

Table 1: Demographic characteristics and military experience of the random selection of 200 male New Zealand military personnel participating in the First World War (for those travelling overseas, who were alive on 1 January 1919, and for whom age at death could be established).

Characteristic	Number	Other data
Demographics		
Mean age (years) at the start of the war (28 July 1914)	25.4	SD=6.95
Median age (years) at the start of the war (28 July 1914)	23.9	IQR=19.2 to 30.1
Māori ethnicity assumed (e.g., te reo Māori language in name)*	5	2.5%
Non-Māori ethnicity (nearly all European/Pākehā)	195	97.5%
Occupational class* (based on occupation at enlistment)		
Highest 3 groupings (i.e., least deprived)	11	5.5%
Middle 3 groupings	81	40.5%
Lowest 3 groupings (i.e., more deprived)	108	54.0%
Military service		
Other war service		
Prior participation in the South African War (1899–1902)	5	2.5%
Subsequent participation in the Second World War (WWII; 1939–1945), albeit not necessarily in an overseas or frontline role	18	9.0%
Military rank on enlistment*		
Commissioned officers (i.e., from officer cadet to field marshal)	4	2.0%
All non-commissioned personnel (excluding the lowest ranks) (i.e., from lance corporal to warrant officer class one)	21	10.5%
The lowest ranks (e.g., gunner, trooper, sapper, signaller, private)	175	87.5%
Timing of frontline service: Year of first arrival at the front line (excluding the n=17 who never went further than the United Kingdom or who worked on hospital ships)		
1914	1	0.55%
1915	40	21.9%
1916	47	25.7%
1917	61	33.3%
1918	34	18.6%
Total to front line	183	91.5%
Mean length of foreign military service (outside of New Zealand)	2.1 years	SD=342 days
Mean length of total military service—including time in New Zealand	2.6 years (965 days)	SD=341 days

Table 1 (continued): Demographic characteristics and military experience of the random selection of 200 male New Zealand military personnel participating in the First World War (for those travelling overseas, who were alive on 1 January 1919, and for whom age at death could be established).

Characteristic	Number	Other data
Theatres of war (with these results not summing to 100% due to participation in multiple theatres by many personnel)		
Any time in France or Belgium	148	74.0%
Any time in Gallipoli/Dardanelles	37	18.5%
Any time in Egypt/Sinai/Palestine	43	21.5%
Any time in Samoa (this was in combination with at least one other theatre—see exclusions in the <i>Methods</i>)	3	1.5%
Only United Kingdom	10	5.0%
Other (e.g., only at sea when away from New Zealand)	2	1.0%

* See the *Methods* in the related study of lifespan in a larger random sample of NZEF personnel.¹⁷
SD = standard deviation; IQR = interquartile range.

Figure 1: New Zealand General Hospital No.1 (Headquarters) Brockenhurst (fracture ward). Qualis Photo Coy (ca. 1915). Auckland War Memorial Museum | Tāmaki Paenga Hira. PH-TECH-925-286 (no copyright).



Table 2: The overall morbidity burden based on diagnoses and hospitalisations during military service (non-fatal injuries and diseases) for the random selection of 200 New Zealand military personnel participating in the First World War.

Characteristic	New condition diagnosed*		Hospitalisation for new condition	
	N	%	N	%
Nil event per person	13	6.5%	22	11.0%
1 per person	58	29.0%	69	34.5%
2 per person	46	23.0%	65	32.5%
3 per person	38	19.0%	25	12.5%
4 per person	25	12.5%	12	6.0%
5+ per person (maximum was 8 for diagnoses, 6 for hospitalisations)	20	10.0%	7	3.5%
	Key number	Other	Key number	Other
Total number	480	240 per 100 cases	358	179 per 100 cases
Mean number	2.40	SD=1.61	1.79	SD=1.21
Median number	2.00	IQR=1.00 to 3.00	2.00	IQR=1.00 to 2.00
Estimated number of events per year of exposure to military service (total service, including training)**	0.92		0.69	

* See Table 3 for these conditions and the *Methods* for how related subsequent diagnoses were excluded.

** Calculated based on the average 2.6 years of military service detailed in Table 1.

Table 3: The specific non-fatal conditions identified among the random selection of 200 New Zealand military personnel participating in the First World War.

Conditions	Individuals having any occurrence (not including multiple such events)		Cases per 100 people (capturing multiple events per person)
	N	%	
Injuries			
Non-fatal injury event associated with conflict (counting multiple injuries received on one occasion as one injury event; includes chemical warfare injuries; and not counting subsequent sequelae relating to injuries e.g., further complications and operations)	83	41.5%	49.5
Chemical warfare injury (gas poisoning)	12	6.0%	6.0
“Accidental” injuries during military service (e.g., ankle sprain, fall from a horse, from lifting heavy weights)	19	9.5%	9.5
Other injuries	1	0.5%	0.5
All of the above injuries	103	51.5%	59.5
Diseases typically associated with hazardous environmental conditions			
Dysentery/gastroenteritis/“enteritis”/diarrhoeal illness not otherwise specified	23	11.5%	13.0
Scabies	10	5.0%	5.5
Mosquito-borne diseases: malaria, dengue	6	3.0%	3.0
Trench fever (a bacterial infection transmitted by body lice)	5	2.5%	2.5
Trench foot (a condition from prolonged exposure of the feet to cold, damp and often unsanitary conditions)	3	1.5%	1.5
Trench mouth (in modern terminology: acute necrotising ulcerative gingivitis)	2	1.0%	1.0
Other conditions (e.g., trachoma, paratyphoid)	2	1.0%	1.0
All of the above diseases	51	25.5%	26.0
Sexually transmitted infections (STIs)			
Gonorrhoea (one STI only)	16	8.0%	8.0
Syphilis (one STI only)	1	0.5%	0.5
Chancroid/soft chancre (one STI only)	1	0.5%	0.5
Pubic lice (one STI only)	1	0.5%	0.5
“Venereal disease” not otherwise specified (one STI only)	6	3.0%	3.0
Multiple STIs	3	1.5%	3.5
All the above STI categories	28	14.0%	16.0

Table 3 (continued): The specific non-fatal conditions identified among the random selection of 200 New Zealand military personnel participating in the First World War.

Conditions	Individuals having any occurrence (not including multiple such events)		Cases per 100 people (capturing multiple events per person)
	N	%	
Other infectious diseases			
Any respiratory condition (influenza, pneumonia, bronchitis, tuberculosis)	65	32.5%	45.0
Influenza (including pandemic influenza in 1918–1919)	38	19.0%	24.5
Tuberculosis (pulmonary or not stated)	6	3.0%	3.0
Measles, mumps or rubella	16	8.0%	8.5
Fever of unknown origin (“pyrexia of unknown origin” or PUO)	16	8.0%	8.5
Diphtheria	8	4.0%	4.0
Other (not detailed above e.g., extra-pulmonary tuberculosis, “jaundice”—probably infectious hepatitis)	15	7.5%	9.0
All of the above diseases	105	52.5%	66.0
Mental health conditions			
Any form of PTSD (see the Appendix for a full list of terms related to this)	19	9.5%	9.5
“Disordered action of the heart” (DAH)	9	4.5%	4.5
Neurasthenia	6	3.0%	3.0
Shell shock	4	2.0%	2.0
Other mental health conditions (i.e., depression)	1	0.5%	0.5
All of the above conditions	20	10.0%	10.0
Other health conditions			
All other conditions (including some pre-war conditions and others potentially not always directly related to military service e.g., asthma)	69	34.5%	52.0
Musculoskeletal condition (e.g., rheumatism possibly not related to a specific injury)	10	5.0%	6.0
Oral health conditions (excluding trench mouth—see above)	10	5.0%	5.0
Impact of health outcomes on further military service			
Deemed unfit for any further military service at any point during service (albeit in 2 cases the individual subsequently returned to service, 1 re-enlisted for home service, and 1 was assigned base duties)	117	58.5%	58.5
Not deemed unfit for military service	83	41.5%	41.5

Table 4: Lifespan of the veterans in this study in relation to selected morbidity profiles and different exposures during military service.

Characteristic	Mean lifespan of group of interest (years)	Mean lifespan of the rest of the sample (years)	P-value (ANOVA)
Morbidity-related exposures			
3 or more new conditions (n=83) (as per Table 3) vs fewer conditions (n=117)	68.5	70.3	0.3960
3 or more hospitalisations for new conditions (n=44) (as per Table 3) vs fewer hospitalisations (n=156)	67.4	70.2	0.2773
Having any mental health diagnosis (n=20) vs no such diagnosis (n=180)	72.0	69.3	0.4368
Having any STI diagnosis (n=28) vs no such diagnosis (n=172)	65.9	70.2	0.1578
Being declared unfit at some point of service (n=117) vs those never declared unfit (n=83)	69.3	69.9	0.7642
Exposures during military service			
Participating in Gallipoli (n=37) vs any other frontline theatres (n=151)—and excluding those not in such theatres	69.1	70.2	0.6905
Going to the frontline before 1917 (n=88) vs later (n=95)	68.5	70.9	0.2657