – presenting to PTSD clinic (1 site).	Sample: n=826 Mean age: 51.7 years [SD 9.93] Sex: 100% men	General population (epidemiological data from the Centers for Disease Control and Prevention). N, age and sex: no information provided	Diseases: asthma, arthritis, TB, diabetes, stroke, MI, cirrhosis of liver, obesity Preventative health behaviours Health risk behaviours SF-36 – physical and mental components
Findings: Rates of asthma (15.0% vs. 7.2%), arthritis (35.1% vs. 19.4%), diabetes (13.0% vs. 9.2%), hypertension (38.0% vs. 36.0%), stroke (5.7% vs. 2.2%), myocardial infarction (11.7% vs. 8.0%), cancer (10.5% vs. 6.0%) and cirrhosis (23.0% vs. 8.7%) were elevated in veterans compared with general population rates for men of a comparable age. Marked level of role-functioning impairment due to physical morbidity as indicated by the physical role functioning indices, which were significantly lower in veterans than the general population.						
De Luca et al. (2016)	Cross-sectional survey (1 US State)	US	Texas (US) Behavioural Risk Factor Surveillance System (BRFSS) (2007).	N = 1124 Mean age: 53.6 [SD 18.2] Sex: 92.41% men	Non-veterans in Texas BRFSS (2007) N = 7,439 Mean age: 44.2 [SD 15.6] Sex: 43.2% men	Mental health related outcomes as attitudes to mental health, stigma towards mental health, Social and Emotional support (i.e. frequency) Mental health treatment (i.e. utilisation)
Findings: A slightly higher proportion of veterans (12%) utilised mental health treatment than non-veterans (11%), but this was not statistically significant. There were no differences in health care utilisation between white veterans and non-veterans, after controlling for mental health stigma, help seeking attitudes, frequency of social and emotional support, gender, age, education, marital status, and employment. However, the results of the logistic regression showed that racial/ethnic identity moderated the effect of veteran status on mental health utilisation significantly: among veterans, there were						

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no racial/ethnic differences in access to mental health treatment, but among non-veterans, Black and Latino survey participants reported lower mental health care use than whites.						
Hoglund & Schwartz (2014)	Cross-sectional survey (national)	US	US veterans within the Behavioural Risk Factor Surveillance System (BRFSS) (2010, 2011, 2012).	Deployed veterans N = 978 Mean age: Men 42.6 [SD 8.6]; Women 41.0 [SD 8.8]. Sex: 86.5% men Non-deployed veterans N = 1,550 Mean age: Men 46.4 [SD 7.9]; Women 44.9 [SD 7.9]. Sex: 75.5% men	Civilians in the BRFSS (2010, 2011, and 2012) N = 39,375 Mean age: Men 42.1 [SD 10.0]; Women 42.7 [SD 9.5]. Sex: 34.7% men	Mental health status
Findings: Compared with civilian status, deployed status was associated with adverse mental health for men (OR: 1.361, 95% CI: 1.055–1.755, p = 0.018) and possibly women (OR: 1.521, 95% CI: 0.930–2.487, p = 0.095. Compared with civilian status, nondeployed status was associated with adverse mental health for women (OR: 1.525, 95% CI: 1.152–2.018, p = 0.003), but not for men (OR: 1.169, 95% CI: 0.943–1.448, p = 0.155). Worse general health carried more than 4 times the odds of adverse mental health in women (OR: 4.215, 95% CI: 3.852–4.613, p < 0.001) and in men (OR: 5.100, 95% CI: 4.448–5.848, p < 0.001). Being out of work or unable to work was also associated with adverse mental health in both men (OR: 2.911, 955 CI: 2.529–3.351, p < 0.001) and women (OR: 2.843, 95% CI: 2.592–3.119, p < 0.001). Adverse mental health affected both male and female veterans, as well as women in noncombat military occupations.						
Hovens et al. (1998)	Cross-sectional survey + interview	Netherlands	Dutch World War II resistance veterans.	N = 182 Age range: 60–65 years Sex: 100% men	Non-veterans (Population survey from Netherlands Bureau of Statistics population study) N: 252 Age range: 54–65 years Sex: 100% men	PTSD Chronic disease (e.g. asthma, CHD, diabetes, rheumatoid arthritis) Anxiety & depression
Findings: 13 specific disease categories more prevalent in veterans than in the general population. Veterans reported significantly more diseases than non-veterans (means 3.85 [SD 2.55] vs. 1.48 [SD 1.68]). Veterans with symptoms of post-traumatic stress disorder (PTSD) reported significantly more disease than veterans without PTSD (means 4.40 [SD 2.63] vs. 3.06 [SD 2.24]). 13 specific disease categories (haemorrhoids, stomach complaints, migraine or						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
headaches, prostate problems, skin diseases, heart disease, varicosis, large bowel problems, hypertension, arthrosis, back pains, bronchitis, and inguinal hernia) were more prevalent in veterans than in the general population. Veterans' total number of reported diseases was significantly correlated with anxiety, depression, and PTSD.						
Kozaric-Kovacic et al. (2009)	Cross-sectional survey + clinical measures	Croatia	Veterans from Referral Centre for Stress Related Disorders (Zagreb, Croatia)	N =478 Age range: 30–61 years Sex: 100% men	Non-veterans (Healthy controls, matched from same site) N = 1553 Age range: 30–61 years Sex: 100% men	Obesity (BMI) PTSD (absent symptoms and current)
Findings: BMI did not differ significantly in veterans with or without PTSD in comparison to the general population. Smoking status, alcohol consumption and physical activity differed significantly between veterans with or without PTSD, as veterans with PTSD were more frequently smokers (p = 0.013) than veterans without PTSD. However, veterans without PTSD more frequently drank at least one alcohol beverage each day during the last year (p < 0.001), and were more frequently engaged in physical activity (p < 0.001). In veterans with PTSD, 25.7% had no comorbid diagnoses, 32% had major depression, 34.6% had mixed anxiety and depression, 4.1% had personality disorder and 3.7% had psychosis. In veterans without PTSD, 51.7% had no comorbid diagnoses, 12% had major depression, 32.1% had mixed anxiety and depression, 2.4% had personality disorder and 1.9% had psychosis.						
Lehavot et al. (2014)	Cross-sectional survey (national)	US	1999-2010 National Health and Nutrition Examination Survey	N = 151 Mean age: 40.8 [SD 0.96] 20.7% aged 50-59 years Sex: 100% women	N = 8738 Mean age: 39.7 [SD 0.15] 23.5% aged 50-59 years Sex: 100% women	Age at first intercourse Number of sexual partners Presence of sexually transmitted infections (STIs)
Findings: Adjusted for age, race/ethnicity, education and marital status, women veterans more likely than nonveterans to have genital herpes or genital warts.						
McCauley et al. (2015)	Cross-sectional survey (national)	US	2010 Behavioural Risk Factor Surveillance System (BRFSS).	N = 631 Mean age: 50.5 [SD 1.14] Sex: 100% women	US non-veterans with 2010 BRFSS N = 35,854 Mean age: 49.4 [SD 0.18] Sex: 100% women	Adverse Childhood Experience (ACE) Health outcomes Disability

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Findings: Women veterans were more likely to be current smokers (24.9% vs. 17.4%, p = 0.02) and reported a disability (14.0% vs. 8.2%, p = 0.003), and those associations were attenuated when controlling for ACE. Despite women veterans' higher prevalence of ACE (both childhood household dysfunction and abuse), their health outcomes did not differ substantially from non-veterans.						
McIntyre-Smith et al. (2015)	Cross-sectional survey (1 clinical site)	Canada	Recruited from the Canadian Forces (CF) members and veterans attending the Parkwood Hospital Operation Stress Injury (OSI) clinic	Sample: n= 99 Mean age: 46.2 [SD 12.6] Sex: 100% men	Non-veteran normative data from other Canadian studies N and age: No data provided Sex: 100% men	Sex-role inventory Erectile functioning index PTSD Health status (e.g. SF-12)
Findings: Mean scores for all eight of the SF-12 subscales fell below the norm of 50, indicating poorer health/functioning than the population norm.						
Ryan et al. (2016)	Cross-sectional survey (2 clinical sites, 1 US state)	US	Hysterectomy in pre-menopausal aged US veterans National population survey	N = 989 Mean age: 38.8 years [SD 8.8]; median 40 years (at the time of the interview) (20-52 years) Sex: 100% women	Non-veterans in national population survey and NSQIP data (ICD codes) N = Approx. > 100,000 Median age: 41 years (at the time of the interview) < 53 years Sex: 100% women	Sexual assault history PTSD history Gynaecological symptoms Care utilisation and care setting BMI Parity (N pregnancies)
Findings: Veteran prevalence of hysterectomy was significantly higher (16.8% vs. 13.3%, p = 0.0002) and mean age at hysterectomy significantly lower (35 vs. 43 years old) than civilian populations. Frequent reasons for hysterectomy included chronic pelvic pain (71%), excessive bleeding (65%), noncancerous fibroids (46%), abnormal Pap smear (28%), and some other reason (42%). Veterans who reported hysterectomy were significantly older and more likely to have ever been married; they were significantly less likely to seek non-VA general medical and women's gynaecological or reproductive health care in the 5 years. They had higher rates of experiencing attempted or completed sexual assault in their lifetimes (62% vs. 15–20%) than in the general female population.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Pre-menopausal-aged veterans may be at higher overall risk of hysterectomy, and for hysterectomy at younger ages, than civilian counterparts. Veterans who had experienced completed sexual assault with vaginal penetration in childhood or while in the military and those with a history of PTSD may be at particularly high risk for hysterectomy.						
Smith et al. (2015)	Cross-sectional survey (national)	US	2010 Medical Expenditures Panel Survey (MEPS)	N = 1007 Age range: 18 to <65 years Sex: No data provided	Non-veterans in same national survey N = approx. 18,593 Age and sex: No data provided	Social disabilities Health status Use of assistive devices Need for assistance with ADLs or IADLs Health service utilisation
Findings: Veterans had significantly more disabilities of any type and, specifically, more social and cognitive disabilities than non-veterans. Veterans with any disability (aOR: 13.88, 95% Cl: 6.7–18.7), social disability (aOR: 2.23, 95% Cl: 0.9–5.6), cognitive disability (aOR: 2.99, 95% Cl: 1.2–7.2),) were more likely not to be employed than non-veterans. Thus, veterans with disabilities were more likely not to be employed than veteran populations without disabilities.						
Thompson et al. (2015)	Cross-sectional computer assisted telephone survey (national)	Canada	Canadian veteran participants in Survey Transition to Civilian Life (STCL) survey	N = 3154 Mean age: 44 years [SD 11.2] Sex: 88.1% men, 11.9% women	General population, prevalence rates from the 2007 to 2008 Canadian Community Health Survey (CCHS) public use microdata file after age- and sex-adjusting to the STCL population) N, age and sex: No information	Health related activity limitation Personal and environmental factors Disability Mental health
Findings: The prevalence of some disabilities was higher in veterans than in the Canadian general population (49% versus 21%), and the prevalence of a high degree of disability was about triple (17% versus 5%). Disability was concentrated in veterans with multiple physical conditions.						

Challenges: Older groups aged > 65

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Buchanan et al. (2004)	Cross-sectional US Minimum Data Set (MDS) for Nursing Home Resident Assessment and Care Screening	US	US Veterans – permanent residents of Community Nursing Facilities (CNF).	N = 7,296 Mean age: 72.1 [SD 12.1] Sex: 100% men	N = 159,203 residents in community nursing facilities. Age: Mean 71.6 [SD 16.7] Sex: 100% men	Diseases Mental health and behaviour Cognitive performance Activities of daily living Pain Treatments received
Findings: VHA residents were more likely to be admitted from acute care hospital (65.8% vs 58.2%), more independent in the self-performance of activities of daily living and less physically disabled than other male residents. A significantly higher proportion of male residents (20% vs. 17%) had at least moderately severe cognitive impairment (17%), slightly lower rates of history of mental illness (10.9% vs. 13.8%), and lower rates of comorbidities comprising hypertension (45.0% vs. 51.3%), diabetes (26.0% vs. 29.6%), dementia (23.4% vs. 28.0%), emphysema/COPD (18.2% vs. 26.5%), depression (21.5% vs. 24.5%), other cardiovascular disease (17.6% vs. 20.5%) and cancer (14.0% vs. 16.2%) than male VHA residents.						
Choi et al. (2016)	Cohort study using two waves of data.	US	Participants of the US National Health and Aging Trend Study (NHATS). The NHATS sample is representative of USA Medicare beneficiaries aged ≥ 65 years.	US Veterans (100% men) T1 (2011), N = 1591 vets Mean age: 75.4 years. [SD 0.19] T2 (2012), N=1,263 Mean age: 76.1 years. [SD 0.21]	Non-veterans in same survey (100% men) T1 (2011), N=1254 non-vets Mean age: 72.6 years [SD 0.15] T2 (2012), N=972 Mean age: 73.3 years [SD 0.17]	HRQoL – using SF-12 physical and mental component summary scores (PCS & MCS) Self-rated health (SRH) Social participation
Findings: Despite their older age, veterans did not differ from non-veterans in their physical, mental and cognitive health, and they had better self-rated health (SRH) (T1: 3.41 [SD 0.03] vs. 3.26 [SD 0.04]; T2: 3.47 [SD 0.03] vs. 3.33 [SD 0.04]). At T1, fewer veterans than non-veterans were employed, but more were volunteers, participated in formal group activities and went out for enjoyment, and at T2 fewer veterans were employed but more went out for enjoyment than non-veterans.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Colon-Emeric et al. (2000)	Cross-sectional: medical records, pharmacy & radiology databases	US	Veterans' Affairs (VA) database	N = 91 men with hip fracture Median age: 73 years (range 68–77) Sex: 100% men N= 93 men who underwent knee replacement Median age: 64 years (range 56–72)	Non-veterans (100% men, community-dwelling) N = 118 Median age: 79 years (range 73–85)	Hip fracture (subsequent risk of post hip fracture)
Findings: One-year mortality rates were 12% for the veterans and 19% for the other cohort. Median time to death was 17 months for the veterans and 12-months for the other cohort. The rate of subsequent fracture among men who underwent knee replacement at the VA during the study period was 2 (95% CI: 0 to 5) per 100 person-years. Thus, the relative risk of subsequent fracture in the veterans, adjusted for age and race, was 6.3 (95% CI: 2.2–18, p = 0.01) compared with those who underwent arthroplasty.							
Cooperberg et al. (2003)	Cross-sectional	US	Cancer of the Prostate Strategic Urologic Research Endeavour (CaPSURE) – national database	N = 6961 Mean age: 67 years (< 60: 10%, 60–69: 16.6%, 70–79: 41.9%, ≥ 80 years: 31.4%). Sex: 100% men	N = 6,961 Mean age: 67 years (Data provided for age groups < 60, 60–69, 70–79, ≥ 80 years) Sex: 100% men	Prostate cancer antigens Treatment
Findings: VA patients had higher risk of prostate cancer. Mean serum prostate specific antigen at diagnosis was 20.1 for VA patients vs 15.3 ng/ml for non-VA patients (p = 0.003). Mean Gleason score was 6.4 for VA patients vs 6.0 for non-VA patients (p = 0.0001). Differing ethnic distributions explained the differences in prostate specific antigen between VA and non-VA patients. Among white and black men, VA patients were about twice as likely to have Gleason 8 to 10 disease (21.5% vs 10.5%, p = 0.0003, and 27.4% vs 15.9%, p = 0.014, respectively).							
Elder et al. (1994)	Longitudinal study (birth cohorts)	US	Longitudinal data from the Standford-Terman study	N= 278 (birth year 1909) N = 434 (birth year 1911) Age: Birth years 1909 and 1911 Sex: 100% men	Non-veterans in same longitudinal study N = 244 (birth year 1909) N = 309 (birth year 1911) Sex: 100% men	Father's SES IQ of subjects Occupational status Time of entry to military (early, middle, late) Major events Post-war health

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Findings: Veterans showed greater work-life discontinuity than non-veterans. No career differences between subgroups (early, mid, late entry to the military). Initially it was observed that veterans with a late entry to the military services were 2.25 more likely to experience a negative health outcome than non-veterans (p<0.001). However, after adjusting the model, late entry did not predict adverse health consequences in veterans.						
Hisnanick (1994)	Cross-sectional survey (national)	US	Longitudinal study of ageing (LSOA)	N = 748 Age: 1984 sample 70 years and over Sex: 96% men	Non-veterans in same national survey N = 4300+ Age and sex: no information provided	Personal-level data Health status ADLs Death
Findings: Veterans were more likely to report excellent health status (19.0% vs. 13.7%, p < 0.01) than non-veterans. However, there were no differences in relation to activity limitation status between veterans and non-veterans. Veterans may be more likely to move into a lower state of health or well-being considering characteristics related to prior existence of ADL limitation, number of doctor and hospital visits in the last 12-months, low level of education and having been widowed in the past 12-months.						
Ikin et al. (2007)	Cross-sectional survey (mail)	Australia	Australian Korean War veterans identified within Australian Electoral Commission (AEC) data 2004–2005. Self-report postal questionnaire.	N = 6,122 Mean age: nearly 75 years (range 66–100 years) Sex: 100% men	Australian non-veterans identified within AEC data and from the electoral roll sample) N = 1,510 Mean age: nearly 75 years (range 66–100) Sex: 100% men	Post-traumatic Stress Disorder (PTSD-S) Checklist (17-item, non-military-S version) Hospital Anxiety and Depression Questionnaire (HAD) Combat Exposure Scale
Findings: PTSD (OR: 6.63, 95% CI: 5.09–8.63, p <0.001), anxiety (OR: 5.74, 95% CI: 4.65–7.09, p < 0.001) and depression (OR: 5.45, 95% CI: 4.26–6.97, p <0.001) were more prevalent in veterans than in the comparison group.						
Lehavot et al. (2016)	Cross sectional survey (national) with follow-up for 21 years	US	1993-1998 Women's Health Initiative, follow up in 2014	N = 3,433 Mean age of sexual minority group: 64.3 [8.0] Mean age of heterosexual group: 67.1 [7.9] Sex: 100% women	N = 133,206 Mean age of sexual minority group: 59.7 [6.9] Mean age of heterosexual group: 63.2 [7.1] Sex: 100% women	Health behaviours Health conditions Mortality (all-cause and cause-specific)
Findings: Women veterans had greater all-cause mortality risk than non-veterans regardless of sexual orientation.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Among heterosexual women, veterans were more likely to have had arthritis (54% vs. 47%), cardio-vascular disease (22% vs. 18%), and cancer (13% vs. 10). However, they reported slightly lower rates of depression (9% vs. 11%).						
O'Donnell (2000)	Cross-sectional Survey (national)	US	Household Component of the Medical Expenditure Panel Survey (MEPS) (Round 1) (1996).	N = 660 (61.8% of 1068) Mean age: 72.3 SD [0.22] (range 65–90 years) Sex: 100% men	Male non-veterans in MEPS data aged 65+ N = 408 (38.2% of 1068) Mean age: 75.0 SD [0.37] (range 65–90 years)	Health status. Mental health
Findings: Veterans reported less motor disability (28.3% vs. 35.3%), cognitive disability (8.9% vs. 14.2%) and mental health fair to poor (9.6% vs. 15.8%) in comparison to non-veterans. However, after controlling for demographic, socioeconomic and health-related characteristics, no statistically significant difference was observed in self-assessed mental health between veterans and non-veterans.						
Selim et al. (2004)	Cross-sectional study.	US	Data from the 1999 Large Health Survey of Veteran Enrollees	N = 663,729 Age: ≥ 65 years. 65–74 years 54%. 75–84 years 42%, ≥ 85 years 4% Sex: 98% men	Older people enrolled in Medicare managed care. N, age and sex: no information provided	Health status. SF-36 PCS and MCS scales
Findings: The Physical Component Summary (PCS) scores of veterans were worse than those of older people enrolled in Medicare managed care. The mean PCS score of the youngest age group of veterans was 35.1, which is 1 SD worse than those of Medicare enrolees of the same age (45.9). The Mental Component Summary (MCS) scores of veterans were also worse than those of older people enrolled in Medicare managed care. The MCS score of the youngest age group (47.5, 95%), was about 0.5 SDs worse than that of those of the same age enrolled in Medicare managed care (53.3).						
Sim et al. (2005)	Survey (self-report questionnaire)	Australia	Korean War veterans residing in Australia Population sample of 2,964 Australian men aged 65 years and over drawn from the Electoral Roll	N = 6,122 (from a sample frame of 7,525) Age range: 66–99 Sex: 100% men	N = 1,893 (from a sample frame of 2,964) Age range: 66–99 Sex: 100% men	Life satisfaction Depression Anxiety PTSD Smoking Alcohol consumption (AUDIT) Quality of life Medical conditions
Findings: Veterans were 3 times more likely to meet criteria for a history of alcohol-related problems at some point in their life. Proportions of veterans meeting criteria for PTSD, anxiety and depression were 5 or 6 times higher than in the comparison group.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Veterans reported poorer overall life satisfaction than non-veterans, were less likely to report feeling pleased about their life as a whole (18% vs. 40%) and were more likely to report feeling unhappy or terrible (11% vs. 3%). Veterans were more likely to report their quality of life as poor or very poor (22% vs. 6%). Fifteen medical conditions were reported 1.5 to 3 times more frequent in veterans than non-veterans: asthma; high blood pressure; stroke; heart attack or angina; rapid or irregular heart beat; liver disease; arthritis; kidney disease; diabetes; melanoma; other skin cancer; other cancer; stomach or duodenal ulcer; partial or complete blindness; and partial or complete deafness. They also reported an increased rate of hospitalisation in the previous 12-months.						
Woodhead et al. (2011a)	Cross-sectional survey (national)	UK	UK veterans identified from the Adult Psychiatric Morbidity Survey (APMS) of England	N = 484 Age range: 65–74 46.4% and ≥ 75 53.6% Sex: 100% men	Male non-veterans in same national survey, 2007 Adult Psychiatric Morbidity Survey (APMS) of England) N = 301 Age range: 65–74 74.3% and ≥ 75 25.8%	Health & related behaviours Physical health Perceived health Experience of homelessness and/or financial problems
Findings: Veterans were less likely to have any mental disorder (age adjusted OR: 0.56, 95% CI: 0.31–0.99). There were no differences in health problems since age 16, health problems in the past year, or perceived health.						

Challenges: Mixed age groups

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
AIHW. (2016)	Comparison of statistics 2001–2014	Australia	Personnel Management Key system database, linked with the National Death Index. Department of Defence's database of confirmed and suspected suicide deaths	All veterans serving and ex-serving in Australian Defence force 2001-2014 Age range: 18–83, analysed by 5-year age bands	All Australian men, age-standardised suicide rates	Suicide rate
Findings: After adjusting for age, when compared with all Australian men, the comparative suicide rate for ex-serving men carried by aged and was higher for those aged 18–24, but lower for those aged 55–83. The suicide rate was: 53% lower than age-standardised rates for men serving full-time and 46% lower for men in the reserve; but 13% higher for ex-serving men. It was not possible to compare rates for women.						
Allender et al. (2006)	Cross-sectional study Postal questionnaire 4 UK general population surveys (1991–1992, 1996, and 1997)	UK	Veteran members of Porton Down Volunteer Support Group (PTVSG)	All members of Porton Down Volunteer Support Group (PDVSG) N=269 (includes 3 surrogates) Mean age: 66.8 [SD 8.3] Sex: 100% Men	N not provided. Data provided for age groups 35–44, 45–54, 55–64, and 76–84 years. Sex: 100% Men	Self-reported health problems (e.g. body systems & symptoms) SF-36 – all component measures.
Findings: Current health-related quality of life dimensions were consistently lower than age-specific estimates from general population samples. Authors' comment: Members of the PDVSG responding to this survey reported poorer quality of life than the general population. Despite there being no clear pattern of specific morbidities, we cannot rule out ill-health being potentially associated with past experience at Porton Down.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Andersen et al. (1992)	Cross-sectional survey (national – 3 US states only reported)	US	US veterans within National Institute of Mental Health (NIMH) Epidemiologic Catchment Areas (ECA) program.	N = 834 Age range: 18–60 years Sex: 100% men	Male non-veterans in National Institute of Mental Health (NIMH) Epidemiologic Catchment Areas (ECA) program N = 2,255 Age range: 18–60 years	Self-reported mental health status Alcohol abuse Drug abuse Depression Other
Findings: Alcohol abuse rate was 28% in veterans and 25% in non-veterans, while drug abuse was 11% in veterans and 13% in non-veterans (both significant at p < .05).						
Barrera et al. (2013)	Cross-sectional survey (single site)	US	US veterans with primary diagnosis of panic disorder, recruited via physician referrals and advertisements posted in clinic waiting areas.	N = 21 Mean age: 46.3 [SD 9.1] (31–58 years) Sex: 86% men	Civilians with panic disorder N = 213 Age and sex: no information provided U.S. population norms N=2,474 Age and sex: no information	SF-36 – all component measures. Health utility scores
Findings: Veterans reported significantly greater impairment on all eight (physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional and mental health) of the SF-36 subscales.						
Becerra & Becerra (2015)	Cross-sectional survey (State-based)	US	California Behavioural Risk Factor Surveillance System (BRFSS) California Health Interview Survey (CHIS) 2009 and 2011/2012 data	N = 9,993 Mean age: 60.0 SD [0.40] Sex: 100% men	Male civilians (non-veterans within California Behavioural Risk Factor Surveillance System (BRFSS)) N = 26,999 Mean age: 41.4 [SD 0.06]	Kessler 6-scale measure of psychological distress. Asthma
Findings: More civilians reported past year serious psychological distress (SPD) (6.34%) than veterans (4.67%).						
Bergman et al. (2017)	Cross-sectional	UK	Scottish Veterans Health Study.	N = 56,570 (56,205 included in the analysis)	Non-veterans	Tuberculosis (TB)

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
	survey (national)			Age range: 37–77 years (Veterans born 1945–1985 registered with NHS Scotland) Sex: 90.7% men	N = 172,753 (172,741 included in the analysis (National Health Service [NHS] Scotland) Age and sex: no information	Compared to NHS Scotland
Findings: Prevalence of tuberculosis was similar in veterans (0.12%) and general population (0.15%). The 1945–1949 veterans' birth cohort was at higher risk of tuberculosis, although the difference in risk did not achieve significance. Veterans born from 1950 were at significantly reduced risk of tuberculosis compared with non-veterans after adjusting for deprivation.						
Bergman et al. (2016a)	Cross-sectional survey (national)	UK	Scottish (UK) veterans within Scottish Veteran Health Study.	56,570 (56,205 included in the analysis) Age range: 37–77 years (Veterans born 1945–1985 who were registered with NHS Scotland) Sex: 90.7% men	Non-veterans N = 172,753 (172,741 included in the analysis (non-veteran population within UK National Health Service administrative data with no record of service matched 3:1 for age, sex and postcode sector residence) Age and sex: No information provided	Mental health disorders based on ICD-10 codes for anxiety disorders
Findings: There was a rate of 4.97% episodes of any mental health disorder in veterans compared with 4.5% in non-veterans, and this difference was statistically significant for all veterans (adjusted HR: 1.21, 95% CI: 1.16–1.27, p < 0.001).						
Bergman et al. (2015a)	Cross-sectional survey (national)	UK	Scottish Veterans Health Study.	56,570 (56,205 included in the analysis) Age range: 37–77 years (Veterans born 1945–1985 who were registered with NHS Scotland)	Non-veterans N = 172,753 (172,741 included in the analysis (National Health Service (NHS) Scotland - people with no record of military service, resident in	Alcoholic Liver Disease (ALD)

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
				Sex: 90.7% men	Scotland, matched for age, sex and area of residence) Age and sex: no information provided	

Findings: Prevalence of alcoholic liver disease was similar in veterans (1.20%) and general population (1.26%). Veterans were at no greater risk of alcoholic liver disease or alcohol-related death than the general population. Veterans had a slightly but significantly reduced risk after adjusting for regional SES.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Campling et al. (2005)	Cross-sectional: medical records	US	Pennsylvania cancer registry (1995–2001)	N = 862 Mean age: 67.8 years [SD 9.2] Sex: 100% men	Non-VA hospitals N = 27,936 Mean age: 68.8 years [SD 10.3] Sex: 100% men	Lung cancer

Findings: There was a significant difference in distribution according to disease stage among the VA patients compared with the non-VA patients (p = 0.001). The rate of patients with distant disease was lower in the VA population than in the non-VA population (38% vs. 43%), but the proportion of patients with unknown disease stage was higher (13% vs. 9%). The proportion of patients with localised disease was higher in the VA hospitals than in the civilian hospitals (25% vs. 22%), but the proportion of VA patients with regional disease was lower (24% vs. 26%). However, when they were considered together, the proportion of patients with localized or regional stage disease was similar in the VA population and the non-VA population (49% vs. 48%).

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Cunningham et al. (2015)	Cross-sectional survey + medical record (1 US State)	US	Nutritional status of US veterans with end-stage renal disease (ESRD) on maintenance haemodialysis (MHD)	N = 33 Mean age: 60.1 [SD 6.3] (range 24–89 years) Sex: 94% men	Non-veterans with ESRD on maintenance haemodialysis (MHD) in community clinic) N = 38 Mean age: 59.4 [SD 13.0] (range 24–89 years) Sex: 55% men	Nutritional status Malnutrition-inflammation score Dietary intake Diabetes Pathology laboratory tests

Findings: The veterans showed equivalent nutrition status and dietary intake and less inflammation than non-veterans. The veterans had lower IL-6 levels (4.4 pg/ml [3.1–5.8] vs 15.4 pg/ml [8.3–20.5] p = 0.01) than non-veterans, after adjusting for sex and ethnicity.
The whole sample of participants was overweight (both groups: 28.9 ± 6.2; veterans: 27.8 ± 4.4; non-veterans: 29.9 ± 7.3), showed intakes of energy (33%), protein (17%) and carbohydrate that were clearly low, while fat intake was somewhat higher than the National Kidney Foundation–Disease Outcomes Quality Initiative recommendations for patients receiving maintenance haemodialysis. However, comparison between veterans and non-veterans with adjustment for sex and ethnicity did not demonstrate any difference for these tested variables.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
In regression analysis, the lower serum IL-6 level in veterans was independently explained by dialysis clinic, sex, and, possibly, household income.						
Dunt (2009)	Literature review	Australia (includes inter-national literature)	NA	NA	NA	Suicide rates Suicide risk factors
Findings: Suicide rates are lower in serving military groups than in the general population due to 'healthy worker' selection effects, but this effect fades over time, so that some years after service, veterans of military service can have health problems that are worse than the general population. Some studies in Australian and the US indicate elevated suicide rates in veterans but the evidence is not conclusive.						
Gray et al. (2016)	Cross- sectional survey (national)	US	Women's Health Initiative (WHI)	N = 618 Age range: 50–59: 23.9%, 60–69: 35.1%, ≥ 70 years: 40.9%. Sex: 100% women	Non-veterans identified from WHI database N = 23,524 Age range: 50–59: 31.5%, 60–69: 48.0%, ≥ 70 years: 20.5%. Sex: 100% women	Diabetes Other chronic conditions SF-36 – physical function component
Findings: Veterans had a rate of diabetes of 5.2% with a corresponding age adjusted physical function score of 78.9, while non-veterans had a rate of diabetes of 4.9% with a corresponding age adjusted physical function score of 72.0.						
Kazis et al. (1999)	Cross-sectional survey (national) + data linkage	US	National Veteran Health Study (VHS)	N = 2,425 Mean age: 662.4 [SD 12.6] (range 22–91 years) 51% aged > 65 years. Sex: 100% men	Non-veterans in the US National Survey of Functional Health (NSFH) 1990 N = 1,052 Age and sex: No information.	Health status. SF-36 HRQoL (Veteran version) –standard measures. Depression screening question.
Findings: Health status was lower among veterans than the general population (controlling for age and gender), by half a standard deviation. The Physical Component Summary score (37.13 [SD 11.85] vs. 49.42 [SD 10.21]) and the Mental Component Summary score (47.81 [SD 12.23] vs. 51.00 [SD 9.73]) were significantly lower in veterans than non-veterans.						
LaCroix et al. (2016)	Cross-sectional survey (national)	US	Data from the Women's Health	N = 2,279 Mean age: 71.5 [SD 4.3] Sex: 100% female	Female non-veterans in same survey N = 65,879	Health behaviours and health status Metrics of ageing well

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
			Initiative (WHI) program.	N = 921 Age: ≥ 80 years Sex: Female 100%	Mean age: 68.8 [SD 4.3] N= 32,565 Age: ≥ 80 years	Disease and disability Death

Findings: Veterans were more likely to have depression (6.9% vs. 8.7%, p= 0.003) than non-veterans.

Veterans had significantly lower scores on the satisfaction with life, social support, quality of life, and purpose in life scales. Women veterans differed from non-veterans on several dimensions of ageing well including, survival to age 80 years, maintaining physical function, and perceived health and quality of life. They were more likely to die prior to age 80 years than non-veterans (OR: 1.2, 95% CI: 1.04 – 1.38).

Among the women aged ≥ 80 years, veterans were significantly more likely to live in a residential environment that provided services for older people (32% vs. 22%), less likely to report at least good perceived health (85% vs. 87%), and reported lower satisfaction with life (mean 25.7% vs. 26.3%), social support (mean 35.6% vs. 36.8%), quality of life (54.7% vs. 60.4%), purpose in life (mean 18.3% vs. 18.7%), and physical function (mean 53% vs. 59.5%) than non-veterans.

Veterans did not differ on the health metrics related to effective ageing (resilience, self and environmental mastery, self-control), nor did they differ in average levels of several optimal ageing indicators including emotional wellbeing, happiness, enjoyment of life, or personal growth scores.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
LaVela et al. (2012)	Cross-sectional survey (national)	US	US veterans with multiple sclerosis identified from the Behavioural Risk Factor Surveillance System (BRFSS) survey	N = 1305 Mean age: 60.8 years Sex: 100% men General veteran population (from the 2003 CDC BRFSS) N= 31, 500 Mean age: 59.1 years Sex: 100% men	Non-veteran general population (from the 2003 CDC BRFSS) N = 68,357 Mean age: 39.5 years Sex: 100% men	Multiple Sclerosis 5 chronic diseases (e.g. diabetes, hypertension, hypercholesterolemia, CHD, or stroke)

Findings: Veterans with MS had a higher prevalence of hypercholesterolemia (49%), hypertension (47%), diabetes (16%), coronary heart disease (11%), and stroke (7%) than the general population. The group of veterans with MS aged ≥ 50 years had significantly higher rate of diabetes (17.8% vs. 14.5%, respectively), hypertension (48.1% vs. 42.1%, respectively), hypercholesterolemia (49.7% vs. 44.8%, respectively), coronary heart disease (12.1% vs. 9.4%, respectively), and stroke (7.9% vs. 4.1%, respectively) than the general population.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
LaVela et al. (2006)	Cross-sectional survey (national) BRFSS database	US	US veterans with spinal cord injury/dysfunction (SCI/D) identified from BRFSS survey	N = 3,737 Age range: < 40 to > 70 years General veteran population (data from the 2003 CDC BRFSS)	Non-veteran general population (data from the 2003 CDC BRFSS) N= 16,676 Age and sex: not provided	Spinal cord injury/dysfunction (SCI/D) Diabetes & other conditions

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
				N= 1,342 Age and sex: not provided		Quality of Life indicators (e.g. pain)
Findings: The overall prevalence of diabetes in veterans with spinal cord injury/dysfunction (SCI/D) was 20%, which was 3 times higher than in the general population (6.7%). Veterans with an SCI/D and the general population of veterans had a higher prevalence of diabetes than non-veterans across all age groups. More veterans with (63%) and without an SCI/D (60%), took a class on how to manage their diabetes than the general population (50%).						
Leavy et al. (2006)	Cross-sectional registry data (1 Australian State)	Australia	Prostate cancer among Australian Vietnam veterans Selected from the Cancer Registry of Western Australia	N = 606 Age range: 40–75 years Sex: 100% men	Non-veterans (age-matched from the Western Australian electoral roll). N = 471 Age range: 40–75 years Sex: 100% men	Prostate cancer history (e.g. father, brother)
Findings: An increased prostate cancer risk was observed in men reporting they were deployed in Vietnam although this was not statistically significant (OR: 2.12; 95% CI: 0.88–5.06).						
Lehavot et al. (2012)	Cross-sectional survey (national)	US	2010 Behavioural Risk Factor Surveillance System (BRFSS) including veterans, active duty, civilian and National Guard/ Reserve women	N = 4,221 Age range: 18–65+ years (30.9% aged 55+ years) Sex: 100% women	N = 274,399 Age range: 18–65+ years (35.4% aged 55+ years) Sex: 100% women	Self-rated health Health conditions Health behaviours Health screening
Findings: Veteran women were more likely than civilian women to report fair or poor health. Veterans were more likely than civilians to be obese or overweight and to have cardiovascular disease. They were also more likely to report limited activities and frequent mental distress. Veterans were more likely than civilian women to report a history of depressive disorder.						
Luncheon & Zack (2012)	Cross-sectional survey (national)	US	2007–2009 surveys of the Behavioural Risk Factor	N = 110,365 Age range: 18–65+ years Sex: 99.9% men	Civilians (in same national survey) N = 691,497 Age range: 18–65+ years	Health related quality of life Physically unhealthy days Mentally unhealthy days

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
			Surveillance System (BRFSS).		Sex: 99.9% men	Recent activity limitation

Findings: Race moderated the relationship between veteran status and health status. Compared with their non-veteran counterparts, Hispanic veterans were more likely to report their health as very good (28% vs. 20%), non-Hispanic blacks (27% vs. 26%) and American Indian/Alaska Native veterans as about the same (23% vs. 25%), and non-Hispanic white veterans as being worse (32% vs. 37%) than that of their civilian counterparts; more non-Hispanic white civilians generally reported their health as very good compared to civilians in other racial/ethnic groups (37% vs. 26%, 25%, 20%).
Veteran and civilian American Indians/Alaska Natives described more physically unhealthy days, mentally unhealthy days, and recent activity limitation days than their veteran and civilian counterparts in other racial/ethnic groups. Non-Hispanic white veterans and Hispanic veterans reported more physically unhealthy days, mentally unhealthy days, and recent activity limitation days than their civilian counterparts.
Veterans' health-related quality of life differs from that of civilians both within the same racial/ethnic group and among different racial/ethnic groups.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
McGuire et al. (2015)	Cross-sectional survey (national)	Australia	2007 National Survey of Mental Health and Wellbeing (NSMHW2) – conducted by ABS.	ADF men N = 447 Age range: 18–54 years: 35.7%; 55–85 years: 64.3%) DVA women N = 188 Age range: 18–54 years: 17.4%; 55–85 years: 82.6%)	Other men in 2007 NSMHW2 N = 3, 644 Age range: 18–54 years: 73.4%; 55–85 years: 26.6% Other women in 2007 NSMHW2 N = 4,573 Age range: 18–54 years: 69.6%; 55–85 years: 30.4%	Life time prevalence mental disorders Use of mental health services Kessler Psychological Distress scale (K10). WHO Disability Assessment Schedule Self-report ratings DSM-IV mental health disorders.

Findings: ADF men were more likely to report their physical health as good/fair/poor (39.5% vs. 31.8%), and more likely to be diagnosed with any lifetime mental disorder (50.5% vs. 44.7%), any affective disorder (15.4% vs. 11.6%), depression (14.7% vs. 11.1%), PTSD (5.9% vs. 4.4%), any substance abuse (37.0% vs. 34.4%) and alcohol disorder (36.2% vs. 32.1%) than the other men.
DVA women were more likely to report moderate/severe psychological distress (37.6% vs. 32.6%) and lower life satisfaction (70.0% vs. 49.9%), and had more disabilities than the other women.
There was no greater lifetime use of mental health services by ADF men or DVA women than civilian counterparts.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
McLay et al. (2000)	Cross-sectional survey (1 US State)	US	Epidemiologic Catchment Area Study	N = 208 Age range: 18–30 16.3%, 31–40 25.5%, 41–50	Non-veterans (in same US State study) N = 1216	Cognitive function

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
			in 1981, 1982, and 1993 to 1996	17.3%, 51–60 24.5%, 61–70 14.9%, ≥71 1.4% Age range: 18 to ≥71 years Sex: 95.2% men	Age range: 18–30 40.4%, 31–40 20.6%, 41–50 11.1%, 51–60 10.7%, 61–70 13.7%, ≥71 3.5% Age range: 18 to ≥71 years Sex: 74.4% men	
Findings; Veterans had significantly less cognitive decline after about 11.5 years than non-veterans. This effect was not explained by differences in age, sex, baseline MMSE, or education. Correcting for these sociodemographic factors strengthened rather than weakened the differences observed between veterans and non-veterans.						
Miller et al. (2012)	Cross-sectional survey (national)	US	NHIS	N = 482 Age range: ≥ 18 years Sex: 100% men	Non-veterans (within same national survey) N = 835 from a population of 500,822 Age range: ≥ 18 years Sex: 100% men	Suicide rate Health status Activity limitations BMI category Doctor visits past 12-months
Findings: Crude suicide rates were: for veterans 26.2/100,000 person-years and for non-veterans 18.8 /100,000 person-years. The risk of suicide was not significantly higher among veterans than non-veterans, after adjustment for age, race, and survey year (hazard ratio: 1.11; 95% CI: 0.96–1.29). The rate of firearm suicides was significantly higher among veterans (19.8/100 000 person-years) than among non-veterans (11.7/100 000 person-years); increased risk of firearm suicide persisted after adjusting for age, race, and survey year (HR: 1.19; 95% CI: 1.01–1.40). Veterans and non-veterans did not differ significantly in their risk of suicide by non-firearm methods.						
Murphy et al. (2014)	Cross-sectional survey (national)	US	BRFSS	N = 184,694 Age range: 18 to > 65 years (18–44, 45–64, ≥ 65) Sex: 91.4% men	Non-veterans in BRFSS database N = 1,277,596 Age range: 18 to > 65 years Sex: 67.3% men	Arthritis
Findings: Veterans had a higher overall prevalence of reported arthritis than non-veterans, 25.6% versus 23.6%, respectively. This meant that one in four veterans reported that they had arthritis (25.6%) and prevalence was higher in veterans than non-veterans across most sociodemographic categories, including sex (prevalence in male and female veterans was 25.0% and 31.3%, respectively).						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Nelson (2006)	Cross-sectional survey (national)	US	BRFSS	N = 6,338 (Veterans who used VA) Age range: >60 years 57.1% Sex: 94.4% men N = 27,111 (Veterans with no use of VA) Age range: >60 years 47.0% Sex: 94.4% men	Non-veterans in BRFSS N = 208,913 Age range: >60 years 19.1% Sex: 40.7% men	Obesity and overweight Comorbid disease Health status and disability Nutritional intake Physical activity

Findings: Self-rated health status was better for non-veterans than veterans (using and not using) VA services.
Veterans accessing VA had higher rates of obesity (27.7%)—including 1.8% (82,950) with morbid obesity—than other veterans (23.9%) and the general population (22.8%).
Veterans who used VA services had higher rates of hypertension (55.6% vs. 23.7%), diabetes (20.1% vs. 6.7%), dyslipidaemia (51.9% vs. 31.9%), arthritis (51.5% vs. 25.6%) and heart disease (25.3% vs, 5.2%) than non-veterans. They were more likely to report poor health (11.9% vs. 4.2%) and disability days due to poor mental (13.1% vs. 10.6%) or physical health (22.4% vs. 10.5%), and limitations in their activities due to health problems (41.3% vs. 17.9%) than non-veterans.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
O'Toole et al (1996)	Cross-sectional survey (national)	Australia	Vietnam veterans identified within Australian Bureau of Statistics (ABS) Health Interview Survey (1989–1990).	N = 641 Age: no information provided Sex: 100% men	Non-veterans (Australian population, age-sex matched within ABS Health Interview Survey (1989–1990)) Age: no information	Self-rated physical health Self-rated happiness Chronic conditions Major health risks Combat exposure. Recent health action Days off work, days in bed, days reduced activity

Findings: Veterans perceived their health state as poorer (8.3% vs. 3.8%) and were less happy (10.3% vs. 4.2%) than the general population.
Veterans reported higher prevalence of medical conditions for which recent health actions were taken in relation to chronic conditions comprising neoplasms (RR: 4.9); cholesterol (RR: 3.00); depression (RR: 3.57); other mental illness (RR: 4.92); migraine (RR: 5.13); and arthritis (RR: 2.47), and greater health service utilisation [doctor consultation (RR: 1.49) or other health professional (RR: 2.08)] than the general population.
Veterans also reported higher prevalence of medical conditions for chronic conditions including neoplasms (RR: 4.82); cholesterol (RR: 2.73); diabetes (RR: 2.71); gout (RR: 3.21); depression (RR: 3.47); other mental illness (RR: 4.69); migraine (RR: 2.50); hypertension (RR: 2.17); bronchitis/emphysema (RR: 4.13;); arthritis (RR: 1.48); and rheumatism (RR: 2.85) than the general population.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Patel et al. (2016a)	Cross-sectional survey (national)	US	Women's Health Initiative (WHI) survey. Study participants were post-menopausal women aged 50–79 years at baseline	N = 3,687, 100% women Age -Not at all-to-a little bit of pain interference: median 69 (range: 61–74 years) -Moderate-to-extreme pain interference: median 70 (range: 61–74 years)	Female non-veterans in the WHI survey N= 141,269 Age Minor pain interference: median 63 (range: 57–68 years) Major pain interference: median 64 (range: 58–70 years)	Pain and other comorbid conditions SF-36 – (physical functioning Qs only) Fatigue, Depressive Symptoms and Insomnia
Findings: Veterans and non-veterans did not differ on moderate-to-severe pain (20.8% and 20.2%) and prevalence of pain interference (16.8% and 15.7%).						
Patel et al. (2016b)	Cross-sectional: medical records	US	US veterans with chronic kidney disease (CKD) identified from VA data	N = 75,787 Age range: 18–102 Sex: 100% women	Non-veterans, 100% women General population data from other datasets (e.g. Kidney Early Evaluation Program (KEEP)) N and age: No information provided.	Chronic kidney disease (CKD) Comorbid disease
Findings: The prevalence of CKD among female veterans was 47.3%, much higher than estimated in general population.						
Rissling et al. (2016)	Cross-sectional survey (national)	US	Women's Health Initiative (WHI)	N = 3,707 Age range: 50–79 years (<50-59: 21.1%, 60-69: 29.1%, 70-79: 49.8%) Sex: 100% women	Non-veterans in WHI database N = 141,354 Age range: 50–79 years (<50–59: 32.7%, 60–69: 45.6%, 70–79: 21.7%) Sex: 100% women	Sleep disturbance Cardio-metabolic health
Findings: Veterans were less likely to have vasomotor symptoms (26.0% vs 32.7%) than non-veterans. Veterans were more likely to have high risk for insomnia and sleep disordered breathing (SDB) than non-veterans (PR: 1.13, 95% CI: 1.02 -1.04).						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Shahoumian et al. (2016)	Cross-sectional survey (national)	US	Cigarette smoking and quit attempts among US veterans with coronary health disease (from BRFSS)	N = >124,000 Age range: 18–80 years Sex: No information	Non-veterans in BRFSS N = 980,000 Age and sex: No information	Health Smoking status
Findings: Prevalence rates for smoking during one's lifetime are higher among veterans than civilians. Among men with coronary heart disease, more veterans than civilians smoked and more were daily smokers, but veterans were no more likely to attempt to quit. Excluding active service, veteran estimates of CHD 6% compared with 5.3% in civilians.							
Shen et al. (2012)	Cross-sectional survey (national)	US	Female veterans within 2009 Behavioural Risk Factor Surveillance System (BRFSS).	N = 3747 (matched) Age range: 21–49 years 56.7%, 50–64 years 25.9%, ≥65 years 17.3% Sex: 100% women	Non-veterans in 2009 BRFSS N = 3747 (matched) Age range: 21–49 years 56.3%, 50–64 years 26.9%, ≥65 years 16.8% Sex: 100% women	Health Related Quality of Life (HRQOL) Financial barriers to health care access
Findings: A significantly higher percentage of women veterans reported poor mental health (12.2% vs. 7.5%) and poor functional status (8.5% vs. 4.7%) than women non-veterans. Women veterans were more likely to report poor physical health (aOR: 1.39) and poor mental health (aOR: 1.75) than women non-veterans. Veteran status was also associated with poor functional status (aOR: 1.83) and poor physical health (aOR: 1.39).							
Taylor et al. (2016)	Cohort study using baseline and follow-up waves of data.	US	2013 HRS Veterans Mail Survey linked to the Health and Retirement Study (HRS)	N = 1,872 Age range: > 50 years. Sex: 100% men	Non-veterans N = 1,552 Age range: > 50 years. Sex: 100% men	Functional limitations (FLs) Activities of daily living (ADLs) Self-rated health (SRH).
Findings: There was no significant association of exposure to combat with SRH. Although there was a connection between combat and later health, it was driven primarily by hazardous or traumatic exposures. Most veteran men experienced good health over the decade.							
Thompson et al. (2013)	Cross-sectional using national computer assisted	Canada	Canadian Force regular force veterans released 1998–2007.	N =3,151, Mean age: 46 years (range 20–69); ≥ 50 years: 32.0%	Non-veterans (Canadian general population—age and sex adjusted)	HRQoL – using SF-12 Physical Component (PCS) and Mental

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
	telephone survey and data linkage.			Sex: 12% women	N, Age and sex: no information provided	Component (MCS) Summary scores. Canadian norms for SF-36
Findings: Compared to reference population, veterans had below average PCS (47.3) and average MCS (52.0). Among VAT clients, 83% of veterans had below average PCS and 49% had below average MCS.						
Vable et al. (2016)	Cross-sectional survey (national)	US	Health and Retirement Study (HRS)	N =246 Age range: >50 years Sex: 100% men	Male non-veterans matched for birth year, race and/or ethnicity, and southern US state birth Participants also matched for youth disability status and childhood health N= 240 Age range: >50 years	Depression scale Effect modifier— Childhood SES (cSES)
Findings: Low SES veterans reported fewer depressive symptoms than low SES non-veterans, but there was no difference between high SES veterans and non-veterans (i.e., veterans reported higher depression only among the low SES group). GI Bill eligibility predicted fewer depressive symptoms among individuals from low cSES backgrounds (p = 0.022). No relationship between Korean War GI Bill eligibility and markers of depression in pooled analysis or among high cSES veterans.						
Washington et al. (2016a)	Cross-sectional survey (national)	US	Women's Health Initiative (WHI) Pre-Vietnam generation and Vietnam/post generation)	N = 3,719 Age range: 50–79 years. Sex: 100% women	Non-veterans (from WHI) N = 141,802 Age range: 50–79 years. Sex: 100% women	All-cause and cause specific mortality Comorbidity Physical activity Health behaviours Depression Causes of death
Findings: All-cause mortality hazard rate ratios (adjusted HRs) were 1.16 for pre-Vietnam and 1.16 for Vietnam/after generations, after comparing those groups with non-veterans. With additional adjustment for health behaviours, risk factors and comorbidities, this excess mortality was eliminated in both groups of veterans.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Pre-Vietnam generation veterans had higher cancer, cardiovascular, and trauma-related mortality rates; however, after the model was adjusted with socio-demographics and WHI study membership, risk factors and behaviours and comorbidities, this effect did not persist. By contrast, trauma-related mortality was greater in Vietnam/after generation veterans than in non-veterans, and the trauma-related mortality rate remained greater in the fully adjusted model (HR = 2.93, 95% CI: 1.64–5.23).						
White et al. (2011)	Cross-sectional survey (national)	US	2008 National Survey on Drug Use and Health (NSDUH)	N = 1,985 Age range: ≥18 years Sex: 100% men	Non-veterans in same national survey, N=55,739 total population pool N = 15,654 Age range: ≥18 years Sex: 100% men	Suicidal thoughts Major depressive episode Alcohol and drug abuse and dependence Serious psychological distress
Findings: Men who had served in the armed forces (veterans and former reserve personnel) were no more likely than men who had never served to report having seriously considered suicide over the prior 12-months (OR: 1.04, 95% CI: 0.82–1.32). Higher rates of self-reported physician-diagnosed depression (6.9% vs. 4.9%) and anxiety disorders (6.5 % vs. 2.7%) were observed among younger veterans than non-veterans.						
Wilson et al. (2005) (DVA, AIHW)	Retrospective epidemiological study using record linkage in national databases	Australia	Vietnam veterans	All personnel N = 59,179 (51,343 alive, 6,382 dead, 1,454 not known)	Calculated cancer incidence rates and mortality for the Australian male population by 5-year age groups for each year from 1982 to 2000	Mortality to 2001 Cancer incidence 1982-2000
Findings: Overall mortality for veterans over 30 years of observation was 6% lower than expected. Veterans had lower than expected mortality for circulatory diseases (12%), respiratory diseases (23%) and infectious diseases (38%). However, mortality from alcoholic liver disease and neoplasms was higher than expected (19% and 6%). Morality from lung cancer and cancers of the head and neck region was significantly higher than expected (18% and 34–44%). Overall mortality among Navy veterans was not significantly different from that of non-veterans, but mortality from cancer was 19% higher. Overall mortality from Army veterans was 7% lower than expected. Mortality of Air Force veterans was 9% lower than expected.						
Woodhead et al. (2011b)	Cross-sectional survey (national)	UK	UK veterans identified within the 2007 Adult	N = 257 Median age: male 49 years (IQR 40–59);	Non-veterans (age and sex frequency matched	Perceived social support Mental health

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
			Psychiatric Morbidity Survey (APMS). A nationally representative sample of community dwelling adults in England.	female 46 years (IQR 39–58) Sex: 81.7% men	identified within same national survey) N = 504 Median age: male 47 years (IQR 39–58); female 45 years (IQR 38–56) Sex: 81.5% men	Treatment seeking behaviour Perceived social support: Childhood adversity/ financial problems or homelessness.

Findings: There was no association between any measure of mental health and veteran status in men, except for more violent behaviours (aOR: 1.44); while in women, a significant association was found between veteran status and ever having suicidal thoughts (aOR: 2.82).
No differences in treatment-seeking behaviour were identified between veterans and non-veterans with any mental disorder.
There were no differences between female veterans and non-veterans on any measure.

Determinants

Determinants: Younger groups aged < 65

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Afifi et al. (2016)	Cross-sectional survey (national)	Canada	Canadian Armed Forces Canadian Community Health Survey–Mental Health in 2012	N = 8,161 Age range: 18–60 years Regular Forces personnel N = 6,692, Sex: 86.1% men Reserve Forces personnel N = 1,469, Sex: 90.6% men	Canadian general population from the Canadian Community Health Survey–Mental Health in 2012 N = 15,891 Age range: 18–60 years Sex: 49.9% men	Self-reported child abuse exposure (CAE) Deployment-related trauma Suicide-related outcomes
Findings: Any child abuse exposure was higher in the Regular Forces (47.7%) and Reserve Forces (49.4%) than the general population (33.1%). All types of child abuse were associated with increased suicidal ideation, suicide plans, and suicide attempts in the general population and both group of veterans. Many associations were significantly weaker in military personnel than civilians.						
Ben-Shalom et al. (2016)	Cross-sectional survey (national)	US	Disability and program participation among US veterans	N = >28,000+ Age range: 18–64 years Sex: No information	Non-veterans in the same national survey N = >330,000 Age range: 18–64 years Sex: No information	Disability Work limitations VA Compensation Disability Insurance (DI) or Social Security Income (SSI) program participation
Findings: Age by veteran status interaction effects on change in prevalence of disability over time. From 2009 to 2013, 6QS disability (serious difficulty concentrating, remembering, or making decisions) appears to have risen slightly for the older veterans' age group (55 to 64 years) and more substantially for the younger group (18 to 39 years), while for non-veterans it remained flat. Work disability (2002–2013) increased over time for younger veterans (18–39 years) and most notably for the middle-aged group (55–64 years), but not for non-veterans. The Social Security Disability Insurance (DI)/Supplemental Security Income (SSI) increased more for veterans than non-veterans.						

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Bergman et al. (2014)	Retrospective case matched cohort study	UK	Scottish Veterans Health Study.	N = 56,570 (56,205 included in the analysis) Age and sex: no information provided. Birth year: from 1945 Sex: 90.7% men	Scottish civilians matched for age, sex and area of residence N = 172,753 (172,741 included in the analysis) Age and sex: no information provided	Acute Myocardial Infarction (AMI) Mortality Socioeconomic status
Findings: Age group by veteran status moderation: There was an increased risk of AMI among veterans born in 1945–1959, but not among those born from 1960 onward—birth cohort effect remained when adjusted for effect of regional SES. Case-fatality was lower among veterans at 30-day after adjustment for regional SES but this effect was confined to older veterans born prior to 1960.						
Bergman et al. (2016b)	Retrospective case matched cohort study	UK	Smoking-related cancer among UK (Scottish) veterans born between 1945–1985	N = 56,570 (56,205 included in the analysis) Age and sex: no information Birth year: from 1945 Sex: 90.7% men	Scottish civilians matched for age, sex and area of residence N = 172,753 (172,741 included in the analysis) Age and sex: no information provided	Smoking-related cancer diagnosis Mortality Prescribing data (individual level)
Findings: Age group by veteran status moderation. Veterans living in Scotland born before 1955 were at increased risk of smoking-related cancer compared with non-veterans, but younger veterans were not.						
Bergman et al. (2015a)	Retrospective case matched cohort study	UK	Scottish Veterans Health Study.	N = 56,570 (56,205 included in the analysis) Age and sex: no information provided. Birth year: from 1945 Sex: 90.7% men	Scottish civilians matched for age, sex and area of residence N = 172,753 (172,741 included in the analysis) Age and sex: no information provided	Alcoholic Liver Disease (ALD)
Findings: Stress or PTSD was strongly associated with ALD in veterans and non-veterans. However, veterans with a diagnosis of stress or PTSD were not at statistically significantly greater risk of alcoholic liver disease than non-veterans with stress or PTSD. Veterans were at no greater risk of alcoholic liver disease or alcohol-related death than the general population. There was a slight but significantly reduced risk after adjusting for regional SES.						

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Bergman et al. (2015b)	Retrospective case matched cohort study	UK	Motor Neurone Disease (MND) among UK (Scottish) veterans born between 1945–1985	N = 56,570 (56,205 included in the analysis) Age and sex: no information provided. Birth year: from 1945 Sex: 90.7% men	Scottish civilians matched for age, sex and area of residence N = 172,753 (172,741 included in the analysis) Age and sex: no information provided	MND Mortality Socioeconomic status
Findings: No interaction effect between trauma and veteran status: increased risk of MND in veterans and non-veterans was associated with a history of trauma or road traffic accident in both veterans and non-veterans (OR: 1.71, 95% CI: 1.29–2.28, p=0.002). The increased risk was independent of birth cohort, length or period of service, or year or recruitment.						
Blosnich et al. (2013)	Cross-sectional survey (national)	US	Health of sexual minority US female veterans Data derived from Behavioural Risk Factor Surveillance System (BRFSS) surveys	N = 53 (sexual minority female veterans, lesbian/bisexual) Mean age: 54.0 [SD 1.58] Sex: 100% female	N = 1,010, 100% female (sexual minority female non-veterans, lesbian/bisexual) Mean age: 48.8 [SD 0.51] N= 845 (female heterosexual veterans) Mean age: 58.2 [SD 0.60]	Mental health Physical health Current smoking Sleep Body Mass Index (BMI)
Findings: Sexual minority women veterans had higher rates of smoking (OR: 2.31, 95% CI: 1.19–4.48) than heterosexual women veterans. After adjusting for sociodemographic characteristics, sexual minority women veterans had more inadequate sleep (OR: 2.10, 95% CI: 1.16–3.83) than sexual minority non-veterans; and had more inadequate sleep (OR: 2.26, 95% CI: 1.24–4.15) than heterosexual veterans.						
Cheung et al. (2000)	Cross-sectional: laboratory tests + survey	US	HCV infection among US veterans	N = 8558 veterans (tested for HCV) Age range: 28–89 years Sex: not provided N = 2985 anti-HCV positive N = 409 newly diagnosed anti-HCV positive	Sentinel counties' HCV infection data Age and sex: not provided	Hepatitis C Virus serology Risk factors for HCV HCV viremia and genotypes

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Findings: Risk of factors for HCV infection identified in 409 consecutive veterans were intravenous drug abuse (81% vs 54% non-veterans), unknown (11% vs. 1%), blood transfusion (3% vs. 4%), sexual/household contact (1% vs. 18%), blood transfusion/intravenous drug abuse (2% vs. not reported) and tattoo (1% vs. not reported) compared with sentinel counties' data. Authors' conclusions: We found the epidemiology of Hepatitis C infection was different in the veteran population compared to published data on non-veterans.						
De Luca et al. (2016)	Cross-sectional survey	US	Mental health care utilisation among US veterans Texas Behavioural Risk Factor Surveillance System (BRFSS) (2007).	N = 1124 Mean age: 53.6 [SD 18.2] Sex: 92.4% men	Non-veterans within Texas BRFSS. N = 7,439 Mean age: 44.2 [SD 15.6] Sex: 43.2% men	Attitudes to mental health, stigma towards mental health Social and emotional support Mental health treatment (i.e. utilisation)
Findings: Veterans were older (mean 54 vs. 44 years), more likely to have some college or graduate education (70% vs. 55%), to be married/coupled (73% vs. 68%), formerly married (19.4% vs 17.0%) and not in the workforce (40.7% vs. 32.5%) than non-veterans. There was no difference on frequency of receiving emotional support. A slightly higher rate of veterans (12%) utilised mental health treatment than non-veterans (11%), but this was not statistically significant (p = 0.259). Perceived stigma, social supports, and mental health attitudes were not significant predictors of mental health treatment utilisation among veterans and general population. Authors' comment: It is important to understand help-seeking patterns among this increasingly racially and ethnically diverse population, including those factors that promote or inhibit utilisation of mental health treatment.						
Delcher et al. (2013)	Cross-sectional survey (national)	US	Data from 2003, 2004, 2009 and 2010 Behavioural Risk Factor Surveillance (BRFSS)	N=18,842 in 2003 N=21,841 in 2004 N=26,016 in 2009 N=25,654 in 2010 Age range: 18–64 years Sex: no information	Working age non-veteran participants within the same national survey (BRFSS) N, age and sex: No information	Financial barrier to medical care Insurance status Sociodemographic General health status Physical distress days Mental distress days Smoking Binge drinking
Findings: Experiencing a financial barrier was more common for women veterans aged 18–44 years (13.5%).						

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
The trends for women veterans relative to men and for younger veterans relative to older women veterans showed reduction in financial barriers to health care over time. The study observed increasing reduction in financial barriers in women veterans relative to non-veteran women in the general population.						
Dichter et al. (2011)	Cross-sectional survey (national)	US	Intimate Partner Violence (IPV) data (IPV module) from the Centres for Disease Control and Prevention (CDC)'s Behavioural Risk Factors and Surveillance System (BRFSS) for 2006	N = 503 Age range: 18–34 37.2%, 35–44 24.9%, 45–54 22.0% and ≥55 15.8% Sex: No information provided	Non-veterans in same survey (BRFSS) N = 20,659 Age range: 18–34 30.1%, 35–44 19.3%, 45–54 19.1% and ≥55 31.5% Sex: No information provided	Intimate partner violence (IPV) CVD risk factors (e.g. depression, smoking, drinking, lack of exercise, overweight)
Findings: Veteran women were more likely to report lifetime IPV victimisation than non-veteran women (33.0% vs. 23.8%). IPV was associated with current depression symptoms, current smoking, and binge or heavy drinking. There were no significant associations between lifetime IPV victimisation and lack of exercise or being overweight or obese. Conclusion: IPV victimisation is associated with an increased risk of heart health risk factors.						
Hoglund & Schwartz (2014)	Cross-sectional survey (national)	US	Behavioural Risk Factor Surveillance System (BRFSS) (2010, 2011, 2012).	Deployed veterans N = 978 Mean age: men 42.55 [SD 8.6]; women 41.0 [SD 8.8]. Sex: 86.5% men Non-deployed veterans N = 1,550, Mean age: men 46.4 [SD 7.9]; women 44.9 [SD 7.9]. Sex: 75.5% men	Non-veterans within the Behavioural Risk Factor Surveillance System (BRFSS) (2010, 2011, and 2012) N = 39,375 Mean age: men 42.1 [SD 10.0]; women 42.7 [SD 9.5]. Sex: 34.7% men	Mental health status measured as: how many days (in past 30 days) mental health not good? <13 days or 14+ days.
Findings: Across all categories, a greater proportion of women than men were college educated (civilians 66.9% vs non-deployed veterans 81.8% vs. deployed veterans 92.4%).						

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Compared with civilian status, deployed status was associated with adverse mental health for men (OR: 1.361, 95% CI: 1.055–1.755, p = 0.018). Compared with civilian status, nondeployed status was associated with adverse mental health for women (OR: 1.525, 95% CI: 1.152–2.018, p = 0.003), but not for men (OR: 1.169, 95% CI: 0.943–1.448, p = 0.155).						
Lehavot et al. (2014)	Cross-sectional survey (national)	US	1999-2010 National Health and Nutrition Examination Survey	N = 151 Mean age: 40.8 [SD 0.96] 20.7% aged 50-59 years Sex: 100% women	N = 8738 Mean age: 39.7 [SD 0.15] 23.5% aged 50-59 years Sex: 100% women	Age at first intercourse Number of sexual partners Presence of sexually transmitted infections (STIs)
Findings: Adjusted for age, race/ethnicity, education and marital status, women veterans reported a younger age at first intercourse and a higher number of sexual partners.						
McCauley et al. (2015)	Cross-sectional survey (national)	US	US veterans within 2010 Behavioural Risk Factor Surveillance System (BRFSS).	N = 631 Mean age: 50.5 SD [1.14] Sex: 100% women	US non-veterans with 2010 BRFSS N = 35,854 Mean age: 49.4 SD [0.18] Sex: 100% women	Adverse Childhood Experience (ACE) Health outcomes Disability.
Findings: Women veterans reported a higher prevalence of 7 out of 11 childhood adversities than women non-veterans, including household alcohol abuse (31.5% vs. 24.9%), exposure to domestic violence (23.4% vs. 15.9%), physical abuse (27.7% vs. 16.4%), emotional abuse (40.0% vs. 27.6%), and sexual abuse (touched sexually: 24.4% vs. 14.1%; made to touch another sexually: 14.8% vs. 9.8%; forced to have sex: 10.0% vs. 5.7%). Additionally, a significantly higher proportion of women veterans reported both family dysfunction and abuse (34.3% vs. 26.8%, p = 0.034) and had a higher mean ACE score (2.32 SD [0.20] vs. 1.72 SD [0.03], p = 0.003) than women non-veterans. Women veterans were more likely to be current smokers (24.9% vs. 17.4%). Despite women veterans' higher prevalence of ACE (both childhood household dysfunction and abuse), their health outcomes did not differ substantially from those of non-veterans.						
McLay et al. (2000)	Cross-sectional survey (1 US State)	US	Epidemiologic Catchment Area Study in 1981, 1982, and 1993 to 1996	N = 208 Age range: ≤60 83.6%, 61–70 14.9%, ≥71 1.4% Sex: 95.2% men	Non-veterans in same study N = 1216 Age range: ≤60 82.8%, 61–70 13.7%, ≥71 3.5% Sex: 74.4% men	Cognitive Function and Decline measure (Mini-Mental State Examination [MMSE])

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Findings: Veterans had significantly less cognitive decline after about 11.5 years than non-veterans. Correcting for sociodemographic factors strengthened rather than weakened the differences observed between veterans and non-veterans. No significant interactions were seen between veteran status and age, sex, race, education or baseline MMSE.						
Miech et al. (2013)	Cross-sectional survey (national)	US	National Survey of Drug Use and Health (NSDUH) in years 1985, 1988, and 1990-2010	N = 9.9% of total sample (i.e. approx. 48,040) Age range: 20–59 years (age-period cohort analysis) Sex: no information	Non-veterans in same national survey N = 90.1% of total sample (i.e. approx. 437,214) Age range: 20–59 years (age-period cohort analysis) Sex: no information	Hallucinogen use (e.g. type – LSD, PCP, peyote, mescaline, psilocybin [mushrooms], and ecstasy) Alcohol use Illegal drug use pre-18 years of age
Findings: The overall prevalence of past-year hallucinogen use for all survey years combined was 0.89% for veterans and 1.5% for nonveterans. Among the birth cohort who were young adults immediately before the implementation of antidrug policy (those in the 1960–1964 birth cohort), odds of past year hallucinogen use were twice as high for veterans as non-veterans (1.1% vs. 0.5%) over the life course. This difference disappeared among birth cohorts that were young adults after the antidrug policies were implemented, when the prevalence of past-year hallucinogen use would be expected to be higher for veterans because of their significantly higher rates of illegal drug use in adolescence. After the drug-testing policies were implemented veterans had significantly lower prevalence of past-year hallucinogen use than non-veterans among the subgroup of respondents who reported a history of illegal drug use before the age 18 (OR: 0.77, p<0.01). Authors' statement: trends in hallucinogen use were driven primarily by birth cohorts						
Mitchell et al. (2014)	Cross-sectional survey	US	Participants recruited from larger study evaluating effects of computer intervention targeting anxiety sensitivity Total sample 56 Mean age: 39.98 SD [17.04] Sex: 80.4% men	N = 28 Age and sex: no information provided	Non-veterans recruited from the community N = 28 Age and sex: no information provided	Presence of psychiatric diagnoses (including PTSD) Traumatic events and symptoms Anxiety Sensitivity (AS) Index Depression inventory

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Findings: 85.2% of reported a traumatic event compared with 75% in civilians. There were no significant differences between veterans and civilians on the presence of a traumatic event, t (53) = .93, p = .35, or number of traumatic events reported.						
Montgomery et al. (2013)	Cross-sectional survey (national) 2010 Washington States BRFSS	US	Relationship between adverse childhood adversity and adult adversity among US veterans	N = 293,707 Mean age: 57.3 years [SD 17] Sex: 92.7% men	Non-veterans in same national survey N = 2,020,281 Mean age: 44.8 [SD 14.1] Sex: 42.4% men	Adverse Childhood Experiences (ACE) Psychological distress Adult homelessness Mental health problem (K10) Health problems
Findings: Individuals with a history of active military service reported slightly elevated adverse child experience scores (1.8 vs 1.7) and higher rates of adult homelessness (6.0% vs 5.5%) than individuals without a history of active military service. Childhood adversity increased the likelihood of mental health problems (OR: 1.67, 95% CI: 1.67–1.68) among individuals with a history of active military service. Childhood adversity experience increased greater the likelihood of homelessness (OR: 1.69, 95% CI: 1.68–1.69 vs OR: 1.42, 95% CI: 1.41–1.43) and health problems (OR: 1.39, 95% CI: 1.39–1.39 vs OR: 1.22, 95% CI: 1.21–1.22) among those without a history of military service. Conversely, the relationship between childhood adversity experience and mental health problems was stronger for those with a history of active military service (OR: 1.63, 95% CI: 1.62–1.64 vs OR: 1.95, 95% CI: 1.93–1.98). The relationship between childhood adversity and adult adversity changes in degree when history of active military service is controlled.						
Oppezzo et al. (2016)	Cross-sectional survey (1 US State)	US	Participants were recruited from addiction treatment clinics at the San Francisco Veterans Affairs Medical Center	N = 250 Mean age: 52.7 [SD 10.0] (24–77 years) Sex: 96.4% men	Non-veterans undergoing addiction treatment in same settings N =560,558 Age range: 45–64 years Sex: 100% men	Profile of Mood States Health status (e.g. SF-12) Depression Health utility Engagement in health behaviours Treatment related measures
Findings: Veterans had an addiction severity index scores of 0.11 ± 0.09 for drugs and 0.17 ± 0.16 for alcohol, each of which meet the cut-off scores for dependence, and 36% reported trauma exposure. Only 7% of the sample met criteria for all five measured health behaviours (practicing stress management, good sleep hygiene, regularly exercising, non-smoking, and daily consumption of 5 or more servings of fruits and vegetables), 19% met four, 32% met three, 24% met two, 13% met one, and 4% did not meet criteria for any of the assessed health behaviours.						

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
When adjusting for age, pain, addiction severity, race/ethnicity, subjective SES, and trauma exposure, those who engaged in multiple health behaviours had higher scores on psychological measures of quality of life. Engagement in healthy lifestyle behaviours of stress management, sleep hygiene, and physical activity was associated with better quality of life in a veteran sample with multiple comorbidities.						
Price et al. (2001)	Cross-sectional survey (national)	US	Washington University Vietnam Era Study Phase III (VES-III) - Vietnam War cohort	Sample: n=672 Age: No information provided Sex: 100% men	Non-veterans in same survey N = 1511 Age: No information provided Sex: 100% men	Health care use Drug use Class of Drug Remission PTSD symptoms
Findings: Prevalence rates of drug use were highest among veterans who tested positive for drug use (sedatives 38.7%, stimulants 44.3%, marijuana 72.1%, cocaine 44.6% and opiates 31.0%) when eligible for return from overseas (DEROS+), followed by those veterans who did not use drugs (sedatives 15.1%, stimulants 19.8%, marijuana 37.3%, cocaine 14.4% and opiates 9.1%) at that time (DEROS-). Rates were lowest in non-veterans for all classes of drugs (sedatives 8.1%, stimulants 10.2%, marijuana 26.4%, cocaine 12.7% and opiates 5.1%).						
Schmitz et al. (2016)	Cross-sectional survey (national)	US	The Health and Retirement Study (HRS) using birth files for Vietnam era cohorts born 1948–1952 [HRS genotyped N=12,507 respondents in 2009).	N = 631 Age range: ≥51 years Sex: 100% men	Non-veterans in same national survey N = 540 Sex: 100% men	Tobacco use Health conditions Genotype (veterans only)
Findings: Overall, there was no evidence that military service impacted smoking behaviour of conscripts with an average genetic predisposition for smoking. However, veterans with a high genetic predisposition for smoking were more likely to have been smokers, smoke heavily, and are at a higher risk of being diagnosed with cancer or hypertension at older ages. Smoking behaviour was significantly attenuated for high-risk veterans who attended college after the war, indicating post-service schooling gains from veterans' use of GI Bill may have reduced tobacco consumption in adulthood.						
Schultz et al. (2006)	Cross-sectional survey (mail)	US	US Women veterans at VA Medical Centre outpatient department in state of Michigan.	N = 142 Mean age: 45.3 [SD 16.3] (range 20–88 years)	Civilians (recruited from health and social organisations in US state of Michigan)	-Wyatt Sexual History Questionnaire (characteristics of child sexual assault [CSA])

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
			Questionnaires were mailed to veterans randomly selected from a list of all female patients enrolled.	Sex: 100% women	N = 81 Mean age: 35.0 [SD 11.6] (range 28–66 years) Sex: 100% women	-Sexual Experience Survey (SES) -adult sexual victimisation [ASV] and sexual assault

Findings: Veterans were significantly more likely to report adult sexual assault (48.9% vs. 21.5%, p <0.001) than community participants.
Veterans and community participants had comparable rates of CSA (48.6% vs 43.2%, p =0.438) and ASV (66.7% vs. 58.2%, p = 0.212). Veterans more frequently reported sexual assault by a parental figure (92.0% vs. 68% for a non-relative as a perpetrator), longer duration of CSA (30.8 months vs. 18.3-months) and significantly greater severity of ASV (involving force/threat of force 38.3% vs. unwanted sexual contact 21.5%) than community participants.

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Smith (2015)	Cross-sectional survey (national)	US	Data from the 2010 Medical expenditures Panes Survey (MEPS)	N = 1007 Age range: 18 to <65 years Sex: No data provided	Non-veterans in same national survey N = approx. 18,593 Age and sex: No data provided	Social disabilities Health status Use of assistive devices Need for assistance with ADLs or IADLs Health service utilisation

Findings: Veterans were more likely to be married/coupled, more highly educated and with some private insurance than non-veterans.
Veterans with a disability had a lower rate of employment than veterans without a disability (15.3% vs. 78.6%, p < 0.001).
For persons <65 years, veteran status was associated with not being employed.
Veteran with any disability (aOR: 13.88, 95% CI: 6.7-18.7), social disability (aOR: 2.23, 95% CI: 0.9-5.6), cognitive disability (aOR: 2.99, 95% CI: 1.2-7.2),) were more likely not to be employed than non-veterans.
Significant differences in employment were found between veterans with and without a disability; however, no significant differences existed in employment between veterans and non-veterans with disability (Interaction effect). Disability has a stronger association with not being employed than veteran status.

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
West & Weeks (2006a)	Cross-sectional survey (national)	US	Mental distress among younger US veterans before, during, and after invasion of Iraq	N = 3,123 (year 2000) N = 5,918 (year 2003) Age range: 18 to ≥65 years Sex: 100% men	Non-veterans in Behavioral Risk Factor Surveillance System (BRFSS) survey N = 49,701 (year 2000) N = 67,403 (year 2003) Age range: 18 to ≥65 years	Physical health Mental health

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
					Sex: 100% men	

Findings: Veteran status by age group interactions. Younger VA patients in 2003 reported a substantially higher number of poor mental health days in two intervals: during the Iraq war build up and invasion, and later, when resistance on the ground re-intensified.
For poor physical health—in those with at least 5 days' poor health—the number of problem days was consistently greater among older men and among VA patients and was highest among Vietnam era VA patients.

Authors & Year	Study design	Country	Study population and sampling	Veterans N, age, gender	Non-veterans N, age, gender	Primary outcome measures
Woodhead et al. (2011b)	Cross-sectional survey (national)	UK	UK veterans identified within the 2007 Adult Psychiatric Morbidity Survey (APMS).	N = 257 Median age: men 49 years (IQR 40–59); women 46 years (IQR 39–58) Sex: 81.7% men	Non-veterans: age and sex frequency matched and were identified within same national survey N = 504 Median age: men 47 years (IQR 39–58); women 45 years (IQR 38–56) Sex: 81.5% men	Perceived social support Mental health Treatment seeking behaviour Perceived social support Childhood adversity/ financial problems or homelessness

Findings: Male veterans reported more childhood adversity (47.9% vs. 39.3%) and were more likely to have experienced a major trauma in adulthood (49.4% vs. 36.2%) than male non-veterans.
Early service leavers were more likely to be heavy drinkers (aOR: 4.16, 95% CI: 1.08–16.00) than longer serving veterans. No differences in treatment-seeking behaviour were identified between veterans and non-veterans with any mental disorder.
Among men, veterans were less likely to be single than non-veterans and reported more childhood adversity and major trauma since age 16. There were no differences in perceived social support, homelessness or money problems.
Among men, there were no differences in severe alcohol use, alcohol dependence, dependence on any drug, or suicide ideation. However, the veterans were more likely to report violent behaviours than non-veterans.
There were no differences between female veterans and non-veterans on any measure.

Determinants: Older groups aged ≥ 65

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Non-veterans age, gender (N)	Primary outcome measures
Bramsen et al. (2007)	Cross-sectional survey (national)	Netherlands	Wartime stress and mental health among Dutch WWII veterans	Sample: n=1448 (n=300 est. veterans) Mean age: 77.3 years SD [2.9] Sex: 62% men	Non-veterans (Dutch WWII civilian survivors, i.e. with various wartime exposures but not military service) N, age and sex: No information provided.	World War II (WWII) exposure: PTSD A-criterion events: - PTSD symptoms Alcohol use Optimism Physical health
Findings: The highest hazard rates of mortality were found among military veterans and war survivors who had been seriously wounded. University level of education was associated with lower hazard of death (HR: 0.05, p<0.05). PTSD, suicidal thoughts, and particularly depression were associated with a higher hazard rate. Of the 10 PTSD A-criterion, two of them showed statistically significant and unique contributions: 'seriously wounded' (HR: 1.54, p < 0.05) and 'seen someone die' (HR: 1.26, p < 0.05), after controlling for gender, age, and education. Depression, anxiety, and somatic complaints appeared to act as mediators between the wartime stressor 'permanent disability or illness' and survival time.						
Chi et al. (2006)	Cross-sectional Survey (national)	US	Influenza and pneumococcal vaccination among older US veterans who participated in the 2003 Behavioral Risk Factor Surveillance System	N = 13,999 3,265 VA users (21%) 10,677 Non-VA users (79%) Age range: ≥ 65 years Sex: 96% men	Non-veterans from influenza and pneumococcal vaccination population N = 40,331 Age range: ≥ 65 years Sex: 14.8% men	Vaccination – influenza and pneumococcal General health Asthma Diabetes Smoking
Findings: Influenza and pneumococcal vaccination rates were higher for veterans than non-veterans (74% vs 68% and 68% vs 63%) and for VA users than non-VA users (80% vs 72% and 81% vs 64%). Current smoking (OR: 0.6, 95% CI: 0.4–0.8) and black race (OR: 0.6, 95% CI: (0.4–0.8) were independent predictors of low influenza vaccine uptake.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Non-veterans age, gender (N)	Primary outcome measures
Elder et al. (1994)	Longitudinal study (birth cohorts)	US	Longitudinal data from the Standford-Terman study	N= 278 (birth year 1909) N = 434 (birth year 1911) Sex: 100% men	Non-veterans in same longitudinal study N = 244 (birth year 1909) N = 309 (birth year 1911) Sex: 100% men	Father's SES IQ of subjects Occupational status Time of entry to military (early, middle, late) Major events Post-war health
Findings: Late-mobilised men were at greatest risk of negative trajectories on physical health [i.e. as substantial social disruptions, from family to work and other civilian pursuits]. No career differences between subgroups (early, mid, late entry to the military). Most men experienced upward progression in work life after the war, though men with early entry to the military service were more likely to experience a pattern of job turnover without career progress. Social obligations in roles and life patterns varied by age.						
Hisnanick (1994)	Cross-sectional survey (national)	US	Longitudinal study of aging (LSOA) (cohort of older Americans)	N = 748 Age: 1984 sample ≥ 70 years Sex: 96% men	Non-veterans in same national survey N = >4300 Age and sex: no information provided	Personal-level data Health status ADLs (increase/decrease over survey period) Death
Findings: Veterans were less likely to be married (72.4% vs. 75.8%) and had higher incomes than non-veterans. However, there were no differences in relation to family living arrangements between veterans and non-veterans. Veterans may be more likely to move into a lower state of health or well-being depending on prior existence of ADL limitation, number of doctor and hospital visits in the last 12-months, level of education and getting divorced.						
Ikin et al. (2007)	Cross-sectional survey (mail)	Australia	Australian Korean War veterans identified within Australian Electoral Commission (AEC) data 2004–2005. A self-report postal questionnaire.	N = 6,122 Mean age: nearly 75 years Sex: 100% men	Australian non-veterans identified within AEC data and from the electoral roll sample N = 1,510 Mean age: nearly 75 years Sex: 100% men	Post-traumatic Stress Disorder (PTSD-S) Checklist Hospital Anxiety and Depression Questionnaire (HAD) Combat Exposure Scale (CES)

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Non-veterans age, gender (N)	Primary outcome measures
Findings: PTSD, anxiety, and depression were strongly associated with heavy combat and low rank. Increasing odds of meeting criteria for PTSD or depression were both associated with increasing combat exposure, decreasing level of rank, increasing duration of deployment, being first deployed before the armistice, and being wounded in action.						
LaCroix et al. (2016)	Cross-sectional survey (national)	US	Data from the Women's Health Initiative (WHI) program.	N = 2,279, 100% female Mean age: 71.5 [SD 4.3] N = 921, aged ≥ 80 years	Female non-veterans in same survey N = 65,879 Mean age: 68.8 [SD 4.3] N= 32,565 aged ≥ 80 years	Health behaviours Health status Metrics of ageing well Disease and disability Death
Findings: Veterans were more likely to be college educated (48.4% vs, 37.5%), to have an alcohol intake of ≥ 1 drink/week (41.3% vs. 37.9%), to be a past smoker (48.1% vs. 42.5%), and less likely to be married/partnered (46.0% vs. 58.2%) than non-veterans. Modifiable risk factors predicting healthy survival were similar regardless of military service. Among the women aged ≥ 80 years, veterans were significantly more likely to live in a residential environment providing services for older people (32% vs. 22%). Healthy survival (both groups) was associated with not smoking, higher physical activity, healthy body weight, and fewer depressive symptoms.						
Lehavot et al. (2016)	Cross sectional survey (national) with follow-up for 21 years	US	1993-1998 Women's Health Initiative, follow up in 2014	N = 3,433 Mean age of sexual minority group: 64.3 [8.0] Mean age of heterosexual group: 67.1 [7.9] Sex: 100% women	N = 133,206 Mean age of sexual minority group: 59.7 [6.9] Mean age of heterosexual group: 63.2 [7.1] Sex: 100% women	Health behaviours Health conditions Mortality (all-cause and cause-specific)
Findings: Among heterosexual women, veterans reported lower mean social support scores than nonveterans (34.8 vs. 36.1), but they also reported slightly lower levels of social strain (6.4 vs. 6.5).						
Liu et al. (2006)	Cross-sectional survey (national)	US	Asset and Health Dynamics among the Oldest Old (AHEAD) survey	Sample: n=1492 Age: 70+ years Sex: No information	N = 5,579 in same national survey Age and sex: No information	Health behaviours (e.g. smoking, alcohol) Health status Functional status
Findings: Veteran status significantly impacts age-dependent transitions from functional dependence to other statuses. At age 85, functionally dependent veterans were much less likely to resolve from functional dependence and much more likely to die than their non-veteran counterparts.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Non-veterans age, gender (N)	Primary outcome measures
O'Donnell (2000)	Cross-sectional survey (national)	US	US veterans identified within the Household Component of the Medical Expenditure Panel Survey (MEPS) (Round 1) (1996).	N = 660 (61.8% of 1068) Mean age: 72.3 [SD 0.22] (range 65–90 years) Sex: 100% men	Non-veterans (within MEPS data aged 65+ years.) N = 408 (38.2% of 1068) Mean age: 75.0 [SD 0.37] (range 65–90 years) Sex: 100% men	Health status Mental health
Findings: Veterans were more likely to be a college graduate (23.8% vs. 13.2%, p < 0.0001) and less likely to be Medicaid eligible (3.9 vs. 12.1%, p < 0.0001). Poorer self-rated mental health was associated with lower educational attainment, lower socioeconomic status, and limitation in walking and cognition.						
Sim et al. (2005)	Survey (self-report questionnaire)	Australia	Korean War veterans residing in Australia (Some participants by proxy) Population sample of 2,964 Australian men aged 65 years and over drawn from the Electoral Roll	N = 6,122 (from a sample frame of 7,525 Korean war veterans) Age range: 66–99 Sex: 100% men	N = 1,893 (from a sample frame of 2,964) Age range: 66–99 Sex: 100% men	Life satisfaction Depression Anxiety PTSD Smoking Alcohol consumption (AUDIT) Quality of life Medical conditions Korean war service characteristics
Findings: 79% of Korean War veterans were current or former smokers compared with 60% of the non-veterans. Veterans were 1.5 times more likely to meet criteria for current hazardous alcohol consumption and 3 times more likely to meet criteria for a history of alcohol-related problems at some point in their life. Some but not all excesses in cancer incidence can be explained by excess smoking. The non-veterans were more likely to be partnered (77% vs. 71%) and more likely to have a post-secondary qualification (40% vs. 29%) than the veterans. Two service-related characteristics were most strongly related to poor outcomes: combat exposure and low rank.						
Weeks (2007)	Cross-sectional Survey (1 Canadian province)	Canada	Falls among community dwelling Canadian veterans	N = 69 Mean age: 81.6 SD [4.3] (65 to ≥85 years) Sex: 100% men	Non-veterans living within community, random sample drawn from a Canadian Province	General health Activity level Number prescription medications

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Non-veterans age, gender (N)	Primary outcome measures
					Department of Health and Social Services N = 68 Mean age: 74.6 SD [6.8] (65 to ≥85 years) Sex: 38.2% men	Number family physician visits/month Number of medical specialist visits/month Falls in past year
Findings: Veterans had higher utilization of physician and medical services, and had greater access to financial resources. Veterans were at higher risk of falling than the general senior population (OR: 3.80, 95%CI: 1.10–13.08) and at higher risk of becoming injured after falling. Veterans experienced a mean of 1.3 falls resulting in injury vs. 0.23 for male seniors and 0.19 for female seniors. Recurrent falls were more common among veterans (31.9%), followed by 4.8% of senior women and 3.9% of senior men. Veterans appear to be more likely to go to a doctor following a fall, compared with male or female non-veterans.						
Woodhead et al. (2011a)	Cross-sectional survey (national)	UK	UK veterans identified from the Adult Psychiatric Morbidity Survey (APMS) of England	N = 484 Age range: 65–74 46.4% and ≥ 75 53.6% Sex: 100% men	Non-veterans in same national survey N = 301 Age range: 65–74 74.3% and ≥ 75 25.8% Sex: 100% men	Health & related behaviours Physical health Perceived health Experience of homelessness and/or financial problems
Findings: Veterans were more likely to report a major trauma in adulthood (37.6% vs. 27.7%) than non-veterans. The trauma experience was military related for 24.2%, and those veterans with a military-related trauma also reported more violent behaviours than veterans who reported their trauma experience as non-military (aOR 3.70, 95% CI: 1.53, 8.95, p = 0.004).						

Determinants: Mixed age groups

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
AIHW. (2016)	Comparison of statistics 2001–2014	Australia	Personnel Management Key system database, linked with the National Death Index and supplemented by information from the Defence suicide database	All veterans serving and ex-serving in Australian Defence force 2001–2014 Age range: 18–83, analysed by 5-year age bands	All Australian men, age-standardised suicide rates	Suicide rate
Findings: After adjusting for age, when compared with all Australian men, the comparative suicide rate for ex-serving men varied by aged and was higher for those aged 18–24, but lower for those aged 55–83. The suicide rate was 53% lower than age-standardised rates for men serving full-time and 46% lower for men in the reserve; but it was 13% higher for ex-serving men.						
Almond et al. (2008)	Cross-sectional survey (national)	US	Behavioural Risk Factor Surveillance System (BRFSS) survey 2004	N = 39,627 Age: ≥65 years 39.0% Sex: 94.1% men	Non-veterans in BRFSS survey 2004 N = 247, 840 Age: ≥65 years 13.4% Sex: 43.0% men	Body Mass Index (BMI) -overweight (≥ 25kg/m2) -obese (≥ 30kg/m2) Gender Age group
Findings: Veterans were more likely to be married (72% vs. 57.0), with incomes of ≥ $50,000 dollars per year (43.6% vs. 40.7), and former or current smoking (63.6% vs. 41.7%) than non-veterans. Overall overweight prevalence in veterans was higher than in non-veterans (72.2% vs. 58.4%) and this pattern was observed in both men (73.3% vs. 66.4%) and women (53.6% vs. 52.4%). Overall obesity prevalence in veterans was slightly greater than in non-veterans (25.1% vs. 23.2%), and this was observed in men (25.3% vs. 23.5%), but not in women (21.2% vs. 23.0%). After adjusting for socio-demographics and health status, veterans were no more likely to be overweight (aOR: 1.05; 95% CI: 0.99–1.11) or obese (aOR: 0.99, 95% CI: 0.93–1.05) than non-veterans. Obesity by age group and gender followed similar trends in both veterans and non-veterans with increasing prevalence up to age 65 years, when it then declined.						
Bastian et al. (2016)	Cross-sectional survey (national)	US	US veterans in the Women's Health Initiative (WHI) survey	N =3,719	N = 141,802 in the WHI survey	Active smoking exposure Passive smoking exposure

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
				Age range: <50–59 21.1%, 60–69 29.1%, ≥ 70 49.8% (range 50–79 years) Sex: 100% women	Age range: <50–59 32.7%, 60–69 45.6%, ≥ 70 21.7% (range 50–79 years) Sex: 100% women	Lung cancer

Findings: There was no consistent pattern with age smoking was initiated; veterans were less likely to initiate between ages 15 and 19 and ≥25 years and more likely to initiate between 20 and 24 years of age.
Veterans had 2.54 additional pack years of smoking (95% CI: 1.68–3.40), 1% increase in risk of any passive smoking exposure (95% CI: 1.00–1.02) and a 9% increase in risk of any workplace exposure (95% CI: 1.07, 1.11) compared with non-veterans.

| Becerra & Becerra (2015) | Cross-sectional survey (State-based) | US | Californian (US) veterans within California BRFSS A secondary analysis of the adult portion of the public access California Health Interview Survey (CHIS) 2009 and 2011/2012 data | N = 9,993 Mean age: 60.0 SD [0.40] Sex: 100% men | Civilians in California Behavioural Risk Factor Surveillance System (BRFSS)) N = 26,999 Mean age: 41.4 SD [0.06] Sex: 100% men | Kessler 6: scale of psychological distress (SPD) |

Findings: Prevalence of currently smoking or binge drinking in the past 12-months was higher among civilians (38.46%) than veterans (29.42%).
Current asthma status was significantly associated with psychological distress in the past month (aOR: 3.1, 95% CI: 1.82–5.29) and year (aOR: 2.73, 95% CI: 1.51–4.91) among veterans but not among civilians. Other factors associated with increased likelihood of SPD among veterans were: having a high school education or less, living in poverty, not being currently employed, not being currently married/living with partner, and not having insurance in the past 12-months (for past month SPD only). In addition, while race/ethnicity and risk behaviours of smoking and/or binge drinking were significantly associated with distress among civilians, no such association was noted among veterans.
This study demonstrated that the relationship between asthma and serious psychological distress varied by veteran status.

| Boehmer et al. (2001) | Cross-sectional Veterans (1 US State) | US | Oral health of US veterans | N = 536 Mean age: 62.2 years [SD 11.96], range: 22–90 years Sex: 100% men | Non-veterans in US population survey and active duty veterans Age and sex: no information provided | Oral health status Dental care utilisation Sociodemographic (e.g. income, education) |

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
	Non-veterans (national US survey)					

Findings: Veterans were mainly white (95.0%), married (59.8%), with an income ≥ $20,000 (52.5%), unemployed (66.0%), without insurance (74.8%), and usually visited a dentist in the last year (50.5%).
Compared with the general population, veterans have poorer oral health with exception for coronal caries.
Younger, more educated VA patients with higher incomes had more teeth, fewer untreated and treated root caries, and were less likely to be dentulous or to have dentures.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Bohnert et al. (2012)	Cross-sectional survey (national)	US	Alcohol use among US male veterans	N = 36,874 Age range: ≤60 51.5%, 61–70 21.3%, ≥71 27.3%) (range 18–71 years) Sex: 100% men	Non-veterans N =77,056 (within national US population survey) Age range: ≤ 60 91.9%, 61–70 6.1%, ≥71 3.1%) (range 18–71 years) Sex: 100% men	Alcohol consumption Binge drinking Heavy drinking Veterans' Health Administration service use

Findings: The rate of any alcohol use (58.5% vs 63.7%), binge drinking (13.3% vs. 25.7%) and heavy drinking (5.0% vs. 6.3%) was significantly lower in veterans than non-veterans. However, drinking was elevated in some age groups of veterans and lowered in other age groups compared with nonveterans. Veterans aged 41 to 50 years were less likely to report any alcohol use (aOR: 0.80, CI: 0.69–0.94) or binge drinking (aOR: 0.82, CI: 0.69–0.98); those aged 51 to 60 were less likely to report binge drinking (aOR: 0.85, CI: 0.72–0.99), those aged 61 to 70 were more likely to report heavy drinking (aOR: 1.73, CI: 1.27–2.34), and ≥ 71 were more likely to used alcohol in the past 30 days (aOR:1.27, CI: 1.08–1.51) than non-veterans.
Findings do not support the assertion that prevalence of alcohol use and problem drinking are substantially higher among male veterans than the US male general population after accounting for sociodemographic differences across all ages.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Boitano et al. (2012)	Cross-sectional medical records (2 sites – 1 US State)	US	Nutritional status (differential effect of) among vascular surgery US veteran hospital patients	N = 322 Mean age: 66.1 years SD Sex: 100% men	Male non-veterans (vascular surgery patients at private [non-veteran] hospital) N = 269 Mean age: 68.6 years [SD 11.9]	Preoperative risk factors Intraoperative factors Postoperative major adverse events Mortality

Findings: Significantly more veterans had a history of smoking (54.1% vs. 30.2%) and >2 alcoholic drinks/d (14.3% vs. 7.6%) than private sector patients.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Acute renal failure (p = 0.01), and overall complications (p<.0001) were also significantly less frequent in the veterans than private sector patients. Veterans had overall better nutritional status and fewer unadjusted outcomes, including death and MAE than private (non-veteran) patients.						
Britton et al. (2012)	Cross-sectional survey (national)	US	Behavioral Risk Factor Surveillance System survey (2006)	N = 46,493 Age range: 18 to ≥75 years Sex: 100% men	Non-veterans N = 87,797 Age range: 18 to ≥75 years Sex: 100% men	Depressive symptoms Life satisfaction Morbidities
Findings: Depression mitigated the positive impact of a history of military service on life satisfaction such that depressed men with a history of military service were just as likely to be satisfied with life (OR: 0.07, 95% CI: 0.05–0.10) as depressed men without a military history (OR: 0.09, 95% CI: 0.07–0.12).						
Britton et al. (2011)	Cross-sectional survey (national)	US	Behavioral Risk Factor Surveillance System survey (2006)	N = 46,493 Age range: 18 to ≥75 years Sex: 100% men	Non-veterans N = 87,797 Age range: 18 to ≥75 years Sex: 100% men	Depressive disorder Depression symptoms
Findings: Prevalence of lifetime and current depression was similar in men with (11.6% vs. 13.5%) and without (10.81% vs. 13.05%) a history of military service. Younger age was positively associated with a lifetime diagnosis of depression (25–74 years vs. ≥75 years). Black minority status, being in a relationship, and self-reported good health were negatively associated with a lifetime diagnosis of depression. Older age, some college, being in a relationship, and self-reported good health were negatively associated with current depression.						
Brown (2010)	Cross-sectional survey (national)	US	Behavioural Risk Factor Surveillance System Survey (BRFSS)	N = 224,169 (across 5-year study) Age: ≥18 years Sex: 93% men	Non-veterans in same national survey – BRFSS Age: ≥18 years Sex: No information	Smoking Cardiac conditions
Findings: Age-adjusted prevalence of smoking during the period was 27.0% among veterans and 21% among non-veterans. For both groups, prevalence decreased across years, and from 2003 (29%) to 2007 (25%) among veterans and from 2003 (23%) to 2007 (20%) among non-veterans. Among veterans, smoking prevalence was higher among men born in 1975–1984 (36%), and those born in 1985–1989 (37%), with lower prevalence among men born in 1945–1955 (26%), 1955–1964 (33%) and 1965–1974 (27%). Prevalence of smoking for those with CHD was higher among male veterans (43%) compared with male non-veterans (31%); and slightly greater in female veterans (30.0%), than female non-veterans (28%). Smoking prevalence for those without CHD was 27% for men veterans, 21% for men non-veterans, 23% for female veterans and 18% for female non-veterans.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Capo-Ramos et al. (2012)	Cross-sectional survey (national)	US and Italy	Mood disorder and lung cancer among US veterans	N = 82,945, 100% male (inpatient hospitalization with diagnosis of lung cancer) Mean age: 51.3 years N = 3,586299 (inpatient hospitalisation for lung cancer) Mean age: 51.3 years	Non-veterans (Italian lung cancer case/control civilian population study) N = 4,000+ Age range: 30–80 years (not included in the current analysis) Sex: no information	Depression symptoms Anxiety Lung cancer Mortality Nicotine dependence
Findings: In veterans without lung cancer, the frequency of alcohol dependence and abuse, substance dependence and abuse, and schizophrenia were higher in subjects who had mood disorders.						
Cooperberg et al. (2003)	Cross-sectional database (national)	US	US veterans identified from Cancer of the Prostate Strategic Urologic Research Endeavour (CaPSURE) – national database	N = 241 Mean age: 67 years Sex: 100% men	N = 6961 Non-veterans within the same database) Mean age: 67 years Sex: 100% men	Prostate cancer (e.g. PSA at diagnosis, Gleason score) Comorbidity index
Findings: Veterans were less educated (college graduate: 8.8% vs. 16.9%), had lower income (<$10,000: 37.4% vs. 10.3%) than non-veterans.						
Cunningham et al. (2015)	Cross-sectional survey + medical record (1 US State)	US	Nutritional status of US veterans with end-stage renal disease (ESRD) on maintenance haemodialysis (MHD)	N = 33 Mean age: 60.1 [SD 6.3] (range 24–89 years) Sex: 94% men	Non-veterans with ESRD on maintenance haemodialysis (MHD) in community clinic) N = 38 Mean age: 59.4 [SD 13.0] (range 24–89 years) Sex: 55% men	Nutritional status Malnutrition-inflammation score Dietary intake Diabetes Pathology laboratory tests
Findings: Veterans showed equivalent nutrition status and dietary intake and less inflammation than the non-veterans. The veterans had higher household income (median $36,500 vs. $ 31,600). The whole sample of participants was overweight (both groups: 28.9 ± 6.2; veterans: 27.8 ± 4.4; non-veterans: 29.9 ± 7.3), showed intakes of energy (33%), protein (17%) and carbohydrate that were clearly low, while fat intake was somewhat higher than the National Kidney Foundation–Disease						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Outcomes Quality Initiative recommendations for patients receiving maintenance haemodialysis. However, comparison between veterans and non-veterans with adjustment for sex and ethnicity did not demonstrate any difference for these tested variables.
Der-Martirosian et al. (2014)	Cross-sectional survey (national)	US	Data from the 2006 -- 2010 Behavioural Risk Factor Surveillance System (BRFSS)	N = 13,611 Age: ≥55 58.8% Sex: 91.3% men	Non-veterans in same BRFSS N = 82,275 Age: ≥55 27.8% Sex: 41.8% men	General emergency preparedness Sociodemographic General health status

Findings: Most veterans' and non-veterans' households had a 3-day supply of food (88% vs. 82%, respectively) and prescription medications (95% vs. 89%, respectively), access to a working, battery-operated radio (82% vs. 77%, respectively) and flashlight (97% vs, 95%, respectively), and were willing to leave the community during a mandatory evacuation.

After adjusting for socioeconomic covariates, general health status, and disability status, households with veterans were significantly more likely than households without veterans to have a 3-day supply of food (OR: 1.22, 95% CI: 1.07–1.39), water (OR: 1.12, 95% CI: 1.02–1.23), and prescription medication (OR: 1.32, 95% CI: 1.09–1.60), and a written evacuation plan (OR: 1.15, 95% CI: 1.04–1.27), but were less likely to indicate that they would leave their community during a mandatory evacuation (OR: 0.74, 95% CI: 0.63–0.87); and equally likely to have a working battery-operated radio (OR: 1.10, 95% CI: 0.98–1.22) and flashlight (OR: 1.07, 95% CI: 0.82–1.38).

Veteran households appear to be better prepared for emergencies than do non-veteran households, although the lower expressed likelihood of veteran households to evacuate when ordered to do so may place them at a somewhat greater risk of harm during such events.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Dunt (2009)	Literature review	Australia (includes inter-national literature)	NA	NA	NA	Suicide rates Suicide risk factors

Findings: Risk factors for suicide fall into categories: socio-demographic factors (male gender; younger age; having graduated from high school; single marital status; being unemployed; living alone; negative life events before military service; living in a rural area); psychiatric and psychological factors (low cognitive functioning; depression; PTSD; traumatic brain injury); access to and availability of means of suicide; and exposure to combat. Protective factors include: service connections; regular compensation payments; good income; anti-depressant use; and psychosocial support.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Faestel et al. (2013)	Cross-sectional survey (national)	US	Behavioral Risk Factor Surveillance System (BRFSS)	N = 2,350 Newly transitioned ≤ 12-months Age: ≥65 15.1% Sex: 71.8% men	Non-veterans in 2009 BRFSS N = 355, 952 Age: ≥65 15.2% Sex: 42.1% men	Sleep insufficiency Sleep duration Self-reported health Poor mental health days

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
				N = 53,011 Long-term > 12-months Age: ≥65 42.0% Sex: 92.8% men N = 4936 (based on sleep duration module) Age and sex: No information	N = 30,983 (based on sleep duration module) Age and sex: No information	
Findings: Veterans were more likely to have more education, be former smokers, and be retired than non-veterans. Veterans were more likely to report sleep duration less than the recommended 7 hours in a 24-h period than non-veterans (34.9% vs. 31.3%), after adjustment for age and gender. After multivariable adjustment, insufficient rest or sleep (22.7% vs. 21.1%) and short sleep duration (< 7 h/night, 34.9% vs. 31.3%) were more common among veterans than non-veterans. In this veteran group (divided as newly transitioned and longer-term veterans), there was little difference in sleep between the two groups of veterans.						
Fryar et al. (2016)	Longitudinal survey (national)	US	Cardiovascular risk factors among US veterans Data from the National Health and Nutrition Examination Survey (NHANES), a complex, multistage, probabilistic survey	Sample: n=1,107 Mean age: 59.9 years range 20 to ≥60 years Sex: 100% men	Non-veterans (within same survey: NHANES) N = 3972 Mean age: 43.4 years Sex: 100% men	Cardiovascular risk factors (e.g. obesity, hypertension, dyslipidaemia, diabetes, smoking)
Findings: Adjusted predicted prevalence estimates show that veterans (42.6%) were more likely than non-veterans (33.7%) to be obese (p<0.01). After adjustment for obesity, there was no difference in hypertension, dyslipidaemia, diagnosed diabetes, or smoking between veterans and non-veterans. The age-standardised prevalence of obesity increased significantly between 2001–2004 and 2009–2012 (31.3% to 41.8%, p < 0.01) whereas there was no statistically significant change in obesity among non-veterans. Although the magnitude of decline in smoking prevalence was similar in veterans (40.7% to 35.7%, p > 0.05) and non-veterans (35.8% to 30.3%, p < 0.01), the change was only statistically significant among non-veterans.						
Gould et al. (2015)	Cross-sectional	US	2006 wave of the Health and	N = 3,494	Non-veterans in same survey 2006 wave of HRS	Depression Scale (CES-D) Beck Anxiety Inventory

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
	survey (national)		Retirement Study (HRS)	Age range: 50–64 45.8%, 65–74 27.2% and ≥75 27.0% (50 to ≥75 years) Sex: 100% men	N = 3,083 Age range: 50–64 69.8%, 65–74 20.4% and ≥75 9.7% Sex: 100% men	

Findings: Veterans were significantly more likely to have at least a high school education (≥12 years) than non-veterans (p <0.001).
Additional analysis indicated that Vietnam War veterans were more than twice as likely as WWII or Korean War veterans to have elevated depression (OR: 2.15, 95% CI: 1.54–3.00) symptoms or anxiety symptoms (OR: 2.12, 95% CI: 1.28–3.51).

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Hoerster et al. (2012)	Cross-sectional survey (national)	US	2010 Behavioral Risk Factor Surveillance Survey	N = 53,406 (veterans) Age: ≥65 44.5% N= 2144 (active duty) Age: ≥65 8.5% N = 3724 (national guard/reserve) Age: ≥65 32.0% Sex: 100% men	N = 110,116 civilians (within same survey) Age: ≥65 8.1% Sex: 100% men	Comorbidity Smoking Alcohol Lack of exercise

Findings: After adjusting for sociodemographic factors veterans were more likely to report current smoking and heavy alcohol consumption than National Guard/Reserve members and civilian men, and lack of exercise compared to active duty men and National Guard/Reserve members.
Active duty men were more likely to report current smoking and heavy alcohol consumption than civilians and National Guard/Reserve members, and reported more smokeless tobacco use than civilians. Active duty men were also more likely to be overweight than civilians and veterans. Conversely, veterans, civilians, and National Guard/Reserve members were more likely to be obese than active duty men. Civilians and National Guard/Reserve members were more likely to be obese than veterans.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Hoffmire et al. (2015)	Cross-sectional data archive (national)	US	Suicide mortality trends among US veterans (2000–2010) Data from the U.S. Department of Veterans Affairs (VA) archive of state suicide data	N = 173,969 Veterans (2000) N = No information provided Age range: < 60 52.3%, 60–69 19.4%, 70–79 20.7% and ≥80 7.7% Sex: 94.1% men Veterans (2010)	US non-veteran national suicide mortality ratios (SMRs) Non-veterans (2000) N = No information Age range: < 60 80.9%, 60–69 8.6%, 70–79 6.3% and ≥80 4.2%	Cause of death Age of death Gender

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
				N = No information provided Age range: < 60 68.6%, 60–69 25.7%, 70–79 17.0% and ≥80 13.4% Sex: 92.1% men	Sex: 41.5% men Non-veterans (2010) N = No information Age range: < 60 78.2%, 60–69 11.4%, 70–79 6.3% and ≥80 4.1% Sex: 43.8% men	

Findings: Sex moderated impact of veteran status on suicide risk. The elevated risk for female veterans (SMR: 5.89 in 2010) was higher than that for male veterans (SMR: 1.54 in 2010).

In 2000, male VHA-utilising veterans experienced 36% more suicides than expected compared to non-veteran peers, declining to 16% in 2003 and increased slightly to 23% in 2010—there was no clear period of change for female veterans—who experienced 1.5–2 times the number of suicides expected compared to non-veteran women.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Kaplan et al. (2012)	Cross-sectional survey (national)	US	Suicide risk among US veterans Data from the National Violent Death Reporting System (2003–2008)	N = 8,440 Age range: 18–34 10%, 35–44 12.3%, 45–64 38.7% and ≥65 39.0% (18 to ≥65 years) Sex: 100% men	Non-veterans N = 21,668 (from national data) Age: no data provided Sex: 100% men	Mental health status Suicidal behaviour Blood alcohol concentration Alcohol and other drug problems Life events Suicide method

Findings: Age group moderated impact of veteran status on suicide risk. Veterans were at statistically significant higher risk for suicide than non-veterans across all age groups, except for the oldest (≥65 years).

Age differences in suicidal behaviours: older (≥65 years) and middle aged (aged 35–44 years) less likely to have had a history of suicide attempts than younger veterans.

There were different rates for alcohol dependence across age groups (14.9% in 18–34 years, 6.2% in ≥65 years, 23.8% in 35–44 years and 24.3% in 45–64 years). Evidence of acute alcohol use was present at the time of death in about one third of the younger veterans but in less than 10% of the elderly veterans.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Koepsell et al. (2002)	Cross-sectional survey (national)	US	1999 Behavioral Risk Factor Survey (BRFSS)	N = 546 Mean age: 56.2 years (18 to ≥80 years)	Non-veterans in same survey N = 2,916	Health status Chronic conditions Substance use

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
				Sex: 95% men	Mean age: 43.7 years (18 to ≥80 years) Sex: 39% men	Health screening
Findings: After adjustment for age, veterans and nonveterans had similar incomes. VA users were socioeconomically worse off (income $<15,000 29% vs. 5% in males) than nonusers. Male veterans were less likely to be employed (54% vs 60%), more likely to be retired (39% vs. 31%) and more likely to have ever smoked cigarettes (71% vs 59%) or to be current smokers (24% vs 18%) than male non-veterans. Use of several screening tests varied little in relation to veteran or VA user status. Prevalence of screening tests for hypertension or colorectal cancer was generally similar between groups.						
Lehavot et al. (2012)	Cross-sectional survey (national)	US	2010 Behavioural Risk Factor Surveillance System (BRFSS) including veterans, active duty, civilian and National Guard/ Reserve women	N = 4,221 Age range: 18–65+ years (30.9% aged 55+ years) Sex: 100% women	N = 274,399 Age range: 18–65+ years (35.4% aged 55+ years) Sex: 100% women	Self-rated health Health conditions Health behaviours Health screening
Findings: Veteran women were more highly educated that civilian women (42.2% vs. 34.7% with > 4 years college) and had higher incomes (48.6% vs. 38.7% > $50,000). They were less likely to report no having no health insurance (10.8% vs 16.9%) or a financial barrier to healthcare services (12.7% vs. 16.4%). Veterans were more likely than civilians to report tobacco use (19.4% vs. 15.1%) but lack of exercise did not differ (26.3% vs. 26.8%). Veterans were more likely than civilians to have had a clinical breast exam (95.2% vs. 89.8%) and a pap smear (85.9% vs. 81.8%).						
Littman et al. (2013)	Cross-sectional survey (national) 2003–2006 National Health and Nutritional Examination	US	Physical activity among US veterans	N = 900 Age range: 21–44 19.1%, 45–64 40.7%, 65–74 22.1% and ≥75 18.1%. Sex: 100% men	Non-veterans (within same national survey) N = 2036 Age range: 21–44 60.0%, 45–64 32.9%, 45–64 32.9%, 65–74 4.9% and ≥75 2.3%.	Self-report physical activity (PA) Sedentary behaviours Physical activity monitoring (e.g., accelerometer)

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
	Survey (NHANES)				Sex: 100% men	

Findings: Proportion of veterans and non-veterans meeting PA guidelines did not differ significantly (51.1% vs. 43.9%, p =0.26).
A greater proportion of veterans reported regular vigorous leisure-time activity (30.4% vs 19.6%, p = 0.04) and muscle-strengthening activities (24.2% vs 16.7%, p = 0.051).
Based on objective measures, activity levels between veterans and non-veterans did not differ significantly.
By self-report (p= 0.02) and PA monitors (p = 0.065), estimated sedentary time was greater in veterans than in demographically similar non-veterans (3.24 vs 2.72 hrs/day).
Veterans were no more likely to meet PA guidelines but may have been more likely to perform vigorous activities and, conversely, to spend more time in sedentary activities.
Objectively measured PA failed to support the self-reported data and instead suggested that veterans may be less physically active than non-veterans.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Long et al. (2010)	Cross-sectional survey (1 clinical in 1 US State)	US	Using PVAMC electronic records, population with diabetes mellitus was identified.	N = 294 (black veterans only in the PVAMC survey) Mean age: 62.4 years Sex: over 98% men	Non-veterans identified as diabetics in the SPHHS survey N = 290 Mean age: 56.8 years Sex: No information provided	Social Capital measures Potential mediators of -health behaviours -access to medical care -utilisation of medical care HbA1c

Findings: In this study of black veterans with diabetes, living in neighbourhoods where people worked together was associated with better glucose control.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Luncheon & Zack (2012)	Cross-sectional survey (national)	US	Data 2007–2009 surveys of the Behavioural Risk Factor Surveillance System (BRFSS).	N = 110,365 Age range: 18–65+ years Sex: 99.9% men	Civilians in same national survey N = 691,497 Age range: 18–65+ years Sex: 99.9% men	Health related quality of life Physically unhealthy days Mentally unhealthy days Recent activity limitation days

Findings: Veterans were more likely to be married than non-veterans and to have graduated from college or technical school (not among whites, but among blacks, native Americans and Hispanics), and less likely to be employed (particularly among whites and native Americans especially). Household income was higher among the veterans.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Lynch et al. (2010)	Cross-sectional survey (national)	US	2003 Behavioral Risk Factor Surveillance Survey	N = 23.4% of 21,111 (actual numbers not provided) Age range: 18–34 0.93%, 35–49 7.89%, 50–64 36.07%, ≥65 years 55.11% Sex: 97.27% men	Non-veterans with diabetes in same national survey N = 21,111 Age range: 18–34 7.66%, 35–49 23.5%, 50–64 36.71%, ≥65 years 32.09% (18 to ≥65 years) Sex: 33.92% men	Diabetes diagnosis and diabetes education Diabetes self-care behaviours Quality of care

Findings: BMI ≥ 30 was significantly lower (p =< 0.001) in veterans (41.27%) than non-veterans (49.92%), and diabetes education occurred significantly less often among veterans than non-veterans (44% vs 50%).

Veterans were significantly more likely to follow measures of quality of care comprising check their feet (OR: 1.33, 95% CI: 1.09–1.64), get a dilated eye exam (OR: 1.36, 95% CI: 1.11–1.66), receive aspirin (OR: 1.31, 95% CI: 1.04–1.65), get a flu shot (OR: 1.32, 95% CI: 1.09–1.61), and ever get a pneumonia shot (OR: 1.38, 95% CI: 1.12–1.70).

On the four self-care behaviours, a significantly higher proportion of veterans than non-veterans met PA recommendations (37% vs 31%) but a lower percentage reported having adequate daily intake of fruit and vegetables (22% vs 28%).

Veterans have better self-care behaviours and receive better preventative care than non-veterans.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
McInnes et al. (2010)	Cross-sectional survey (national)	US	US veterans randomly selected adults from a panel of 60 000 US households	N = 3,408 Age range: 21–34 8.9%, 35–49 22.2%, 50–64 35.7%, 65–74 21.0% and ≥75 years 12.3% Sex: 93.9% men	Non-veterans within same national survey N = 5,456 Age range: 21–34 26.0%, 35–49 37.2%, 50–64 23.1%, 65–74 9.2% and ≥75 years 4.6% Sex: 38.6% men	Internet use for health-related purpose Urban vs non-urban Travel time to medical care Health status Chronic conditions

Findings: Of veterans who responded, 54% had used the internet and 29% had used the internet specifically for health issues.

Nearly one-third of all respondents nationally reported using internet to search for health-information, with veterans reporting similar health-related internet use (29.2%) to non-veterans (32.5%) (p=0.18). About 7–8% of both veterans and non-veterans used the internet frequently (monthly or more often) for health-related information.

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Health-related internet use was associated with more education (OR: 2.32, CI: 1.45–3.74, most vs least educated group), urban location (OR: 2.41, CI: 1.66–3.50), and worse health (OR: 1.85, CI: 1.16–2.95, fair/poor versus very good/excellent).						
Nelson (2006)	Cross-sectional survey (national)	US	BRFSS	N = 6,338 Veterans who used VA Age range: 18–39 years 9.1%, 40–59 years 33.8%, >60 years 57.1% Sex: 94.4% men N = 27,111 Veterans with no use of VA Age range: 18–39 years 14.4%, 40–59 years 33.6%, >60 years 47.0% Sex: 94.4% men	Non-veteran identified within BRFSS database N = 208,913 Age range: 18–39 years 44.4%, 40–59 years 36.5%, >60 years 19.1% Sex: 40.7% men	Obesity and overweight Comorbid disease Health status and disability Nutritional intake and physical activity
Findings: Veterans who used VA services were more likely to be ≥ 60 years (57.1% vs. 19.1%, respectively), male (94.4 vs. 40.7%, respectively), African American (13.6% vs. 9.8%, respectively) and to report lower income of < $25,000 (40.6% vs. 30.5%, respectively) than the general population. Only 27.8% of veterans who used VA services had normal weight (vs. 42.6% of the general population). Those veterans accessing VA had higher rates of obesity (27.7%)—including 1.8% (82,950) with morbid obesity—than other veterans (23.9%) and the general population (22.8%). Veterans who used VA services were less likely to meet recommendations for physical activity (34.8% vs. 38.8%, respectively), to follow healthy guidelines (20.8% vs. 23.9%, respectively), or to eat the daily recommended fruit/vegetable intake than non-veterans (20.8% vs. 23.9%).						
Patel et al. (2016a)	Cross-sectional survey (national)	US	US veterans identified within Women's Health Initiative (WHI) Survey. Study participants were postmenopausal women aged 50–79 years at baseline (Total sample size 144,956)	N = 3,687 Age: some pain, median age 69; moderate to extreme pain median age 70 Sex: 100% women	Non-veterans in the WHI survey N= 141,269 Age: some pain median 63 years; moderate to extreme pain median 64 years Sex: 100% women	Pain and other comorbid conditions SF-36 – (physical functioning only) Fatigue, depressive symptoms and insomnia
Findings: Veterans and non-veterans did not differ on moderate-to-severe pain (20.8% and 20.2%) or prevalence of pain interference (16.8% and 15.7%).						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Veterans with moderate-to-extreme pain interference were substantially more likely to be obese (44.0% vs. 25.9%) and have comorbid medical conditions (hypertension, diabetes, myocardial infarction, stroke, etc.), and less likely to be physically active (median metabolic equivalent 5.3 vs. 10.4) and drink alcohol (≥1 drink/month 27.2% vs. 41.9%) than veterans with less pain interference.						
Piette & Heisler (2004)	Cross-sectional survey (national)	US	National panel survey of adults living in the US, recruited using random digit dialling (total numbers over 40,000)	N = 334 Age: ≥50 years Sex: 89.8% men Age: No information provided	Non-veterans within national census data including Medicare, private, and uninsured patients N = 3721 Age: ≥50 years Sex: Approx. <43.0% men Age: No more information provided	Chronic health problem Medication cost pressure Other financial problems Behaviours
Findings: Rates of cost-related medication underuse were lower among VA patients (12%) than among patients with Medicaid (25%, p = 0.0004), Medicare (22%, p = 0.001), or no insurance (35%, p < 0.0001). VA patients reported more prescription medications on average than other groups and lower monthly out-of-pocket medication costs than patients with either private health insurance or no insurance coverage. Less than half VA patients reported foregoing medication at least once per month due to cost (7%) than patients with Medicaid (20%), Medicare (19%), or no health insurance (28%). VA patients also were less likely than patients with Medicaid, Medicare, or no health insurance to cut back on necessities to pay medication costs, borrow money from family or friends to pay for their prescriptions, or worry about their medication costs at least once per month. Differences between VA and non-VA patients were larger in men than women.						
Shahoumian et al. (2016)	Cross-sectional survey (national)	US	Cigarette smoking and quit attempts among US veterans with coronary health disease	N = >124,000 Age range: 18–80 years Sex: No information	Non-veterans (within same national survey) N = 980,000 Age and sex: No information	Health Smoking status
Findings: Prevalence rates for smoking during one's lifetime are higher among veterans than civilians. Among men with coronary heart disease, more veterans than civilians smoked and more were daily smokers, but veterans were no more likely to attempt to quit. No differences among all women with coronary heart disease.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Not distinguishing active duty personnel from veterans can materially affect prevalence estimates in this study. Excluding active service, veteran estimates of CHD 6% compared with 5.3% in civilians.						
Shen et al. (2012)	Cross-sectional survey (national)	US	Female veterans within 2009 Behavioural Risk Factor Surveillance System (BRFSS).	N = 3747 (matched) Age range: 21–49 years 56.7%, 50–64 years 25.9%, ≥65 years 17.3% Sex: 100% women	Non-veterans in 2009 BRFSS N = 3747 (matched) Age range: 21–49 years 56.3%, 50–64 years 26.9%, ≥65 years 16.8% Sex: 100% women	Health related quality of life (HRQOL) Financial barriers to health care access.
Findings: Both veterans (14%) and non-veterans (14.5%) indicated financial barriers to receiving care; and, 40.4% of the non-veterans and 34.1% of the veterans who reported poor mental health also reported having financial barriers to receiving care; whereas 8.3% of the non-veterans and 7.8% of the veterans who reported excellent mental health also reported financial barriers to care.						
Thorp et al. (2012)	Cross-sectional survey (national) (Secondary data analysis)	US	Schizophrenia among older US veterans	N = 373 Mean age: 57.13 SD [6.25] Sex: 100% men	Non-veterans (matched within same national survey) N = 373 Mean age: 54.39 SD [9.16] Sex: 100% men	Schizophrenia diagnosis confirmation Pre-morbid adjustment scale American National Adult Reading Test Psychopathology Health related quality of life (SF-36) Everyday functioning Cognitive performance
Findings: Veterans had higher likelihood of being married (9% vs. 5%) and lower likelihood of living in a board-and-care facility (44% vs. 58%) than non-veterans. Fewer veterans endorsed current use of substances than non-veterans.						
Ullrich et al. (2008)	Cross-sectional survey (2-clinical sites in 2 US states)	US	Pain among US veterans with spinal cord injury	N = 132 Mean age: 56.5 SD [12.8] Sex: No information provided	Non-veterans (with SCI involved in a separate and ongoing study of pain (reference provided)	Primary diagnoses Place of residence

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
					N = 289 Mean age: 46.9 SD [13.7] Sex: No information provided	
Findings: Veterans were 10 years older and lived with SCI 8 years longer than non-veterans. Other characteristics on demographic and medical variables were comparable between veterans and non-veterans. In summary, differences between veterans with SCI and non-veterans with SCI were few and small in magnitude.						
Vable et al. (2016)	Cross-sectional survey (national)	US	Health and Retirement Study (HRS)	N =246 Age: >50 years Sex: 100% men	Non-veterans matched for age, youth disability status and childhood health N= 240 Age: >50 years Sex: 100% men	Depression scale Childhood SES (cSES)
Findings: Interaction effect between veteran status and SES in predicting depressive symptoms. Low SES veterans reported fewer depressive symptoms than low SES non-veterans, but there was no difference between high SES veterans and non-veterans. Ancillary results [stated as] show that GI Bill eligibility predicted more years of education for low cSES veterans than non-veterans, indicating education rather than income or wealth as an explanatory variable.						
Washington et al. (2016a)	Cross-sectional survey (national)	US	US women veterans identified from Women's Health Initiative (WHI)	N = 3,719 Age range: 50–79 years. Sex: 100% women	Non-veterans from WHI N = 141,802 Age range: 50–79 years Sex: 100% women	All-cause and cause specific mortality (+morbidity) Comorbidity Physical activity Health behaviours Depression Causes of death
Findings: All-cause mortality hazard rate ratios (adjusted HRs) were 1.16 (95% CI: 1.09–1.23) for pre-Vietnam and 1.16 (95% CI: 0.99–1.36) for Vietnam/after generations, comparing those groups with non-veterans. With additional adjustment for health behaviours, risk factors and comorbidities, this excess mortality was eliminated in both groups of veterans. By contrast, trauma-related mortality was greater in Vietnam/after generation veterans than in non-veterans, and the trauma-related mortality rate was greater in the fully adjusted model (HR = 2.93, 95% CI: 1.64–5.23).						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
Among participants born in the pre-Vietnam generation, veterans tended to be older, college-educated, employed as a professional, never married, and a current or former smoked than non-veterans. Among the Vietnam/after generation, veterans tended to have a higher likelihood of being never married and were more likely to smoke or have smoked, where differences in race/ethnicity, education and employment status were attenuated. Younger (Vietnam/after generation) women had a higher prevalence of unhealthy behaviours (more smoking, less physical activity, and higher BMI) than older (pre-Vietnam generation) women.						
Washington et al. (2016b)	Cross-sectional survey (national)	US	Women's Health Initiative	N = 3,719 Age range: 50–59 21.1%, 60–69 29.1% and 70–79 49.8% Sex: 100% women	Non-veterans in Women's Health Initiative N = 141,800 Age range: 50–59 32.7%, 60–69 45.6% and 70–79 21.7% Sex: 100% women	Social characteristics Health characteristics and behaviour practices Recreational physical activity (PA) Sedentary time (ST)
Findings: Compared with non-veteran women, veterans were older (≥ 70 years 49.8% vs. 21.7%), more likely white (87.1% vs. 82.2%), never married (10.3% vs. 4.3%) a college graduate (46.8% vs. 39.5%), currently not employed (72.9% vs. 62.2%), current or former smokers (54.0% vs. 48.2%), and previously participated in strenuous exercise 3 or more times/week (39.6% vs 21.5%). Veterans had higher baseline of physical activity (PA) than non-veterans (13.2 vs 12.5 MET-hours/week, p = 0.03). PA declined for both groups, with a steeper decline among veterans (change/visit year −0.19 vs −0.02 MET-hours/week; interaction p < 0.001). Both groups had similar ST at baseline. ST remained stable among veterans but declined slightly for non-veterans (change/visit year −0.19 vs −0.49 hours/week; interaction p = 0.01).						
Weitlauf et al. (2015)	Cross-sectional survey (national)	US	Women's Health Initiative	N = 3,706 Mean age: 67.1 SD [8.0] (50–79 years) Sex: 100% women	Non-veterans in Women's Health Initiative (WHI) survey N = 141,009 Mean age: 63.3 SD [7.2] (50–79 years) Sex: 100% women	Depressive symptoms Physical activity Comorbid medical conditions Self-reported health Self-reported hip fracture Medical characteristics
Findings: Veterans were more likely to be college educated (46.8% vs. 39.5%) and a smoker (54.1% vs. 48.2%) than non-veterans at baseline.						

Authors & Year	Study design	Country	Study population and sampling	Veterans age, gender (N)	Comparison Group age, gender (N)	Primary outcome measures
West & Weeks (2006b)	Cross-sectional survey (national)	US	2000 Behavioral Risk Factor Surveillance System (BRFSS) survey	N = 22,068 Age range: range 18 to ≥65 years Sex: 100% men	Non-veterans in 2000 Behavioral Risk Factor Surveillance System (BRFSS) survey (N=184,450 total population pool) N = 49,552 Age range: 18 to ≥65 years Sex: 100% men	Residence (Rural vs. Metro) Health status Days physical and mental health not good Need to see a doctor in past year
Findings: Interaction between veteran status and residence in predicting health status and access to care: Non-metropolitan VA patients younger than 65 years consistently reported the worst physical and mental health status and reduced access to care. VA patients reported poorer health and more days of both physical and mental health problems than other veterans or non-veterans. Veterans (VA patients) relatively less likely to be white or married, and more likely to be unemployed or have low income (p < 0.001). Non-metropolitan VA patients 45–64 years reported highest rate of poor general health, followed by non-metropolitan VA patients 65+ years.						

Interventions

Younger groups aged < 65

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Arefnasab et al. (2016) Iran Immunology	RCT	Chemically pulmonary injured veterans Mean age: 49.40 years (range 42–59)	Mindfulness-based Stress Reduction (MBSR) vs. wait list control	General health questionnaire (GHQ) St. George respiratory questionnaire (SGRQ) Immunological tests
Findings: A significant increase was reported in the lymphocyte proliferation with phyto-hemagglutinin, and peripheral blood; however, lymphocyte percentages were not affected significantly				
Babamahmoodi et al. (2015) Iran Immunology	RCT	Chemically injured pulmonary veterans Age: EFT group 48 years WL control: 50 years	Emotional freedom technique (EFT), a form of counselling that draws on various theories of alternative medicine including acupuncture, neurolinguistic programming, energy medicine, and thought field therapy vs. wait list control	General health questionnaire (GHQ-28) Saint George respiratory questionnaire (SGRQ) Immunological Test Lymphocyte Transformation Test (LTT): The enzyme-linked Immunosorbent Assay (ELISA)
Findings: EFT improved mental health (F=79.24, p=0) and health-related quality of life (F=13.89, p=0.001), decreased somatic symptoms (F=5.81, p=0.02), anxiety/insomnia (F=24.03, P<0.001), social dysfunction (F=21.59, P<0.001), frequency and severity of respiratory symptoms (F=20.38, P<0.001), and increased lymphocyte proliferation with nonspecific mitogens Concanavalin A (Con A) (F=14.32, P=0.001) and Phytohemagglutinin (PHA) (F=12.35, P-0,002), and peripheral blood IL-17 (F=9.11, P=0.006)				
Bokhour et al. (2016) US Medication compliance and physical activity	RCT	Afro-American veterans with documented hypertension and at least 1 uncontrolled BP (SBP>140 mm Hg for non-diabetics and SBP>130 for diabetics) in the past 12-months. Age: Primarily >50 years old DVDs with stories: N = 308	Educational DVD featuring stories of successfully controlling hypertension African-American veterans with uncontrolled hypertension viewed an information-only DVD about hypertension or a DVD adding African-American veterans telling stories	Current hypertension management behaviours, smoking, alcohol, exercise, beliefs about medications, self-efficacy for managing hypertension, and medication adherence

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		Age range: 50–65years, 52.3% Sex: 91.5% men Information only DVDs: N = 310 Age range: 50–65years, 51.9% Sex: 91.9% men	about successful hypertension management.	Short Test of Functional Health Literacy in Adults Post-DVD questionnaire–ratings of the extent to which they were engaged
Findings: Results favoured the Stories intervention, with significantly higher emotional engagement versus control (4.3 vs. 2.2 p < 0.0001). Intervention patients reported significantly greater intentions to become more physically active (4.6 vs. 4.4, p = 0.018), use salt substitutes (3.9 vs. 3.4, p = 0.006), talk openly with their doctor about hypertension (4.6 vs. 4.5, p = 0.049), and remember to take hypertension medication (4.8 vs. 4.6, p = 0.04).				
Burling et al. (2001) US Smoking, alcohol, drugs	RCT with 12-month follow up	Drug and alcohol-dependent cigarette-using veterans MST group (n=50) MST + G group (n=50) Usual care Average age of treatment accepters 42 years	Multicomponent smoking treatment (MST) vs. MST plus generalisation training of smoking cessation to drug and alcohol cessation (MST+G), or usual care (UC). MST program focused exclusively on smoking MST + G also covered drugs and alcohol. Usual care (n = 50) and refusers (n = 50) received standard inpatient programs (n=50)	Preliminary psychosocial interview SCID-P–presence of depressive, manic and psychotic symptoms Weekly assessment of smoking habits + breath samples Follow-up assessments at 1, 3, 6, and 12-months post-discharge
Findings: Both treatment conditions achieved continuous smoking abstinence rates (MST: 12%, MST+G: 10%, at 12-month follow-up) that were significantly higher than in the UC condition (0%). The MST condition had a continuous drug and alcohol abstinence rate that was significantly higher than that of the MST+G condition (40% vs. 20% at 12-month follow-up) although neither differed significantly from that of the UC condition (33%).				
Chang & Sommers (2014) US Substance use Mental Wellbeing (substance abuse)	RCT	Residents of a homeless veteran rehabilitation program with a substance use problem. For acupuncture: Age 46.4 ± 8.9 years. For relaxation response: Age 51.1 ± 4.6 years.	Three groups Auricular acupuncture. Relaxation response (RR). Usual care.	The degree of craving for substance. Level of anxiety.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: One session of either of the two interventions resulted in significant reductions in craving and anxiety levels, and the levels continued to drop as study participants attended additional intervention sessions. Furthermore, as the number of daily practice sessions of RR-eliciting techniques increased, the greater the effects on craving and anxiety reduction.				
Conrad at al. (1998) US Social wellbeing	RCT (enrolment 9 months and 24-months follow-up)	Homeless male veterans addicted to alcohol and/or drugs. Mean age approximately 40 years, range 25 to 70 years	Case-Managed Residential Care (CMRC) Program: 178 participants. Customary care: 180 participants.	Time points measured: during treatment at 3, 6, and 9 months and at 12, 18, and 24-months, which were post-treatment periods. History of homelessness. Addiction severity.
Findings: The CMRC program was more effective than the 21-day hospital program during the 2-year period, but it was especially effective for the first 9 months. Participants thought that CMRC program was more supportive and that it had a more practical orientation.				
Damschroder et al. (2014) US Physical wellbeing (weight loss)	RCT, 12-month follow-up	Four-hundred eighty-one overweight/obese participants from two Mid-Western Veterans Affairs (VA) Medical Centers ASPIRE (phone): N = 162, Age: 55.4 [SD 10], Sex: 84% men ASPIRE (group): N = 160, Age: 54.9 [SD 9.5], Sex: 84% men Usual care: N = 159, Age: 54.6 [SD 10.5], Sex: 87.4% men	28 sessions with a non-clinician coach via telephone or in-person groups using a small-changes obesity treatment approach compared to a 15 –30-session standard VA program 1. The ASPIRE, delivered via in-person groups 2. The ASPIRE, delivered via phone 3. The MOVE! Usual care weight management	Anthropometric measures (height, weight, and waist circumference); blood pressure and self-reported measures including a Food Frequency Questionnaire EuroQoL-5D utility assessment Satisfaction with Life Scale Lab testing for Cholesterol and glucose metabolism 6-minute walk test
Findings: Although all three programs resulted in significant weight loss 12-months after baseline, participants in the ASPIRE-Group program lost significantly more weight than the other two programs. In the first three months of treatment both ASPIRE programs resulted in more weight loss then the MOVE! Program. The ASPIRE programs resulted in more than twice the level of engagement compared to the MOVE! Program. At 3-months, improvements were more likely with the ASPIRE programs, but there were no differences between programs for any measure other than EuroQoL-5 utility, which increased more for ASPIRE-Phone participants than the ASPIRE-Group. At 12-months, participants in all three programs experienced a significant improvement in life satisfaction, high-density lipoprotein, and functional exercise capacity (i.e., 6-minute walk distance).				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Dixon et al. (2009) US Mental wellbeing Social wellbeing	RCT with 6-month follow-up	Veterans aged 18-70 years Diagnosed as having a schizophrenia spectrum disorder, major depression or psychotic disorder not otherwise specified B-CTI: N = 64, Age: 46.55 [SD 8.35], Sex: 91% men Usual care: N = 71, Age: 48.86 [SD 7.18], Sex: 90% men	Critical Time Intervention to Promote continuity of care after psychiatric inpatient hospitalisation The three-month B-CTI intervention begins before discharge. A B-CTI clinician meets with the patient, assesses needs, and maintains a high level of patient contact after discharge.	Hospital use Quality of life
Findings: Compared with the control group, the B-CTI group had significantly fewer days between their hospital discharge and their first outpatient service. B-CTI participants were more likely to have had an outpatient visit and to have had more total mental health and substance abuse visits within 30 and 180 days of discharge. They had greater continuity of care as evidenced by a greater number of two-month blocks with two or more outpatients visits over 180 days. Participants in the B-CTI group reported receiving more help in making and keeping medical and mental health appointments, making family contact and community connections, and receiving information on prescribed medications				
Eisen et al. (2012) US Mental wellbeing	RCT with 3-month follow-up	At least one psychiatric diagnosis. Cohort: N = 240 (who completed the 3-month follow-up), Age: 36–60 years, Sex: 92% men.	A peer-led recovery group vs. a clinician-led recovery group, and usual treatment	Outcome name: Mental health outcomes
Findings: There were no statistically significant differences in mental health outcomes among the groups. Across groups, depression and functioning, psychotic symptoms, and overall mental health improved significantly.				
Fields et al. (2016) US Sleep Mental wellbeing	RCT (random-ised pilot) with 3-month treatment arm	Veterans at the Philadelphia Veterans Affairs Medical Center (PVAMC) and two affiliated community-based outpatient clinics Telemedicine group: N = 32, Age: 48 [SD 13.4], Sex: 96% men Usual care group: N = 28, Age: 53.9 [SD 15.8], Sex: 88% men	Comprehensive, telemedicine-based OSA management pathway vs. traditional in-person care model	Functional Outcomes of Sleep Questionnaire [FOSQ], dropout rates, positive airway pressure [PAP] adherence rates, participant satisfaction ratings, and verbal feedback Epworth Sleepiness Scale [ESS], Center for Epidemiological Studies Depression Scale [CES-D], Health

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
				Outcomes Short Form [SF-12], and Working Alliance Inventory-Short Form (WAI-SF), and Client Satisfaction Questionnaire-8 [CSQ-8] APAP adherence
Findings: There was no significant difference in functional outcome changes, patient satisfaction, dropout rates, or objectively measured PAP adherence between groups after 3-months of treatment. Telemedicine participants showed greater improvement in mental health scores, and their feedback was overwhelmingly positive.				
Friedmann et al. (2013) US Alcohol consumption	RCT (16-week trial period)	Homeless, alcohol-dependent veterans who had 12 hours to 12-months of sobriety Age range: 18–64 years	XR-NTX (injections) versus oral naltrexone	Time points measured: baseline, weeks 4, 8, 12 and 16 Blood tests
Findings: Of the 215 potential candidates approached over a 16-month recruitment period, only 15 agreed to consider study entry and 7 were randomised. The primary reasons given for refusal were not wanting an injection; fear of needles; and not wanting to change drinking habits. Only 1 participant in the XR-NTX group returned after the first injection. Three participants in the oral naltrexone group attended all 7 visits and had good outcomes.				
Fritz et al. (2013) US Smoking	RCT (6 weeks)	Currently smoking ≥10 cigarettes per day Mean age: 55.8years [SD 10.0]	Auriculotherapy ("stop smoking" class) vs. placebo	PHQ-9 Stress scale Self-report of smoking Urine cotinine level Additional outcomes: nicotine withdrawal symptoms, perceived stress, self-report frequency of tobacco use
Findings: Auriculotherapy was found to be safe and largely free from significant side effects; however, there was no difference in the rate of smoking cessation between those participants who received true auriculotherapy and those who received sham auriculotherapy. The auriculotherapy group achieved a rate of 20.9% abstinence versus 17.9% for the placebo arm after 6 weeks. Conclusions as reported by authors: the results do not support the use of auriculotherapy to assist with smoking cessation and no evidence that auriculotherapy is superior to placebo when offered once a week over 5 weeks, as described in previous uncontrolled studies.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Garber et al. (2002) US Health literacy	RCT 24-month follow-up post discharge	Veterans with spinal cord dysfunction or multiple sclerosis (MS) admitted to hospital for surgery to repair a pelvic pressure ulcer Age: Overall mean: 53 [SD 11] Intervention mean: 55 [SD 11] Control mean: 52 [SD 11]	A structured educational model to improve pressure ulcer prevention knowledge in veterans with spinal cord dysfunction	Demographic and health information questionnaire Pressure ulcer knowledge test (PUKT) Health beliefs questionnaire Multidimensional health locus of control (MHLoC) Scale
Findings: Participants who received individualised, enhanced education about pressure ulcer prevention and management gained more knowledge during admission than those who received standard education.				
Glasner-Edwards et al. (2007) US Mental wellbeing Social wellbeing	RCT (24 weeks)	Outpatient veterans meeting DSM-IV criteria for (i) current alcohol, cannabis and/or stimulant dependence; and (ii) MDD independent substance abuse. ICBT (n=78) TSF (n=70) Mean age (all): 49.0 [SD 7.4]	Integrated, dual disorder-specific cognitive behavioural therapy (ICBT) vs. twelve-step facilitation (TSF).	HDRS—depressive symptoms Negative mood regulation (NMR) scale Social support questionnaire Alcoholics Anonymous Affiliation Scale Drug taking confidence questionnaire (DTCQ)
Findings: Self-efficacy increased among both TSF and ICBT participants during treatment, whereas self-reported ability to regulate negative affect did not change. TSF participants increased community twelve-step affiliation (TSA) during treatment, whereas those receiving ICBT reduced TSA. There were no differences in change in depression scores between groups. Changes in self-efficacy and TSA were associated with improvement in substance use outcomes at the end of treatment. Hypothesised changes in social support were not supported for either of the two groups.				
Goldberg et al. (2013) US Weight loss Mental wellbeing	RCT (6-month trial)	Veterans recruited from outpatient mental health clinics within the VA Maryland Health Care System and the District of Columbia VA. Age:	MOVE! (individual and group sessions) Control group received standard services, brochures and handouts about diet and exercise each month.	MOVE!—questionnaire for general medical health, eating habits, exercise patterns, and weight management barriers

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		Control mean: 53.5 [SD 8.1] Intervention mean: 50.5 [SD 9.9]		Impact of weight on quality of life survey; block fruit, vegetable, and dietary fat screeners Diet and exercise confidence survey SF-12
Findings: Study did not find any significant differences in weight loss or related metabolic outcomes between persons receiving MOVE! and persons receiving monthly weight monitoring and brochures and handouts related to diet and exercise. Seven participants (6% of the full sample) lost 5% of their baseline weight over the six-month study period. Continuous weight measures revealed no significant effects for month or month × treatment effects. No significant differences in weight outcomes in relation to dose (number of attended sessions) of the intervention. No group difference in change in SF-12 physical or mental health composite measures.				
Golier et al. (2016) US Physical wellbeing Mental wellbeing Cognitive wellbeing	RCT with 1-month follow-up	Gulf War Veterans with chronic multi-symptom illness (CMI), recruited from VA hospital Mean age: 49.1 [SD 7.2]	Regular doses of mifepristone vs. placebo	Primary outcome: PCS (SF-36) Secondary clinical outcome: MCS of SF-36 Symptoms of fatigue, depression, and PTSD Neurocognitive measures
Findings: Mifepristone treatment was not associated with improvement in the primary outcome of self-reported physical health status or the secondary outcome of self-reported mental health status. Mifepristone was not associated with changes in PTSD symptom severity and depression severity. Mifepristone resulted in significant improvements in verbal learning. Mifepristone treatment was associated with a (significant) 113% increase in plasma cortisol level and a 510% increase in adrenocorticotropic hormone (ACTH) level.				
Golomb et al. (2014) US Physical wellbeing	RCT	Veterans with Gulf War Illness (GWI) Q100 group Mean age:50 [SD 7.6], Sex: 73% men Q300 group Mean age: 44 [SD 6.0], Sex: 83% men Placebo group	PharmaNord-Myoquinone-CoQ10 Coenzyme Q10	Primary outcome: General self-rated health (GSRH) survey Secondary outcomes: Physical health (SPS)

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		Mean age: 48 [SD 6.1], Sex: 91% men		CoQ10 levels/CoQ10 effect modification

Findings: Q100 significantly benefited GSRH in men versus Q300 and placebo:
Physical function improved from pre-treatment ratings in Q100 versus placebo.
SPS improvement on Q300 was not significant, though the effect on Q100 did not differ significantly from that on Q300
CoQ10 treatment was associated with significantly increased CoQ10 blood concentrations (µm/mL) relative to placebo.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Goodman et al. (2016) US Mental wellbeing	RCT, 6-month post-trial follow-up	Veterans at high risk for suicide Mean age: DBT group: 36.7 [SD 11.1] TAU group: 40.1 [SD 10.6]	6-month treatment with standard DBT compared with TAU DBT combines behavioural interventions, including skills training, exposure, and problem solving, with cognitive techniques	Primary outcome: number of patients who attempted suicide in each treatment group during the trial and follow-up Secondary outcomes: suicide ideation, depression, hopelessness, and anxiety.

Findings: There was no significant difference in number or timing of suicide attempts between treatment arms.
- Both treatment groups exhibited close to a 35% hospitalisation rate with similar survival curves over the 6-month treatment plus follow-up period that did not differ between treatment arms.
- Suicidal ideation ratings, depression, and hopelessness improved over the course of the treatment trial and remained improved over the 6-month follow-up with no significant differences between treatment groups.
- Anxiety as measured by the BAI improved during the 6-month treatment trial with no significant differences between treatment groups. However, at the 6-month follow-up, DBT patients showed significantly more improvement in symptoms compared to TAU participants. The mean ± SD duration in treatment during the 6-month trial was 17.87 ± 11.5 weeks for TAU and 16.85 ± 11.0 weeks for DBT.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Grant et al. (2007) US Alcohol Smoking	RCT 96-month follow-up	Alcoholics undergoing alcoholism treatment Mean age: All: 39.6 [SD 11.5] Bupropion: 38.5 [SD 11.7] Placebo: 40.8 [SD 11.3]	Bupropion/treatment group (n = 30) Placebo group (n = 28)	Mini-International Neuropsychiatric Interview Fagerstrom Test for Nicotine Dependence (FTND) Beck Depression Inventory (BDI) Cigarette smoking 7-day point abstinence rates Continuous abstinence, drinks per day, drinks per drinking day, and percent days abstinent in the previous 30 days

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: Bupropion, when added to nicotine patch therapy, did not improve smoking outcomes. At each follow-up point, there was no significant difference in cigarette smoking outcomes between the placebo and bupropion groups. There was no difference in mean BDI between cigarette quitters and non-quitters. One third of participants on bupropion reported discontinuing the drug during weeks 1–4. No significant difference in abstinence from cigarettes in participants with and without a history of an affective disorder.				
Greene et al. (2010) US Anger problems	RCT	Male veterans with PTSD and moderate to severe anger problems Mean age: 55.1 [SD 9.0]	Anger management group therapy either through traditional face-to-face delivery or by VTC	Attrition Treatment adherence Patient satisfaction Treatment credibility Therapeutic alliance Group cohesion
Findings: There were no significant differences between face-to-face and VTC participants on treatment drop-out. There were no significant differences between conditions on the number of sessions attended or the number of homework assignments completed.				
Groessl et al. (2011) US Health Health literacy Mental wellbeing	RCT with 6-week follow-up	Veterans Affairs patients with chronic hepatitis C Mean age: HCV-SMP group: 53.0 [SD 5.2] Control group: 56.4 [SD 7.2]	Hepatitis C virus (HCV) self-management intervention - The Hepatitis C self-management programme (HCV-SMP) is designed to provide HCV-infected people with the knowledge and skills they need to improve their health and quality of life.	Health-related quality of life (HRQOL) HCV-related knowledge Self-efficacy Depression Energy/fatigue Alcohol use Health distress
Findings: SF-36 energy/vitality scores increased almost 5 points in the self-management workshop while the mean scores in the information-only group decreased 2.6 points. Statistically significant differences between groups over time were found for HCV knowledge, and HCV-related self-efficacy. Trends towards greater improvements for HCV-SMP participants were found for SF-36 physical functioning, SF-36 bodily pain, health distress, depression and VAS global health.				
Hagedorn et al. (2013) US	RCT with 12-month follow-up	Veterans with drug/stimulant and alcohol addiction CM (alcohol) group (n=94) CM (stimulant) group (n=71) Usual care (alcohol) (n=97)	Contingency management (CM) intervention vs. usual care CM intervention participants received the standard program services offered by the clinic at each site. In addition,	Primary outcome: total number of urine and breath samples out of the possible 16 samples negative for all targeted drugs

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Physical wellbeing (drug and alcohol use)		Usual care (stimulant) (n=70) Mean age: 50 for all four groups	they earned chances to win vouchers when their urine and breath test results were negative for all targeted substances (cocaine, amphetamine, methamphetamine and alcohol).	Frequency and quantity of alcohol and drug use over the previous 30 days Drug/alcohol screening: urine drug and breath alcohol samples
Findings: CM intervention participants had a significantly higher mean number of negative appointments (M=11.93) compared to usual care participants (M=10.39). By the end of the 8 weeks, 64.8% of the intervention participants were retained compared to 52.7% of the usual care participants. Compared to usual care participants, those receiving CM were more likely to maintain abstinence for the full eight consecutive weeks (29.7% of patients in the usual care group versus 42.4%, of the patients in the CM group; p<.01) as well as for at least four consecutive weeks (56.4 versus 71%, respectively; p<.01). In the alcohol dependent subgroup, CM participants achieved longer median duration of abstinence (CM intervention group—16 visits; UC group 9 visits; p<0.001). In the stimulant subgroup, there was a non-significant trend (CM intervention group—9.5 visits; UC group 7 visits; p=0.08).				
Kasckow et al. (2016) US Mental wellbeing	RCT	Veterans with schizophrenia admitted for suicidal ideation HB group: N = 25, Age: 51.0 [SD 11.7] ICM group: N = 26, Age: 51.2 [SD 11.1]	HB group: Received telehealth monitoring system using the Health Buddy, a telephone device that facilitates symptom assessment and patient-staff communication.	Participants assessed the telehealth intervention Beck Scale for Suicidal Ideation (BSS) Patient Health Questionnaire (PHQ9) Depression
Findings: Both groups exhibited improvements in suicidal ideation. No group differences were present with survival analysis when using remission (i.e., BSS score = 0) as the outcome. However, in a subgroup with a history of suicide attempts, there was a trend (p = .093) for a higher rate of remission for those in the HB condition. Telehealth monitoring for this population appears to be feasible for those who can start using the system.				
Kilbourne et al. (2008) US Physical wellbeing Mental wellbeing	RCT, 6-month follow-up	Persons with bipolar disorder and cardiovascular disease–related risk factors Bipolar disorder medical care (BCM) group (n=27) Usual care group (n=31)	BCM care consisted of four self-management sessions on bipolar disorder symptom control strategies, education and behavioural change related to cardiovascular disease risk factors, and promotion of provider engagement.	Assessments administered at baseline and at three and six months: Primary outcomes: were physical and mental health–related quality of life Secondary outcomes: functioning and bipolar symptoms

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		Mean age: BCM group: 54.5 [SD 8.7] Mean age usual care group: 56.0 [SD 8.2]		
Findings: Significant differences were observed between the two groups in change in scores from baseline to six months for the 12-Item Short-Form Health Survey (SF-12) subscale for physical health (t=2.01, df=173, p=.04), indicating that the usual care group experienced a decline in physical health over the study period Change in SF-12 scores indicated that compared with the usual care group, the BCM group showed improvements in mental health–related quality of life over the six-month study period; however, this finding was not significant Compared with usual care, BCM care may have slowed the decline in physical health–related quality of life.					
Luxton et al. (2016) US Mental wellbeing	RCT, 3-month post-treatment follow-up	US military personnel and veterans with depression In home (n=40) In office (n=42) Mean age, home group: 35, 18% aged over 50 Mean age, office group: 36, 15% aged over 50	8 sessions of behavioural activation treatment for depression (BATD) either in the home via videoconferencing (VC) or in a traditional in-office setting.	Primary outcome: scores on the Beck Hopelessness Scale (BHS) and the Beck Depression Inventory II (BDI-II) Other clinical outcomes including depression diagnosis, PTSD severity, and anxiety severity
Findings: Scores suggested relatively strong and similar reductions in hopelessness and depressive symptoms for both groups; however, non-inferiority analyses failed to reject the null hypothesis that in-home care was no worse than in-office treatment based on these measures. - The difference in reduction of the number of participants meeting criteria for major depressive disorder was not statistically significant. - No differences were found between treatment groups regarding treatment satisfaction.					
O'Connell et al. (2012) US Substance abuse Social wellbeing Housing	RCT (follow-up for up to 5 years)	Homeless veterans with substance abuse Age: Treatment as usual, N = 88: mean 42.3 ICM only, N = 52: 44.0 HUV-VASH, N = 119: 41.8	Housing and Urban Development – Veterans Affairs Supported Housing (HUD-VASH) Program with intensive care management (ICM) and rent subsidy vouchers vs. ICM only vs. Treatment as usual	Housing outcomes Days of drug or alcohol use (Addiction Severity Index) Employment Quality of life Social support
Findings: Comparison of housing outcomes among veterans enrolled in HUD-VASH and treatment-only conditions found that the access to housing vouchers facilitated by HUD-VASH was associated with particularly beneficial housing outcomes for Caucasian veterans, veterans with co-occurring disorders, and veterans with more active substance use.					

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Oslin et al. (2014) US Alcohol	RCT with 6-month follow-up	Veterans with alcoholism Intervention: ACM: N = 85, Age: 54.8 [SD 11.4], Sex: 85% men 12-step control: N = 78, Age: 57.1 [SD 10.1], Sex: 73% men	Focused on the use of pharmacology and psychosocial support. Participants met with their behavioural health provider (BHP) weekly for 30 minutes, face-to-face or by telephone.	Use of alcohol Short inventory of problems Health-related quality of life (Short Form-12)
Findings: The ACM condition has a significantly higher proportion of participants engaged in treatment over the 26 weeks [OR = 5.36, 95 % CI 2.99, 9.59}. The percentage of heavy drinking days was significantly lower in the ACM condition [OR = 2.16, 95% CI 1.27, 3.66]. Overall abstinence did not differ between groups.				
Ottomanelli et al. (2012) US Employment	RCT (1-year follow-up)	Veterans with spinal cord injury (SCI) N = 213, Age: 51.0 [SD 10.1], Sex: 96.7% men	SCI Vocational Integration Program (SCI-VIP) study, which provided supported employment (SE) vs. treatment as usual (TAU)	Competitive employment defined as competitive employment obtained after the baseline interview.
Findings: Subjects in the supported employment (SE) group were 2.5 times more likely than the treatment as usual interventional site (TAU-IS) group and 11.4 times more likely than the treatment as usual observation site (TAU-OS) group to obtain competitive employment.				
Ottomanelli et al. (2013) US Employment	RCT with 1 –year follow-up	Veterans with spinal cord injury	Participants assigned to supported employment (SE) or treatment as usual (TAU)	Primary outcome: competitive employment Secondary outcomes: health related quality of life (HRQOL), handicap and disability
Findings: There were no significant differences in outcomes between veterans who participated in SE and those who received TAU. Participants obtaining competitive employment demonstrated significantly higher scores on the Social Integration, Mobility, and Occupation dimensions of the CHART.				
Partin et al. (2006) US Physical wellbeing (health behaviours)	RCT, multicentre trial, 6-month follow-up period	Veterans aged ≥19 years with a prescription for nicotine replacement or bupropion for smoking cessation/Zyban. Age: Overall: mean age 55 ± 10.59. Usual care: 55 ± 11.00	Patients received a phone call to assess smoking status, quit challenges, and treatment preferences, and computerised progress note to providers communicating this information 2) Usual care: 949 participants.	Proportion of patients receiving repeat pharmacologic or behavioural smoking-cessation treatment in the 6-month follow-up period 7-day point prevalence abstinence and satisfaction assessed by patient survey.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: The intervention significantly increased repeat treatment rates and satisfaction with services; but, did not have a significant effect on abstinence rates.				
Salyers et al. (2014) US Schizophrenia	RCT with 18-month follow-up	Patients currently receiving (or newly admitted to) mental health services with diagnosis of schizophrenia or schizoaffective disorder IMR group (n=60) PS control (n=58) Mean age: 47.76 +/- 8.9.	Illness management and recovery (IMR) group: Trained facilitators ran group sessions using the IMR curriculum, incorporating psychoeducation, cognitive-behavioural approaches, relapse prevention, social skills training, and coping skills training. PS control: Participants were encouraged to discuss current concerns and receive group support for solving problems.	Diagnoses were assessed with the psychosis modules of the Structured Clinical Interview for DSM-IV Psychiatric (PANSS) Quality of life Illness self-management Patient Activation Measure Medication adherence Recovery Assessment Scale (RAS) State Hope Scale Service utilisation
Findings: - No significant differences were found between IMR and problem-solving groups. - Participants in both groups improved significantly over time in symptom severity, illness management, and quality of life and had fewer emergency department visits. Participation rates in both interventions were low. Only 28% of consumers assigned to IMR and 17% of those assigned to the problem-solving group participated in more than half the scheduled groups, and 23% and 34%, respectively, attended no sessions.				
Saxon et al. (2006) US Addiction	RCT, 12-month follow-up	Veterans in additions treatment Onsite group: N = 358, Average age: 45.4 [SD 7.7], Sex: 98% men Offsite group: N = 362, Average age: 46.5 [SD 7.1], Sex: 98% men	IG: randomised to medical centre CG: randomised to SUD clinic among VA pts who receive medical care within the substance use disorder clinic and those referred to a general medicine clinic at the same facility	Primary: medical service use Health related quality of life Substance use disorder treatment engagement SUD treatment outcomes VA admin costs
Findings: Over the year, patients assigned to on-site care were more likely to attend primary care (adjusted odds ratio [AOR] = 2.20; 95% CI 1.53–3.15) and to remain engaged in SUD treatment for at least 3-months (OR 1.36, 1.00–1.84). Overall, outcomes on the Mental Component Summary (but not the Physical Component Summary) and the Addiction Severity Index improved significantly over time, but did not differ by treatment condition. Total VA costs did not differ reliably across conditions.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Shahnazari et al. (2013) US Physical wellbeing (health behaviours, eating)	RCT, 6-month follow up	Veterans responsible for their own food selection, preparation, and consumption	IG: Wellness coaching: Both IG and CG receive initial 60-minute individualised nutrition education session from dietetics students. IG received individualised wellness coaching weekly either face-to-face or telephone	Primary: reduction in BMI Secondary: changes in nutrition behaviours
Findings: Average weight loss of 5k from baseline was observed in the intervention group after 6-months, whereas in the control group no change in body weight was observed. In the intervention group, 73% of participants lost weight, 15% gained weight, and 12% did not change weight after 6-months. Those in intervention group reported diets at follow-up lower in cholesterol, saturated fat, sodium, sugar and calcium and vitamin D, although when adjusted for energy, calcium increased and vitamin D remained the same.				
Willenbring & Olson (1999) US Physical and mental wellbeing	RCT with 2-year follow-up	Medically ill alcoholics Intervention N = 48, Mean age: 52.8 [11.5], Sex: 100% men Control N = 53, Mean age: 57.2 [10.0]; Sex: 100% men	Integrated outpatient treatment (IOT) vs. usual care The IOT intervention integrates techniques for addressing excessive drinking and psychosocial problems with primary medical care.	Drinking Life problems Medical service utilisation Health and well-being Mortality
Findings: Frequency of hospital use was similar in both groups. After 2 years, 28 (74%) of 38 surviving IOT patients and 17 (47%) of 36 control patients were abstinent (p = .02). Nearly 2 times as many control patients (30% [n=16]) as IOT patients (18% [n=9]) died, but the results of Cox survival analysis were not significant. There were no differences in symptoms of alcohol dependence, quality of life, or life problems. The incremental cost of IOT was approximately $1100 per patient/year.				
Worley et al. (2012) US Mental wellbeing	RCT with 9-month follow-up	Met DSM-IV criteria for lifetime dependence on alcohol, cannabis or stimulants with use in past 90 days; and major depressive disorder TSF N = 97 Average age: 49.6, Sex: 90.9% men	Twelve Step Facilitated (TSF) vs. Integrated Cognitive Behavioural Therapy (ICBT)	Outcome definition: depressive symptoms and substance use

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		ICBT N = 112, Average age: 48.8, Sex: 88.7% men		
Findings: 12-Step meeting attendance predicted lower depression and mediated the superior depression outcomes of the TSF group, explaining 24.3% of the group difference in depression. Independent of treatment group, lower depression severity predicted lower future alcohol use and mediated the effects of 12-Step meetings, explaining 15.7% of their effects on future drinking. Controlled, lagged models indicated these effects were not confounded by current substance use, suggesting that depression had unique associations with 12-Step meeting attendance and future drinking.					
Zanjani et al. (2008) US Mental health Substance abuse	RCT with 9-month follow-	Adult male veterans displaying depression and/or substance abuse, warranting psychiatric treatment Intervention N = 57, Age: 54 [SD = 12], Sex: 98% men Usual care N = 56, Age: 51 [SD = 11], Sex: 93% men	Usual care group: following psychiatric appointment, a report is sent to patient's primary care clinician, a letter is mailed home with upcoming appointment details, and an automated call is placed 2–3 days prior to their appointment. Intervention group: same initially as usual care with added TBR-CM.	Attendance at treatment
Findings: Overall, 40 participants (70%) in the intervention group compared with 18 (32%) in the usual care group engaged in at least one psychiatric treatment appointment. On average the intervention group attended more appointments compared with the usual care group (more than three compared with less than two) The TBR-CM intervention program was effective at improving psychiatric engagement.					
Zanjani et al. (2010) US Mental health Substance abuse	RCT with 9-month follow-	Adult male veterans displaying depression and/or substance abuse, warranting psychiatric treatment Intervention N = 57, Mean age: 54 [SD = 12], Sex: 98% men Usual care N = 56, Mean age 51 [SD = 11], Sex: 93% men	As above	Baseline and 6-months Dependent variables: mental functioning; physical functioning; depression; total drinks in last week and binge rate
Findings: Over time evidence of improvement of psychological health outcomes in intervention group but with no evident effects by randomised assignment. No effects on psychological health outcomes based on individual treatment attendance, psychological diagnostic group and age group. TBRCM led to increased attendance with no evidence of increased psychological health outcomes when compared to control group.					

Older groups aged > 65

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Alessi et al. (2016) US Sleep	RCT	Older veterans with chronic insomnia Mean age: 72.2 years [SD 7.7] overall Sex: n=154, 96.9% men	Cognitive behaviour therapy, using non-clinical sleep coaches	Self-reported sleep onset latency (SOL-D) Wake after sleep onset (WAS-O) Total wake time (TWT-D) Sleep efficiency (SE-D) Pittsburgh Sleep Quality Index (PSQI) Objective measure sleep efficiency Insomnia Severity Index (ISI) Depressive symptoms (PHQ-9) Quality of life (MOS-12-item SF-12-v2)
Findings: Intervention subjects had greater improvement than controls between the baseline and post-treatment assessments, the baseline and 6-month assessments, and the baseline and 12-month assessments in: SOL-D (-23.4, 15.8, and -17.3 minutes). TWT-D (-68.4, -37.0, and -30.9 minutes). SE-D (10.5%, 6.7%, and 5.4%). PSQI (-3.4, -2.4, and -2.1 in total score). ISI (-4.5, -3.9, and -2.8 in total score, respectively) (all P<.05). There were no significant differences in SE-A, PHQ-9 (depression), or SF-12v2 (quality of life).				
Burns et al. (1995) US Physical wellbeing (Health status)	RCT with 1-year follow-up	Older veterans after hospital discharge Aged 65 years or older with impairment of activities of daily living, chronic disease, polypharmacy, or two or more hospitalisations in the previous year Age: Intervention: $\overline{x}$ = 71.7 [SD 6.3] Usual care: $\overline{x}$ = 70.8 [SD 3.7]	Geriatric outpatient management of health outcomes	Health status Functional status Depression (CES-D) Mini-Mental State examination (MMSE)

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: At 1 year following randomisation, GEM clinic patients compared with subjects receiving usual care had significantly improved health perceptions, took fewer medications despite increased number of diagnoses, reported greater social activity, had improved Center for Epidemiologic Studies-Depression scale scores, and had higher life satisfaction scores. There was a trend toward improved performance of activities of daily living for GEM clinic patients. The GEM clinic patients had a 54% lower mortality (6.8% vs 14.9%). Overall, no differences were observed in the total number of hospitalisations between the groups.				
Byles et al. (2004) Australia Physical wellbeing	RCT with 3-year follow-up	Older Australian veterans and war widows All aged 70 years or over Groups 1–4: N = 942 Group 5: N = 627	Home-based Health assessments Group 1: annual visits, with report to GP, and telephone follow-up after each visit; Group 2: as group 1 with a second report to GP post telephone follow-up; Group 3: 6-monthly visits, with report to GP, and telephone follow-up post each visit; Group 4: as group 3, with second report to GP after each telephone follow-up Control group: care as usual	36-item Medical Outcomes Study Short Form (SF-36) General items assessing healthcare use, including admission to hospital in the previous year
Findings: Intervention group participants who remained in the study reported higher health-related quality of life than control-group participants (difference in Physical Component Summary score, 0.90; 95%CI, 0.05–1.76; difference in Mental Component Summary score, 1.36; 95% CI, 0.40–2.32). There was no significant difference in the probability of hospital admission or death between intervention and control groups over the study period. Significantly more participants in the intervention group were admitted to nursing homes compared with the control group (30 v 7; P<0.01).				
Chang at al. (2006) Taiwan Dietary supplements	RCT	Five kitchens of a veteran retirement home for men were randomised into 2 groups (experimental or control). Veterans were given either potassium-enriched salt	Potassium-enriched salt	Cardiovascular disease (CVD) mortality Medical expenditures

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		(experimental group) or regular salt (control group) Mean age: all groups 74-75 years		
Findings: The study showed that switching from regular salt to potassium-enriched salt reduced cardiovascular mortality, improved longevity, and cut down medical expenditures for cardiovascular-related inpatient care in a group of elderly men in northern Taiwan.				
Chen et al. (2008) Taiwan Glycaemic control	RCT	Eligible participants were aged 50 to 70 years, had type 2 DM, and were treated with oral antidiabetic drugs. Age: Program 1 62.0 ±10.1 years. Program 2: 63.6 ±8.0 years. Sex: 100% men in both groups	Program 1 (receipt of regular diabetes education between October 20 and November 25, 2004, and then every 3–4 months): 52 patients. Program 2 (receipt of a special reminder pamphlet during the holidays): 50 patients.	The primary outcome: glycaemic control during the winter holidays. Secondary analyses: changes in blood pressure, body weight, and lipid profiles. Blood samples obtained on 4 occasions at 4-to-6-week intervals.
Findings: Patients with type 2 DM who received holiday-specific educational pamphlets had better glycaemic control during the Chinese New Year holidays than those who received diabetic managed care. Recommendation: Holiday reminder pamphlets be included in general diabetes education before some special events.				
Dubbert et al. (2008) US Physical activity	RCT with 10-month follow-up	Older primary care patients, 60–85 years EXEC group: N = 101: Age: completers, 72.6 (6.0), non-completers, 72.7 (4.0) EDUC group: N = 99, Age: completers, 71.7 (5.6), non-completers, 72.1 (4.9)	Counselling for home-based walking and strength exercise EXC – counselling for homebased walking plus strength exercise targeting functional limitations – 83% retention EDUC (Control) – Discussion of their choice of health education topics - 97% retention	Baseline, 5 months, and 10 months after randomisation Exercise on monthly calendars SF-36
Findings: 14 EDUC participants reported falls or injuries. 4 EXC participants reported falls or injuries. Author comment: Our findings indicate that older male veterans are receptive to exercise interventions based in primary care. Although 25% of the recruited sample was not interested in participating, our randomisation rate of close to 40% is higher than that typically observed in these types of interventions.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Counselling in the EXC group produced greater increases in weekly frequency and minutes of walking and strength exercises and more frequent physical activity.				
Fabacher et al. (1994) US Immunisation, functional status	RCT, 1-year intervention period	Community-living veterans 70 years and older not currently receiving health care at the Sepulveda VA Medical Centre Mean age: 73 years Sex: 98% men Intervention N = 131, Age: 73.5 [SD 4.3], Sex: 97.7% men Control N = 123, Age: 71.8 [SD 7.0], Sex: 97.6% men	In-home preventative assessment program	Outcome comparisons between the two groups included: mortality, medication usage, functional status, immunisation rates, and nursing home and hospital utilisation
Findings: On average, four new or sub-optimally treated problems were identified for intervention subjects. At 12-month follow-up, intervention subjects had significantly increased their immunisation rates (P<0.001) and had a significantly increased likelihood of having a primary care physician (p < 0.05). 12-month functional status (IADL) scores were significantly higher for intervention subjects than for controls; intervention subjects maintained their functional status, while controls experienced significant decline during the follow-up year (p < 0.05). Non-prescription drug use increased significantly among controls, but not among intervention subjects (p < 0.05).				
Fried et al. (2017) US Medication compliance Quality of care	RCT	Veterans aged 65 and older prescribed seven or more medications TRIM group: N = 64, Age: 70–79 48.4%, Sex: 99% men Usual care group: N = 64, Age: 70–79 40.6%, Sex: 99% men	Tool to Reduce Inappropriate Medications (TRIM), a web tool linking an electronic health record (HER) to a clinical decision support system	Medications and chronic conditions Beers Screening tool Patient Assessment of Care for Chronic Conditions (PACIC)
Findings: Adjusting for covariates and clustering of patients with clinicians, TRIM was associated with significantly more-active patient communication among patients and clinicians. TRIM was significantly associated with correction of medication discrepancies but had no effect on number of medications or reduction in PIMS.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Fung et al. (2016) US Sleep	RCT with 12-month follow-up	Veterans 60 years or older, presence of a chronic insomnia disorder, no known history of sleep apnoea No SDB group: N = 39, Age: 72 [SD 7.7], Sex: 97.4% men; Mild SDB group: N = 95, Age: 71.9 [SD 7.9], Sex: 96.8% men.	Individual cognitive behavioural therapy for insomnia (CBTI) Group CBTI Sleep education control	Pittsburgh Sleep Quality Index (PSQI) In-home sleep study Sleep diaries Actigraphy Insomnia Severity Index Epworth Sleepiness Scale PHQ-9 Weight Pain measure
Findings: Compared with participants with mild SDB who received sleep education, participants with mild SDB who received CBTI had significant improvements in SOL (p= .0078) and PSQI total score (p = .002), but they did not have significant improvements in WASO (p = .1), TWT (p = .02), diary-measured SE (p= .01), or actigraphically measured SE (p = .7). CBTI improves sleep in older veterans with insomnia and untreated mild sleep-disordered breathing (SDB).				
Huffman et al. (2010) US Physical activity	RCT with 12-month follow-up	Veterans enrolled in the LIFE (Learning to Improve Fitness and Function in Elders) Study Mean ages: No arthritis: 77.7 Arthritis: 77.7 Arthritis and diabetes: 77.3	Home-based physical activity counselling intervention vs. usual care. The PA program was based on social cognitive theoretical models.	Community Health Activities Model Program for seniors (CHAMPS) [measures exercise]
Findings: Recipients of PA counselling increased minutes of PA per week independent of disease status (treatment arm by time interaction p < 0.05 for both; endurance training time p = 0.0006 and strength training time p < 0.0001). Conclusions: A home-based PA intervention was effective in increasing minutes of weekly moderate intensity endurance and strength training PA in older veterans, even among those with arthritis or arthritis plus diabetes.				
Ouslander et al. (2005) US Continence	RCT with crossover design	Patients in Veterans Administration (VA) nursing homes Mean age: 78.3 [6.7], range 61–94, Sex: 92% men	FIT intervention, which included prompted voiding combined with individualised, functionally oriented endurance and strength training exercises offered four times per day, 5 days per week, for 8 weeks.	Tests of strength, balance, endurance, and continence Costs of intervention

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: Adherence to FIT was in general high but variable. Participants completed prompted voiding plus at least one exercise in 75% of the FIT rounds offered. Of the 60 participants who completed the protocol and who could answer simple questions, 75% indicated they enjoyed FIT, but 62% indicated that the exercise was too frequent, and 28% indicated they were offered opportunities to toilet too often. Based on timed observations, the costs of FIT are about four times as high as usual continence care. FIT is applicable to a substantial number of patients in VA nursing homes.				
Weinstock et al. (2012) US Physical wellbeing (skin cancer)	RCT with follow-up 1.5–5.5 years	VA patients with evidence of BCC (Basal and squamous cell carcinoma of the skin) Age: IG: 45% 70–79 years CG: 44% 70–79 years	Tretinoin cream vs. placebo IG were provided tretinoin cream while CG were provided matching vehicle cream for 1.5–5.5 years	Time points measured: 2 years and 5 years Primary outcome: Time to diagnosis of first BCC on face and ears and first SCC on face and ears
Findings: No difference between groups. Worse symptoms in IG at 12-months after randomisation				
Wootton et al. (2009) Australia Physical wellbeing	RCT with 12-month follow-up	Congestive heart failure Veterans and war widow/ers aged 70–89 Intervention: N = 214 (155 at follow-up), Mean age: 82, Sex: 72% men Control: N = 195 (133 at follow-up), Mean age: 83, Sex: 65% men	Telephone-supported care coordination vs. usual care	Costs of care SF-12 and EQ-5D measurements at baseline and 12-months
Findings: Intervention shown to be successful but not over and above usual care.				
Wootton et al. (2010) Australia Physical wellbeing	RCT with 12-month follow-up	Complex, chronic conditions Intervention: N = 243 (213 at follow-up), Mean age: 78.5, Sex: 45% men Control: N = 238 (208 at follow-up), Mean age: 78.1, Sex: 54% men	Telephone-supported care coordination vs. usual care	Costs of care SF-12 and EQ-5D measurements at baseline and 12-months
Findings: Intervention shown to be successful but not over and above usual care.				

Interventions: Mixed groups

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Aburizik et al. (2013) US Pain Depression	RCT	Veterans with documented diagnosis of uncontrolled hypertension or non-cancerous chronic pain Combined: Mean age: 66.4 [SD 7.9], Sex: 100% men Illness Management Only: Mean age: 62.7 [SD 9.1], Sex: 90% men Usual Care: Mean age: 64.1 [SD 10.5], Sex: 91% men	Usual care vs. illness management only vs. combined psychotherapy and illness management A multidimensional telehealth intervention designed to focus on access barriers to care	Beck Depression Inventory-II Health related quality-of-life Medical Outcomes Study Medical Adherence Questionnaire Pain (Brief Pain Inventory)
Findings: The combined intervention yielded a significant decline in depressive symptoms compared with usual care. There was no time X group effect for pain management. There was no significant difference between the combined and illness management only groups. All three groups showed little change over the course of the 10-week trial on the measures of chronic disease self-management and health-related quality-of-life. Neither the combined nor the illness management only was effective in improving chronic disease self-management outcomes.				
Allen et al. (2016) US Physical performance	RCT with 24-week follow-up	Veterans with knee osteoarthritis Group physiotherapy: N = 159, Mean age: 59.2 [SD 9.6], Sex: 88.7% men Individual physiotherapy: N = 161, Mean age: 60.8 [SD 10.0], Sex: 87.6% men	Group versus individual physical therapy	Osteoarthritis Index (WOMAC) Short Physical Performance Battery (SPPB)
Findings: No difference between groups on change in WOMAC scores-at 12 weeks or 24 weeks. No difference between groups on change in physical performance at 12 weeks. Group physical therapy was not more effective than individual physical therapy for primary and secondary outcomes. Either group physical therapy or individual physical therapy may be a reasonable delivery model for health care systems to consider.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Battersby et al. (1993) Australia Mental wellbeing	RCT	Psychiatric and non-psychiatric patients of a Veterans' hospital and general hospital patients 3 Groups: 1. Veteran psychiatric patients (n=81) 2. Veteran non-psychiatric out-patients (n=45) 3. Civilian general hospital out-patients (n=50) Mean ages: Vet psychiatric patients 64 Veteran non-psychiatric patients 58	Video (educational material)	Attitudes to Electroconvulsive therapy Measure: Questionnaire 1. Knowledge (cognition) 2. Behavioural intent 3. Fear (affective) 4. Specific fears 5. Source of knowledge
Findings: Overall positive attitudes towards ECT were demonstrated in all three groups. In Veteran psychiatric patients the video produced an improvement in some attitudes, but no reduction in fear. For psychiatric patients, the effect of the media was negative.				
Battersby et al. (2013) Australia Depression, anxiety, quality of life	RCT with follow-up at 18-months post recruit-ment	Vietnam veterans with comorbid alcohol misuse and psychiatric and medical conditions Age: Intervention: $\overline{x}$ = 60.55 [SD 3.40] Control: $\overline{x}$ = 60.18 [SD 2.24]	Flinders Program™ of chronic condition management	AUDIT – self-report measure of hazardous and harmful alcohol consumption Assessment of Quality of Life (AQoL) Hospital Anxiety and Depression Scale (HADS) Dimensions of Anger Reactions Scale (DARS) Abbreviated Dyadic Adjustment Scale (ADAS) Partners in Health (PIH) scale
Findings: AUDIT scores improved significantly from baseline to 9-month follow-up (p = 0.039) in the intervention group compared to control group. The control group had 1.46 times the risk of alcohol dependence than the intervention group at 9 months (p = 0.027). There were no significant differences between groups for secondary measures.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Within-group analyses showed that both groups significantly improved in AUDIT (p < 0.001), anxiety and depression (p < 0.01), anger (p < 0.001), and post-traumatic stress (p < 0.01). Improvements in AUDIT (p < 0.001) and alcohol dependence were maintained in the intervention group to 18 months.				
Berkwits et al. (2005) US Medical	RCT	Patients with symptoms prompting providers to order cardiac enzyme (CK/CK-MB) testing in the centre's emergency department (ED) Mean ages: Intervention: 57, Sex: 95.4% men Control: 62, Sex: 97% men	Linked CK-troponin I (CKTnI) (n=194) vs. CK testing alone (n=198)	ED discharge and cardiac catheterization incidence ED medication use, inpatient non-invasive testing, revascularisation procedures, discharge medications, and 8-week ED visits, hospitalisations, and procedures
Findings: ED discharge incidence was greater in the CKTnI arm (18% vs 9.6%). Troponin testing had no significant effect on catheterisation incidence (18.2% vs 14.5%) or other outcomes except follow-up echocardiography (13.4% vs 7.4%). CKTnI testing led to more ED discharges than CK testing alone but had no effect on inpatient care and was associated with more echocardiograms in a follow-up period.				
Bhoopalam et al. (2009) US Medical	Intra-venous Zole-dronic Acid vs. placebo	Veteran population with multiple risk factors for bone loss on Androgen Deprivation Therapy Histologically confirmed prostate cancer (CaP) with no distant metastatic disease Whole sample, N = 93, Mean age: 70.6, Sex: 100% men	Intravenous Zoledronic Acid vs. placebo	Percent change in BMD in the lumbar spine at 12-months. BMD of the total hips, including subregional analyses of the femoral neck, trochanteric region and Ward's triangle
Findings: In stratum 1 (one year) spine bone mineral density increased 5.95% in the zoledronic acid arm and decreased 3.23% in the placebo arm (p= 0.0044). In stratum 2 (multiple years) spine bone mineral density increased 6.08% in the zoledronic acid arm and only increased 1.57% in the placebo arm (p =0.0005). Treatment was well tolerated with minimal impact on renal function.				
Bosworth et al. (2005) US	RCT with 6-month follow-up	Veterans with hypertension Age: Intervention: $\bar{x}$ = 63 [SD 11.24]	Nurse administered telephone intervention for blood pressure control	Knowledge and perceived risks Confidence and ability to continue the recommended hypertension regimen

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Health literacy and medication adherence		Control: x̄ = 64 [SD 11.48] Sex: Intervention: 98% men Control: 98% men		Morisky Self-Reported Medication-Taking Scale
Findings: At 6-month post-enrolment, individuals receiving the nurse intervention had a greater increase in confidence with following hypertension treatment (P < 0.007) than the usual care group. No difference in change in hypertension knowledge. No difference in medication adherence.				
Bowen et al. (2013) US Medical	RCT, 18-month follow-up	Veterans with hypertension Age: <30 miles to primary care Intervention: x̄ = 65 [SD 10] Control: x̄ = 65 [SD 10] ≥30 miles to primary care Intervention: x̄ = 63 [SD 10] Control: x̄ = 63 [SD 10] Sex: 90-98% men	Three groups received telephone-based, home BP monitoring interventions vs. usual care 4 groups: (1) usual care and <30 miles to primary care; (2) usual care and ≥30 miles to primary care; (3) intervention arm and <30 miles to primary care; and (4) intervention arm and ≥30 miles to primary care.	Primary outcome: mean 18-month systolic blood pressure (SBP) Secondary outcome: BP control
Findings: No difference in 18-month SBP was observed between the 4 exposure groups in unadjusted analysis.				
Carmody et al. (2013) US Pain management Mental Wellbeing	RCT with 6-month follow-up	Military Veterans Aged 55 or older, with documented chronic pain for at least one year, and having access to a telephone. Mean ages: T-CBT group: 66 ± 9 years T-EDU treatment condition: 69 ± 10 years	Telephone-delivered cognitive-behavioural therapy for pain management vs. T-EDU: used manualised education regarding chronic pain and pain management.	Mental health (SF-12v2). Depressive symptoms (BDI-II). Pain behaviour (PBCL). Coping strategies questionnaire
Findings: Both treatment groups reported small but significant increases in level of physical and mental health, and reductions in pain and depressive symptoms. Both treatment groups showed reductions in catastrophising between baseline and post-treatment which were maintained during follow-up. Use of coping self-statements did not change significantly for participants in either group.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
T-CBT was not shown to be more effective than T-EDU as a pain-management intervention				
Carter et al. (2015) US Physical Health	RCT	Veterans with hypertension Mean age: 64.8 ±10.8 years. For discontinued intervention: 66.0 ±10.4 years. For continued pharmacist: 63.6 ±11.2 years. Sex, no data	Pharmacist intervention discontinued vs. continued All patients received a pharmacist intervention for 6-months. Then, the intervention continued another 24-months only for the pharmacist intervention continued group. The other group was given educational materials	Blood pressure
Findings: Blood pressure (BP) control was improved and mean BP was significantly reduced during a 6-month pharmacist intervention. The effect was maintained for another 24-months in both patients who continued to receive the intervention and those with a discontinued intervention plus one-time educational material. Patients who were involved in the intervention had high levels of satisfaction.				
Chak et al. (2014) US Physical Health (screening)	RCT	Adult veterans aged between 45 and 85 years, without a prior EGD in the previous 10 years TNE: N = 92 Age: 58.8 [SD 8.3], Sex: 95.6% men ECE: N = 92, Age: 59 [SD 8], Sex: 96.7% men	Transnasal esophagoscopy (TNE). Esophageal capsule esophagoscopy (ECE)	Acceptance and tolerability Yield of screening
Findings: Transnasal esophagoscopy (TNE) and esophageal capsule esophagoscopy (ECE) are equally accepted as primary screening tests and could be considered for BE screening in the outpatient clinic setting at VA medical centres. TNE is moderately less tolerable than ECE.				
Charlton et al. (2014) US Physical Health (screening)	RCT with 6-month follow-up	Veterans aged 50–64 in Iowa City FIT group: N = 500; Age: 59.1 [SD 4.3], Sex: 87% men Educational group: N = 499, Age: 58.7 [SD 4.3], Sex: 84% men	1-step mailing of a (faecal immunochemical test) FIT to veterans' homes compared to 2 other groups: (1) a group receiving education materials only and (2) a usual care group	Overall colorectal screening

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		Usual care group: 500, Age: 60.1 [SD 4], Sex: 99% men		
Findings: This low-intensity intervention of mailing (faecal immunochemical test) FITs to average risk patients who were overdue for screening resulted in a significantly higher colorectal screening rate than educational materials alone or usual care, and may be of particular interest in rural areas. Mailing education materials was no better than usual care.				
Cohen et al. (2011) US Glycaemic control and cardiac risk factors	RCT, 6-month follow-up	Veterans from a VA medical centre with type 2 diabetes. MEDIC-E group: N = 50, Age: 69.8 [SD 10.7], Sex: 100% men Usual care group: N = 49, Age: 67.2 [SD 9.4], Sex: 96% men	MEDIC-E (VA MEDIC-E (Veterans Affairs Multidisciplinary Education and Diabetes Intervention for Cardiac risk reduction), pharmacist-led shared medical appointments program	Proportion achieving target glycaemic and cardiac risk factor goal Health-related quality of life Values of SBP, A1C, total cholesterol, HDL, triglycerides, and LDL Perceived Competence and the Summary of Diabetes Self-Care Activities questionnaire
Findings: At 6-months, significant improvements from baseline were found in the intervention arm for exercise, foot care, and goal attainment of A1C, LDL-C, and BP but not in the control arm. At the 6-month follow-up, there were no significant differences from baseline to follow-up in the quality-of-life scale (VR-36) in either the physical score or mental score in VA MEDIC-E arm vs usual care.				
Cooper at al. (2007) Crowley et al. (2016) US Physical wellbeing Mental wellbeing	RCT	Veterans with (clinic-refractory) persistent poorly controlled diabetes mellitus (PPCD). Mean age: 60 years (overall). ACDC. N = 25, Mean age 60 ± 8.4 years. Usual care. N = 25, Mean age 60 ± 9.2 years.	Advanced Comprehensive Diabetes Care (ACDC): 25 participants vs. Usual care: 25 participants ACDC: Tele-monitoring. Participants performed self-monitoring of blood glucose (SMBG) and transmitted results. Participants received daily automated calls to prompt	HbA1c measurement. Diabetes self-care (Self-Care Inventory–Revised) Depressive symptoms Self-reported medication adherence Blood pressure (BP) Adverse events Intervention acceptability
Findings: Diabetes self-care was better in the ACDC group than in the usual care group. Self-reported medication adherence and depressive symptoms did not differ between groups.				
Copeland et al. (2003) US	RCT with 18-month follow-up	Male veterans aged 55 years and older drinking more than guideline limits.	The Brief Alcohol Intervention The clinician and patient together reviewed a copy of the intervention	Average number of drinks per week Binge drinking Alcohol misuse

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Health behaviours		Age: at baseline 65.9 (range 55 to 81), Sex: 100% men	booklet containing the client's self-reported drinking data. The client and clinician developed and signed a contract to reduce at-risk drinking to safer or minimal levels. Control: A General Health Advice booklet	Alcohol related problems Inpatient data utilisation Outpatient data utilisation All utilisation variables were tallied for each study period (18 or 9 months preceding baseline assessment, 9 or 18 months following baseline)
Findings: Veterans exposed to the intervention used more outpatient medical services in the short term (9 months post-intervention). Long-term effects on inpatient/outpatient use were not observed.				
Cucciare et al. (2013) US Mental health	RCT with follow-up at 3 and 6-months	Positive screens for alcohol misuse among Veterans presenting to VA primary care clinics. Age: Overall 59 ± 15 years (23–92 years).	Brief alcohol intervention (BAI). A brief (10–15 min) assessment of typical alcohol consumption, alcohol-related negative consequences, and risk factors for unsafe drinking (e.g., hepatitis C), which was used to generate a personalised feedback report.	Overall mental health functioning PTSD Depression
Findings: BAI protocols delivered in a primary care clinic improved veterans' mental health and reduced symptoms of depression at six-month follow-up. There was no impact of either treatment condition on symptoms of PTSD at six-month follow-up. However, reductions in PTSD symptoms were observed in the combined treatment protocol at the three-month follow-up, and trend level reductions at six-months' post treatment. Both treatment conditions resulted in improvements in mental health functioning, and reduced symptoms of PTSD and depression at six-month follow-up.				
Dalessandri et al. (1998) US Physical wellbeing (screening)	RCT, 6-month follow-up period	Women who earned less than $22,000 PA Age range: < 40 to > 80 Sex: 100% women Pamphlet + follow up call: N = 366, Pamphlet only: N = 351	Group I n=351 (received nil further intervention) Group II n=366 (received a follow-up phone call by a breast care nurse if they had not responded within 45 days of the informal mailing)	Getting a mammogram
Findings: Telephone counselling nearly doubled the odds of a woman getting a mammogram.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Damush et al. (2016) US Medication compliance	RCT ("pragmatic, randomized controlled pilot study")	Stroke/transient ischemic attack (TIA) survivors VSPP group: N = 86, Mean age: 60.4 (SD 9.5), Sex: 96% men Usual care group: N = 88, Mean age: 62.1 (SD 9.4), Sex: 97% men	Self-management vs. usual care attention control The stroke self-management program applied theoretical concepts of Bandura's self-efficacy.	Compliance with medication 6-months before and after stroke/TIA
Findings: A secondary stroke risk factor self-management program for veterans with stroke/TIA has the potential to improve medication adherence for veteran patients with comorbid cardiovascular conditions (diabetes and hypertension) after an acute stroke/TIA event. The control group showed no difference in compliance rates from baseline to follow-up.				
del Junco et al. (2008) US Physical wellbeing (screening)	RCT	Women aged 52 years and older (n=23,000) from National registry of women veterans Study candidates ranged in age from 52 to 100 years (mean 62.4 years)	Aim: "Project HOME" Group 1 –Tailored and targeted – all 3 surveys Group 2 – Less personalised intervention, all 3 surveys Group 3 – Control group (all surveys no intervention) Group 4 - Baseline delayed 1 year Group 5 – Baseline delayed 2 years	Mammography rates were determined from self-report and Veterans Health Administration records.
Findings: Groups 1–3 were similar throughout the trial in participation and correlates of mammography screening. No statistically significant survey cueing effects or differences between nonparticipants and participants across groups were observed. Mammography screening rates over the 30 months preceding the respective baselines were lower in group 5 (82.3% by self-report) than in groups 1–4 (85.1%, P = .024, group 5 vs groups 1–4 combined), suggesting a decline over time similar to that reported for US women in general.				
Edlund et al. (2008) US Treatment adherence for depression	RCT with 6-month follow-up	Patients in Community Based Outpatient Clinics (CBOCs). 1) TEAM intervention: 177 participants 2) Usual care (TAU): 218 participants Average age: 59 overall	1) TEAM intervention: 177 participants 2) Usual care (TAU): 218 participants TEAM included information about depression such as causes, common symptoms, treatments available, and	(1) Perceived need for depression treatment (2) Efficacy of depression treatment (3) Treatment barriers, including stigma

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
			reasons patients should seek treatment.	
Findings: Patients had generally positive views toward depression treatment. A summary measure of beliefs was found to predict initiating and adhering to antidepressant treatment. These results highlight the potential difficulty in modifying individuals' attitudes regarding depression and depression treatment in chronic care models for depression interventions. Further, they found no evidence that beliefs were modified as a result of the intervention.				
Egede et al. (2015) US Mental wellbeing	RCT, 8-week intervention	Male and female veterans initially aged 60 years or older, then aged 58 years or older. Meeting DSM-IV criteria for major depressive disorder. Telemedicine, N = 100, Mean age: 63.5 [4.4], Sex: 97% men Same-room delivery, N = 104, Mean age: 64.2 [5.6], Sex: 98% men	Behavioural activation therapy for major depression delivered via telemedicine to same-room vs. telemedicine	Proportion of patients who responded to treatment at the end of the 12-months of follow-up Geriatric Depression Scale (GDS) Beck Depression Inventory (BDI)
Findings: Treatment response according to GDS, BDI or structured clinical interview scores did not differ significantly between the telemedicine and same-room groups. At 12-months 22 patients in the telemedicine group had at least a 50% reduction in symptom severity compared with 21 of those in the same-room group, on the GDS. Results on the BDI were similar, with 19 classified as respondents in the telemedicine group and the same-room group. No significant differences existed between treatment trajectories over time. The criteria for non-inferiority were met.				
Ferreira et al. (2005) US Screening	RCT, 12-month follow-up	Male veterans aged 50 years and older scheduled to be seen for a new or ongoing health problem Intervention; N = 1015, Age: 67.9 [SD 10.6], Sex: 100% men Control; N = 963, Age: 67.8 [SD 10.3], Sex: 100% men	Health-care provider-directed intervention designed to increase the rates of colorectal cancer screening recommendations and adherence in a VA population vs. treatment as usual	Colorectal cancer screening Baseline (from medical record review) 1-hour meetings at 4 to 6-month intervals to assess progress/rates 6 to 18-month follow-up post index visit
Findings: Colorectal cancer screening was recommended for 76.0% of patients in the intervention group and for 69.4% of controls (p = .02) Screening tests were completed by 41.3% of patients in the intervention group vs 32.4% of controls (p =.003)				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Fu et al. (2014) US Smoking	RCT 1-year follow-up	Population-based registry of current smokers, identified using the VA electronic medical record Age range: 18–80 years, Mean age: 56.1 [SD 0.2]	Proactive, population-based tobacco cessation-care model Proactive care combined (1) proactive outreach and (2) offer of choice of smoking cessation services (telephone or in-person) Proactive outreach included mail invitations followed by telephone outreach	Primary outcome was 6-month prolonged smoking abstinence at 1 year and was assessed by a follow-up survey among all current smokers regardless of interest in quitting or treatment utilisation
Findings: The population-level, 6-month prolonged smoking abstinence rate at 1 year was 13.5% for proactive care compared to 10.9% for usual care (p = .02). Logistic regression mixed model analysis showed a significant effect of the proactive care intervention on 6-month prolonged abstinence (OR, 1.27 [95% CI, 1.03–1.57]). In analyses accounting for nonresponse using likelihood-based not-missing-at-random models, the effect of proactive care on 6-month prolonged abstinence persisted (OR, 1.33 [95% CI, 1.17–1.51]).				
Hedrick et al. (2003) US Physical wellbeing Mental Wellbeing	RCT with 9-month follow-up	Patients in a VA primary care clinic with current major depressive episode or dysthymia Collaborative care (CC) group (n=168) Consult liaison control (CL) group (n=186) Mean ages: CC: 57.8 CL: 56.6	Effectiveness of collaborative care depression treatment in Veteran's Affairs Primary Care CC intervention: a mental health team provided a treatment plan to the primary care provider, telephoned patients to support adherence to the plan, reviewed treatment results and suggested modifications to the provider CL: study clinicians informed the primary care provide of the diagnosis and facilitated referrals to psychiatry residents.	Hopkins Symptom Checklist depression scale Sheehan disability scale (how much diminished health status interfered with work, family life, social life) SF-36 Patient satisfaction with treatment Chronic disease score

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: CC produced greater improvement than CL in depressive symptomatology from baseline to 3-months (SCL-20 change scores), but at 9 months there was no significant difference. The intervention increased the proportion of patients receiving prescriptions and cognitive behavioural therapy. CC produced significantly greater improvement on the Sheehan at 3-months. A greater proportion of CC patients exhibited an improvement in SF-36 Mental Component Score of 5 points or more from baseline to 9 months.				
Heisler et al. (2012) US Physical Wellbeing	RCT	Patients suffering from diabetes mellitus with persistent poor BP control and poor refill adherence or insufficient medication intensification Mean ages: Intervention: 65.3 Control: 65.3	Clinical pharmacist outreach program in patients vs. usual care	Primary outcome: Change in systolic blood pressure (SBP) between 6-months preceding and 6-months following treatment Secondary outcome: Shorter-term changes in SBP (longitudinal analysis)
Findings: Mean SBPs of intervention patients were 2.4 mm Hg lower (95% CI: -3.4 to -1.5; P<0.001) immediately after the intervention than those achieved by control patients. Adherence and intensification of medications program more rapidly lowered SBPs among intervention patients, but usual-care patients achieved equally low SBP levels by 6-months after treatment phase. There were no differences in health services utilisation, in SBP change from the 6-months before versus 6-months after the 14-month intervention, or in mean A1c and low-density lipoprotein levels. Additional monetary and staff resources devoted to state-of-the-art interventions (i.e. AIM) cannot be counted on to improve BP control beyond usual care and may simply add to greater polypharmacy in intervention subjects.				
Hilgeman et al. (2014) US Health literacy and service use	RCT, 500-day follow-up	Veterans living in rural areas of Alabama Enhanced enrolment and engagement (EEE) group: n=101 Administrative outreach (AO) group: n=102 Mean ages: EEE: 55.72 [SD 14.24] AO: 55.39 [SD 14.60]	EEE vs. AO EEE = Motivational interviewing, patient navigation, and health services education	Attendances measured across 500 days Number of VA appointment dates World Health Organization Disability Assessment Schedule II Cumulative Illness Rating Scale (CIRS)

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: Eighty-eight (87.1%) of the veterans in the EEE outreach group attended an appointment within 6-months compared with 59 (58.4%) of the veterans randomised to the AO control condition. Veterans assigned to EEE were significantly more likely to attend an appointment than those who received AO [χ2(1) = 21.01, P < .0001]. The EEE group attended their first appointment significantly more quickly than the AO group.				
Hoffman et al. (2010) US Screening	RCT	Veterans: primary care patients due for screening Intervention: (n=202) Control: (n=202) FIT: Mean age: 63.9 [SD 8.1], Sex: 95.5% men fFOBT: Mean age: 63.9 [SD 7.3], Sex: 98.5% men	Fecal immumochemical tests (FIT) vs. guaiac-based faecal occult blood tests (gFOBT)	Completion of FIT and gFOBT test period
Findings: Overall screening adherence was higher for those assigned to FIT tests (137/202 or 68%) vs. those assigned to gFOBT (112/202 or 55%; P=0.01). Of participants completing both tests (n=62), 37 (62%) preferred the FIT, 7 (12%) preferred gFOBT, and the rest were neutral.				
Hsiao et al. (2012) Taiwan Wounds	RCT	Veteran amputees with chronic limb pain True group: N = 30, Age: 61.8 [SD 12.3], Sex: 97% men Placebo group: N = 27, Age 65.8 [SD 13.4], Sex: 100% men	Non-invasive Farabloc limb cover vs. placebo limb cover	Numerical pain rating scale of PLP level Overall pain level PLP frequency per week Veterans RAND 12-Item Health Survey (VR-12)
Findings: Overall pain levels did not differ significantly between the 2 groups at 6 weeks (mean difference, 0.8; 95% confidence interval [CI], -1.4– 3) or at 12 weeks (mean difference, 0.2; 95% CI, -1.9–2.3).				
Hughes et al. (1990) US Functional status Satisfaction with care Costs of care	RCT, 6-month follow-up	Severely disabled or terminally ill veterans with an informal caregiver HBHC group (n = 122) Control group (n = 122) Age: HBHC group: x̄=66.2 [SD 10.4] Control group: x̄=69.3 [SD 9.8]	Hines VA hospital-based home care (HBHC) Program vs. usual care home care services (HBHC) provided comprehensive services from a range of health professionals Control group patients received customary care	Measures at baseline, 1- and 6-months post discharge Changes in satisfaction, morale, and functional status of patients and caregivers Service utilisation and net costs

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: There were no differences in change in ADL functioning. There was improved 1-month satisfaction with care among HBHC patients (not sustained at 6-months), improved 6-month cognitive functioning among HBHC patients, and improved 1-month and 6-month satisfaction with care among caregivers. A nonsignificant 10% decrease in net cost of care was found in treatment group.				
Kasckow et al. (2014) US Depression	RCT	Veterans with subsyndromal depression Mean ages: Intervention: 64.8 DIET: 61.9	Problem-solving therapy PST-PC group (n=11) Dietary education DIET group (control) (n=12)	17-item Hamilton Rating Scale for Depression Beck Depression Inventory. Short Form Survey (SF-36) Social Problem-Solving Inventory
Findings: There were significant differences in SF-36 mental component scores in the group receiving PST-PC group (baseline: 37.9 ± 12.1; endpoint: 51.3 ± 16.7) relative to the group receiving DIET (baseline: 46.3 ± 11.8; endpoint: 50.1 ± 8.5; p = 0.0019). However, there were no significant group differences between endpoint and baseline BDI, HRSD, SF-36 physical component, or SPSI scores. These pilot study findings suggest that a six-to-eight session version of PST-PC may lead to improvements in mental health functioning in primary care veterans with subsyndromal depressive symptoms.				
Kashner et al. (1992) US Alcohol	RCT 1 year	Older alcoholic patients OAR group (n=65) Control group (n=72) Age: 45–59years, 47% 60–69years, 45% 70+ years, 8%	OAR patients lived on a special unit in which staff could focus on problems facing the older alcoholic. OAR staff provided reminiscence therapy. Patients were supported an active schedule of social, physical, and cognitive activities. Control group: counselling provided in the traditional care program was oriented to problem solving, vocational development, and life change.	Information about use of VA hospital services and costs was obtained from VA hospital records Volume of treatment: number of group therapy sessions, inpatient days, or outpatient visits or the total cost of alcoholism treatment
Findings: OAR patients were 2.9 times more likely at six months and 2.1 times more likely at 12-months to report abstinence than their counterparts who received traditional treatment. For each ten years of age, OAR patients were 2.1 times more likely than their traditional care counterparts to report abstinence at six months, and 3.2 times more likely to report abstinence at 12-months.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Patients who were 50, 55, 60, and 70 years old were respectively, 0.5, 1, 1.6, and 5.1 times more likely to abstain from drinking following the OAR program than they would have been after the traditional care program. Response to the OAR program was best for patients over 60 years of age Patient care costs were slightly lower (2.5 percent lower) in the OAR program than in the more traditional program, and OAR patients were 2.1 times more likely to report abstinence at one year.				
Kashner et al. (2002) US Mental and social wellbeing	RCT (1 year)	Homeless, substance-dependent older veterans	Compensated work therapy program (CWT) vs. usual care (traditional alcoholism treatment) CWT group: Participants were offered work opportunities based on work performance and health behaviours (sobriety and use of recommended addiction services).	Substance dependence behaviours (substance consumption and use of addictions treatment services) Health outcomes (addiction-related physical symptoms, psychiatric symptoms, and health functioning), and other aspects of quality of life (rates of incarceration and homelessness)
Findings: CWT clients were initially 2.7 times more likely to use addiction treatment than their control counterparts. CWT group experienced immediate reductions in drug (−44.7% ± 12.8%) and alcohol (−45.4% ± 9.4%) use problems, and number of substance use–related physical symptoms (−64.4% ± 8.0%). There was no significant difference in psychiatric status between the CWT and control groups on any of the four outcome measures. Differences between CWT and control groups tended to grow during follow-up by −24.4% ± 8.7% per quarter based on ASI medical status and 6.9% ± 2.0% per quarter based on SF-36 Physical Functioning. However, these gains were due primarily to declining function among control subjects rather than improved functioning among subjects in the CWT group.				
Kominski et al. (2001) US Physical wellbeing Mental wellbeing	RCT 24-month follow-up	Veterans aged 60 and older hospitalised for medical or surgical treatment with symptoms of anxiety, depression, or alcohol abuse Age: UPBEAT group: $\bar{x}$=69.4 [SD 10.8] Usual care group: $\bar{x}$=69.4 [SD 9.0]	UPBEAT is for post-hospital care: 2 critical elements of UPBEAT care are in-depth psychogeriatric assessment and proactive mental health care coordination by a multi-disciplinary clinical team trained in psychogeriatrics.	The Mental Health Inventory (MHI) Alcohol Use Disorder Identification Test (AUDIT) RAND 36-Item Health Survey Short Form (SF-36) Inpatient days, ambulatory care clinic stops and costs, and mortality and readmission rates. Estimated costs
Findings: Mental health and general health status scores improved equally from baseline to 12-month follow-up in both groups.				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
UPBEAT increased outpatient costs by $1,171 (P <0.001) per patient but lowered inpatient costs by $3,027 (P = 0.017), for an overall savings of $1,856 (p = 0.156). Inpatient savings were attributable to fewer bed days of care (3.30 days; p = 0.016) rather than fewer admissions. There were no significant differences in hospitalisation between UPBEAT and usual care or in 12-month mortality rates between UPBEAT (13.3%) and usual care (14.1%). Statistically significant improvements were detected on SF-36 scores (Role Physical, Role Emotional, Mental Health, and Bodily Pain subscales) in both groups, on Vitality in UPBEAT, and on Social Functioning and General Health in the usual care group (p < 0.05). However, the extent of the change over time was not significantly different between the UPBEAT and usual care groups. No statistically significant differences were detected in AUDIT scores between usual care and UPBEAT groups.				
Lairson et al. (2011) US Screening	RCT	Women military veterans aged 52 years and older Tailored N = 1803 Targeted N = 1857 Control N = 1840	Targeted intervention vs. tailored intervention vs. control The targeted group received a generic letter conveying messages about breast cancer and breast cancer screening and encouraging them to be screened. The tailored group received a tailored cover letter using information from the baseline knowledge, attitudes and beliefs survey to address specific concerns about screening.	Use of mammogram (two within 15 months)
Findings: Mammogram screening rates were .447 in the control group, .469 in the targeted group, and .460 in the tailored group. The tailored intervention was costlier and less effective than the targeted intervention ($52 per person for the tailored intervention, about twice as expensive as the targeted intervention).				
Magid et al. (2011) US Physical wellbeing	RCT (6-month follow-up)	Patients with hypertension who were taking 4 or fewer antihypertensive medications Age: Intervention + usual care: $\bar{x}$ = 65.1 [SE 11.1], Sex: 66.7% men	Multimodal intervention composed of patient education, home blood pressure (BP) monitoring, BP measurement reporting to an interactive voice response (IVR)	Proportion of patients who achieved guideline-recommended BP goals Change in systolic and diastolic BPs between enrolment visit and follow-up Medication adherence

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
		Usual care: x̄ = 66.7 [SE 12.2], Sex: 62.8% men	phone system, and clinical pharmacist follow-up vs. usual care	

Findings: At 6-months, BPs were similar in the intervention group vs. the usual care group (137.4 vs. 136.7 mm Hg, p = .85 for systolic; 82.9 vs. 81.1 mm Hg, p =.14 for diastolic).

At 6-months, the intervention group vs. the usual care group had a greater increase in the number of hypertension medications (change of 0.3 vs. 0.1, p = .05) and a higher intensity of hypertension medication regimens (change of 0.6 vs. 0.2, p = .008).

BP reductions were greater in the intervention group vs the usual care group (−13.1 vs. −7.1 mm Hg, p = .006 for systolic; −6.5 vs. −4.2 mm Hg, p = .07 for diastolic).

Adherence to medications was similar between the 2 groups, but intervention patients had a greater increase in medication regimen intensity.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Makinen et al. (1996) US Physical wellbeing (dental)	RCT (6-month follow-up)	Patients receiving periodontal treatment Sorbitol: (n=42) Xylitol: (n=41) Control: (n=105) Age: Sorbitol: x̄ = 58.6 [SE 10.7] Xylitol: x̄ = 54.8 [SE 10.3] Control: x̄ = 59.8 [SE 11.2] All groups 10% female	Xylitol- and sorbitol-containing chewable saliva stimulants (chewing gums and dragées [covered sweet])	Primary outcome: presence and risk of root surface caries (RSC) Plaque index Gingival index

Findings: The risk for a root-surface lesion in the xylitol group was only 19% of that for a surface in the sorbitol group (relative risk, 0.19; 95% confidence interval, 0.06-0.62; p < .0065).

Both polyols significantly reduced gingival index scores and slightly reduced plaque index scores.

Frequent daily consumption of chewable saliva-stimulating products may have an oral health improving effect.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Rice et al. (2010) US Physical wellbeing	RCT, I year follow-up	Veteran patients with severe COPD Disease management: N = 372, Mean age: 69.1, Sex: 97.6% men Usual care: N = 371, Mean age: 70.7, Sex: 98.4% men	Intervention: Patients received a single 1- to 1.5-hour education session, an individualised action plan for self-treatment of exacerbations, and monthly calls from a therapist case manager. Usual care: Patients received a one-page handout containing a summary	Primary outcome: combined number of COPD-related hospitalisations and ED visits per patient over 12-months Secondary outcomes included hospitalisations and ED visits for all causes, respiratory medication use, mortality, and change in health-related quality of life

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
			of the principles of COPD care and helpline phone number	

Findings: After 1 year, the mean cumulative frequency of COPD-related hospitalisations and ED visits was 0.82 per patient in usual care and 0.48 per patient in disease management (difference, 0.34; 95% confidence interval, 0.15–0.52; p. 0.001).
After 1 year, the average number of COPD-related hospitalisations per patient was 30% lower in disease management than usual care, and the average number of COPD-related ED visits was 50% lower.
Respiratory health status after 1 year worsened by an average of 6.4 points in the usual care group and by 1.3 points in the disease management arm (difference, 5.1. a 4-point change is clinically significant).
Disease management reduced hospitalisations for cardiac or pulmonary conditions other than COPD by 49%, hospitalisations for all causes by 28%, and ED visits for all causes by 27% (p < 0.05 for all).

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Oslin et al. (2003) US Mental wellbeing	RCT, 4-month follow-up	Veterans with depression and/or at-risk drinking Mean age: 61.1	Telephone-based disease management (TDM) program for the acute management of depression and/or at-risk drinking TDM comprised regular contacts by a behavioural health specialist to assist in assessment, education, support, and treatment planning.	Primary outcome: response to treatment Secondary outcome: severity of depressive symptoms

Findings: Overall response to treatment rates favoured those assigned to TDM compared with those assigned to usual care (39.1% responded vs. 17.6%, p = 0.022).
Comparing depression severity using the HDRS, the patients treated using TDM had significantly greater improvement in symptoms compared with those randomised to usual care.
Response rates within the separate diagnostic groups also favoured TDM, but this was only significant for those with depressive disorders. At-risk drinking did not improve.

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Oslin et al. (2004) US Alcohol use Mental wellbeing	RCT	Significant anxiety symptoms, significant depressive symptoms, and/or at-risk drinking Age: Intervention: $\bar{x}$ = 69.72 [SD 6.56] Usual care: $\bar{x}$ = 69.74 [SD 6.70]	Psychogeriatric Biopsychosocial Evaluation and Treatment (UPBEAT) Program, an interdisciplinary mental health care management program	Mental Health Inventory (MHI) and for at risk drinking using the Alcohol Use Disorders Identification Test (AUDIT) SF-36

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Findings: Participant nonadherence to the protocol was common and is a major limitation. There were no differences between UPBEAT and usual care patients on symptom or functional outcomes at any follow-up point. Exploratory analyses suggested that among participants with more physical health problems, there were greater improvements in depressive symptoms in those assigned to UPBEAT care. Despite a theoretical and practically sound intervention, participation was low and treatment outcomes, while generally good, appeared unaffected by the addition of the program.				
Rintala et al. (2008) US Physical wellbeing	RCT (2-year follow-up)	Veterans with severe COPD Intervention: N = 20, Mean age: 54.8, Sex: 100% men	Individualised education for pressure ulcer care in spinal cord injury vs. usual care	Time to pressure ulcer recurrence Measures, baseline and ongoing to 24-months
Findings: Group 1 had a longer average time to ulcer recurrence or end of study than groups 2 and 3 (19.6-months, 10.1 months, 10.3-months; p =.002) and had a smaller rate of recurrence (33%, 60%, 90%; p =.007). Groups 2 and 3 were not significantly different from each other. The 3 groups did not differ significantly with respect to number of drains, number of postoperative complications, days on an air-fluidised bed, time from surgery to first sitting, or LOS.				
Roumie et al. (2006) US Physical wellbeing (blood pressure)	RCT, 6-month follow-up	Aged 21 to 90 years of age, with at least 2 uncontrolled blood pressure measurements in the 6-month baseline period (systolic blood pressure >140 mm Hg or diastolic blood pressure >90 mm Hg), Group 1 - Providers (n=54) - Patients (n=324) Group 2 - Providers (n=62) - Patients (n=547) Group 3 - Providers (n=66) - Patients (n=470)	3 groups: provider education only (Group 1); provider education and alert (Group 2); or provider education, alert, and patient education (Group 3) Group 1 - Providers received an e-mail with a link to the (JNC7) guidelines (provider education) Group 2 - Provider education and a patient-specific hypertension computerised alert Group 3 - Provider education, hypertension alert, and patient education	Primary outcome: proportion of patients clustered by provider who reached the systolic blood pressure goal of 140 mm Hg or less. Secondary outcome: the proportion of patients clustered by provider who reached a diastolic blood pressure goal of less than 90 mm Hg.
Findings: Mean baseline blood pressure was 157/83 mm Hg with no differences between groups (P = 0.105). Six-month follow-up data were available for 975 patients (73%).				

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
Patients of providers who were randomly assigned to the patient education group had better blood pressure control (138/75 mm Hg) than those in the provider education and alert or provider education alone groups (146/76 mm Hg and 145/78 mm Hg, respectively). More patients in the patient education group had a systolic blood pressure of 140 mm Hg or less compared with those in the provider education or provider education and alert groups (adjusted relative risk for the patient education group compared with the provider education alone group, 1.31 [95% CI, 1.06–1.62]; p = 0.012). A multifactorial intervention including patient education improved blood pressure control compared with provider education alone.				
Stelmack et al. (2008) US Vision	RCT with 4-month follow-up	Veterans with evidence of macular disease IG: N = 64, Mean age: 78.8, Sex: 98.4% men Wait list control: N = 62, Mean age: 79.0, Sex: 96.8% men	Treatment group patients received 10 hours (5 weeks X 2 hours) treatment from an optometrist and low-vision therapist that included; low-vision examination; education on eye disease diagnosis and prognosis; low-vision therapy; and prescribed low-vision devices. A home visit was provided.	Visual reading ability SF-36 (health-related quality of life) CES-D (depression)
Findings: - Treatment group demonstrated significant improvement in all aspects of visual function compared with control. - The difference in mean changes was 2.43 logits (95% CI 2.07-2.77, p < .001, effect size 2.5) for visual reading ability; 0.84 logits (95% CI 0.58-1.10 p < .001 effect size 2.03 for visual information processing; 1.51 logits 995% CI 1.22–1.80, p < .001, effect size 1.82) for visual motor skills; and 1.63 logits (95% CI 1.40-1.86 p < .001 effect size 2.51) for overall visual function.				
Stone et al. (2010) US Type 2 diabetes	RCT with 6-month follow-up	Veterans with type 2 diabetes Most were male CM-HT group N = 73, Age range: 45–65: 59.4% - >=65: 35.9% CC group N = 77, Age range: 45–65: 58.9% - >=65: 35.6%	Active care management with home telemonitoring (ACM-HT) OR monthly care coordination (CC) telephone call. All participants attended an initial 2-hour educational session for diabetes self-management; and received monthly calls for diabetes self-management review. ACM-HT group participants transmitted blood glucose, blood pressure, and weight to a nurse.	Change in glycated haemoglobin (A1C) over time Weight Blood pressure Lipid values

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
			practitioner using a TeleHealth Monitor. The CC group received monthly telephone calls from the study diabetes nurse educator.	
Findings: Compared with the CC group, the ACM-HT group demonstrated significantly larger decreases in A1C at 3-months (1.7 vs. 0.7%) and 6-months (1.7 vs. 0.8%; p <0.001 for each), with most improvement occurring by 3-months. None of the other primary outcomes differed significantly by treatment group at either 3 or 6-months. Compared with the CC group, the ACMHT group demonstrated significantly greater reductions in A1C by 3 and 6-months. However, both interventions improved glycaemic control in primary care patients with previously inadequate control.					
Stone et al. (2012) US Diabetes	RCT, further 6-month follow up	Diabetes management ACM-HT group N = 73, Age: 64 at follow-up, Sex: 100% men CC group N = 77, Age: 73 at follow-up, Sex: 96% men	Participants receiving Active Care Management (ACM) were re-assigned to monthly CC calls with continued telemonitoring but no active medication management (ACM to CCHT, n = 23) or monthly CC telephone calls (ACM-to-CC, n = 21). Participants receiving CC were assigned to continued CC (CC-to-CC) n = 28) or usual care (CC-to-UC, n = 29).	Change in glycated haemoglobin (A1C) over time
Findings: Marked HbA1c improvements observed in participants were sustained after re-randomisation in both groups. Lower HbA1c improvements observed in DiaTel CC participants were sustained in both CC-to-CC and CC-to-UC groups. No benefit was apparent for continued transmission of glucose data among DiaTel ACM participants or continued monthly telephone calls among DiaTel CC participants 6-months after re-randomisation.					
Thielke et al. (2015) US Pain Physical wellbeing Mental wellbeing	RCT, 12-month follow-up	Musculoskeletal pain Collaborative group: N = 187, Age: 62.1 [SD 11.2], Sex: 92% men Usual care group: N = 214, Age: 61.3 [SD 12.3], Sex: 92% men	Intervention group (collaborative approach to pain) vs. treatment as usual (TAU) IG pts received phone call, written education materials, a list of community resources and an	Primary outcomes: Pain intensity Pain interference Depression Disability scores Secondary outcomes:

Author (date) Country Theme	Design	Sample / Condition	Intervention	Measures
			assessment visit with the care manager to survey pain-related behaviours and treatment barriers, identify psychiatric comorbidities and develop individualised functional goals.	Probabilities of symptom improvement or sustained reduction
Findings: Intervention patients more likely to experience continued relief from depression and pain. Collaborative care interventions may provide benefits beyond just symptom reduction.				
Whittle et al. (2014) Australia	RCT with 12-month follow-up	Veterans with uncontrolled BP Peer-led group: N = 219, Mean age: 68.8, Sex: 84.5% men Didactic group: N = 185, Mean age: 67.4, Sex: 90.8% men	Peer-led vs. didactic groups, 12 sessions. The peer-led group provided blood pressure cuffs, bathroom scales, pedometers, and educational resources. The education seminar provided all except the educational resources.	Change in systolic blood pressure
Findings: Systolic BP decreased significantly overall. The decrease was similar in peer-led and seminar posts. Our peer-led educational intervention was no more effective than didactic seminars for BP control.				

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