

YOUNG AGE AT ARMY ENLISTMENT IS ASSOCIATED WITH GREATER WAR ZONE RISKS

AN ANALYSIS OF BRITISH ARMY FATALITIES IN AFGHANISTAN

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SUMMARY

When enlisting into the British Army, minors (aged 16 or 17) are more likely than adults to join the combat Infantry,¹ which has suffered a higher rate of fatality in Afghanistan than has the rest of the Army.² This gives cause for concern that enlisted minors, once deployable to Afghanistan at age 18, may have faced a relatively higher risk of fatality, non-fatal injury or traumatic stress-related psychiatric disorder.

This study examines the relative risk of fatality in Afghanistan among enlisted Army recruits who joined as minors versus those who joined as adults.

We researched the enlistment ages and enlistment dates of soldiers³ who died as a consequence of deployment to Afghanistan and had enlisted during a ten-year period between 1999-00 and 2008-09 (n=209). Using published data on the enlistment ages of the Army's total intake for each of the ten years under investigation, we then calculated the relative odds of fatality for those who enlisted in each of three age groups: at age 16, at age 17 and at age 18 or over.

Given that rates of drop-out during training were known to be higher among minors (39.4%) than adults (24.1%) over a five-year period from 2007-08 to 2011-12,⁴ we used this as a basis for estimating the number of soldiers who enlisted in each age group and also successfully completed their training; we then ran the analysis for each age group again.

We found that **soldiers who had joined the Army at age 16 were approximately 50% more likely to die as a consequence of deployment to Afghanistan** than were those who had enlisted as adults (odds ratio 1.52, 95% CI 1.10-2.10 p=0.01). When we accounted for estimated training drop-out rates among minors and adults, **soldiers who enlisted at age 16 and completed training were almost twice as likely to die as a consequence of deployment to Afghanistan** than were those who enlisted as adults and completed training (odds ratio 1.92, 95% CI 1.39-2.66), p<0.001). **We found no significant evidence that those enlisting at age 17 faced a level of risk different from those who enlisted at 18 or above**, although a non-significant trend was seen after including their higher drop-out rates in the model.

We speculate that the substantially higher relative risk faced by soldiers who enlisted at 16 is due mainly to two factors: i) the over-representation of this enlistment age group in the Infantry, where the fatality rate in Afghanistan has been approximately six times the rate in the rest of the Army;⁵ and ii) the longer average career length among soldiers who enlist at age 16 and complete their training, leading to a larger number of tours of duty.⁶

Finally, we hypothesise that the elevated risk of fatality among soldiers who enlisted at age 16 may also indicate an increased risk of non-fatal physical injury and mental health problems. We do this on the basis of: (i) evidence that rates of non-fatal injuries and fatalities in Afghanistan show a constant relationship;⁷ (ii) studies showing that fatality rates show a similarly constant relationship to psychiatric casualties⁸ and a higher prevalence of mental health problems among personnel with combat roles^{9 10 11 12} including the Infantry;^{13 14} and (iii) studies which show that young people from disadvantaged backgrounds have heightened vulnerability to trauma-related mental health problems.^{15 16 17 18 19}

This paper indicates that, whilst minors in the Army are protected from the dangers of deployment until they reach adulthood at age 18, they are likely to face a greater long-term risk of physical and psychiatric harm when compared with those who enlist as adults.

BACKGROUND

The UK is the only state in the European Union and the only United Nations Security Council Permanent Member state to recruit from age 16 into the armed forces. Concerns have been raised at the United Nations,²⁰ in Parliament^{21 22} and by human rights groups²³ about the policy. In support of the practice, the Ministry of Defence has argued that the policy allows the armed forces to provide opportunities to young people.²⁴

British and US research on risk in military populations has identified the relatively greater vulnerability of younger recruits to mental health problems,^{25 26 27 28 29 30 31} harassment,^{32 33} and committing violent behaviour after exposure to combat and traumatic events.^{34 35} There has been less emphasis on the relative risk to enlisted minors of fatality and injury once they are deployed to war zones.

Recruitment patterns give reason to hypothesise that minors enlisting into the armed forces face a greater risk of fatality during deployment when compared with those enlisting as adults. Four out of five minors who enlist join the Army,³⁶ where they are over-represented in non-technical roles among front-line regiments/corps.³⁷ Of these, the Infantry is the largest, accounting for a quarter of the Army but containing one third of all its enlisted minors.³⁸ Records of soldiers killed in Afghanistan show that the fatality rate in the Infantry has been approximately six times that in the rest of the Army.³⁹ Once minors become eligible for deployment at 18, it is therefore plausible that they face a higher risk of fatality than those who enlisted as adults, who are statistically less likely to have joined the Infantry.

Some evidence already lends credence to this hypothesis. British Infantry fatalities in Afghanistan are on average two years younger than those in the

rest of the Army; and of the 34 armed forces fatalities in Afghanistan aged 18 and 19 to the end of March 2013, 30 were Infantrymen and 27 had enlisted as minors.⁴⁰

There are two principal reasons why a relatively large number of minors join the Infantry.

First, the Infantry is the single largest part of the Army so requires the greatest number of new recruits each year to replace those who leave; between 2007-08 and 2011-12, 35.3% of new Regular Army recruits joined Infantry regiments (39.2% of all minors and 33.8% of all adults).⁴¹ The Infantry is also chronically under-manned so, unlike many other armed forces trades, there are invariably vacancies available.

Second, whilst many technical armed forces trades are barred to recruits without good GCSE and/or 'A' Level grades, the Infantry accepts school-leavers without any qualifications. For this reason, it contains a higher proportion of younger recruits who left school at 16. As of March 2013, 19.4% of Infantry soldiers were under 22, compared with 11.7% of soldiers in the rest of the Army.⁴²

In addition to the over-representation of minors in high-risk Infantry roles, their slightly longer average career length when compared to adult recruits also gives reason to hypothesise that they may be at greater risk in Afghanistan. Although minors are more likely than adults to drop out of training,⁴³ those who successfully complete training stay in the Army for an average of 10 years (this includes the period before they become deployable at age 18). Adult recruits who complete training stay in the Army for an average 7.6 years.⁴⁴ The period of potential exposure to warfare for soldiers who enlisted as minors and became deployable to war zones at age 18 is therefore correspondingly slightly longer than it is for those who enlisted as adults.

STUDY AIM

We sought to discover whether, over a ten-year period, the risk of fatality among British Army soldiers in Afghanistan varied between those who enlisted at age 16 or 17 and those who enlisted at 18 or older.

Given that Army training drop-out rates differ between minors and adult recruits, we also aimed to compare fatality risks among those who enlisted in each age group and also successfully completed their training.

METHOD

We obtained data published by the Ministry of Defence on the enlistment ages of Regular recruits joining the Army at 16, 17 and 18 or above over a ten-year period from 1999-00 to 2008-09 (see column (a) of Table 1).⁴⁵ The financial year 1999-00 is the earliest date for which this information is published. We chose 2008-09 as the most recent year in our analysis in order that all individuals studied would have had at least two years of potential exposure to the risk of fatality in Afghanistan, including those who enlisted as minors and therefore would not have been sent to war zones until aged 18.

We also used Ministry of Defence data showing that drop-out rates of Army trainees between 2007-08 and 2011-12 inclusive were 39.4% among minors and 24.1% among adults.⁴⁶ Drop-out rates in earlier years are not available.

Using information published by the Ministry of Defence⁴⁷ and, in 27 cases, other sources such as press reports and memorial websites, we sought to assign the enlistment ages and dates to all 298 Regular

soldiers⁴⁸ who died as a result of deployment to Afghanistan between the beginning of the war in October 2001 and 31 March 2013. We were able to do so in 283 cases (95%), of whom 209 had enlisted during the ten-year period under investigation.

These 209 fatalities included 10 individuals for whom age group at enlistment (16, 17 or 18+) could not be calculated with certainty but could be estimated using other data, such as date of birth and year of enlistment.⁴⁹ Our findings were almost unchanged in sensitivity analyses which excluded these 10 individuals.

We divided the 209 fatalities into three groups according to whether they enlisted at age 16, at age 17, or at age 18 or over (see column (c) of Table 1). We fitted a logistic regression model to calculate the odds of fatality for those enlisting at 16 or 17 vs. 18+, adjusting the analysis for financial year of enlistment. Given that the total risk of fatality was low, the odds ratios generated in this regression model provide a good approximation of the risk ratio.

Table 1: (a) Regular Army intake; (b) estimated numbers completing training; and (c) numbers of fatalities in Afghanistan, by financial year of enlistment and by age at enlistment.⁵⁰

Year of enlistment	a) Total Regular Army intake by enlistment age			b) Estimated number successfully completing training, by enlistment age ⁵¹			c) Number of fatalities in Afghanistan from January 2001 to March 2013, by enlistment age (n=209)*		
	16	17	18+	16	17	18+	16	17	18+
FY 99-00	3377	3641	9467	2046	2206	7185	3	4	5
FY 00-01	3248	3136	8330	1968	1900	6322	8	0	5
FY 01-02	3400	3065	8315	2060	1857	6311	5	6	13
FY 02-03	3600	3330	9625	2182	2018	7305	8	2	9
FY 03-04	3225	2985	8980	1954	1809	6816	8	3	8
FY 04-05	2470	2385	6835	1497	1445	5188	5	3	12
FY 05-06	2445	2685	7555	1482	1627	5734	5	3	12
FY 06-07	2005	2865	8915	1215	1736	6766	4	7	13
FY 07-08	2200	2550	9785	1333	1545	7427	7	7	22
FY 08-09	1980	2155	10375	1200	1306	7875	1	3	18
Total	27950	28797	88182	16937	17449	66929	54	38	117

FY=financial year. * Fatalities include 10 with estimated ages of enlistment

We then calculated the odds of fatality among soldiers who enlisted at 16 vs. 18+ and 17 vs. 18+ and also completed training. We did this by tentatively assuming that known Army in-training drop-out rates for minors and adults between 2007-08 and 2011-12 can also be applied to the ten-year period 1999-00 to 2008-9, and scaling down the 'intake' denominators at each age accordingly (see column (b) of Table 1).

Finally, in view of calls on the UK government by the United Nations Committee on the Rights of the Child,

British Parliamentary Committees and others to raise the minimum age of enlistment to 18, we repeated these analyses comparing those enlisting at age 18 with those enlisting age 19+ in order to discover whether or not those enlisting at 18 had faced a higher risk of fatality. This involved assigning probable enlistment ages to 11 individuals; again, our findings were unchanged in sensitivity analyses excluding these individuals.

RESULTS

Across the duration of the conflict to 31 March 2013, the risk of fatality in Afghanistan to soldiers enlisted between 1999-00 and 2008-09 has been 1.92 per 1,000 for those who enlisted at age 16, 1.32 per 1,000 for those who enlisted at age 17 and 1.33 per 1,000 for those who enlisted at age 18+. ⁵²

When comparing the risk of fatality between those who enlisted at ages 16 versus 18+, we calculated an odds ratio of 1.52 (95% confidence interval (CI) 1.10-2.10 $p=0.01$). This means that **Regular Army soldiers who enlisted at 16 between 1999-00 and 2008-09 were approximately 50% more likely to die as a result of deployment to Afghanistan than those who had enlisted aged 18 or older.** ⁵³

When we included estimated training drop-out rates, the ratio increased to 1.92 (95% CI 1.39-2.66), $p<0.001$). This means that **soldiers who enlisted at 16 between 1999-00 and 2008-09 and successfully completed training were almost twice as likely to die as a result of deployment to Afghanistan than those who had enlisted at 18 and above and completed training.**

The p values of 0.01 and <0.001 , respectively, indicate that **these results are statistically significant and very unlikely to have occurred by chance.**

We found **no statistically significant evidence that recruits who had enlisted at age 17 faced a level of risk any different from those who enlisted at other ages.** This was true irrespective of whether the cases with estimated enlistment ages were included in the analysis. However, a non-significant trend was seen after modelling differential drop-out rates (all $p\geq 0.17$, see Table 2 and Figure 1).

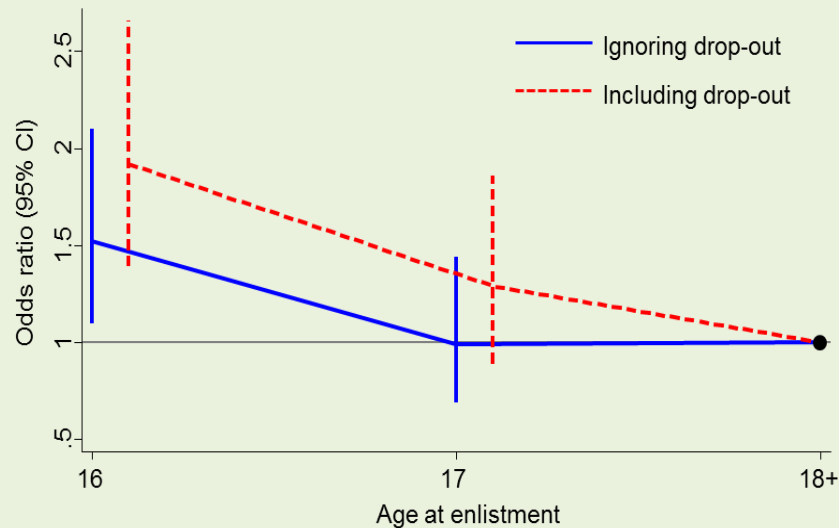
There was also no significant evidence that fatality risks differed between those who had joined the Army at 18 and those who enlisted at 19 and above. This was true irrespective of whether the probabilistic recruitment ages and assumed drop-out rates were included or excluded (all $p\geq 0.33$, results not shown).

In summary, we found that the risk to those enlisting at 16 was substantially higher than it was to those who enlisted at 18 and above. We found no evidence that enlisting at 17 or 18 involved a level of risk any different from enlistment at older ages.

Table 2: Association between age of enlistment and risk of fatality in Afghanistan among Regular Army soldiers enlisted between 1999-00 and 2008-09 inclusive, a) ignoring estimated in-training drop-out rates and b) accounting for estimated constant in-training drop-out rates of 39.4% for minors and 24.1% for adults. ⁵⁴

<i>Enlistment age group</i>	<i>a) Odds ratios (95% confidence intervals) ignoring differences in drop-out rates</i>	<i>b) Odds ratios (95% confidence intervals) including estimated differences in drop-out rates</i>	<i>Interpretation</i>
16	1.52 (1.10, 2.10), $p=0.011$	1.92 (1.39, 2.66), $p<0.001$	Significant; very unlikely to be due to chance
17	0.99 (0.69, 1.44), $p=0.97$	1.29 (0.89, 1.86), $p=0.17$	Non-significant; likely to be due to chance
18+ <i>[reference group]</i>	1	1	

Figure 1 showing results in Table 2:



DISCUSSION

Our analysis shows that Army recruits enlisting at age 16 have faced a substantially greater risk of fatality in Afghanistan than have those enlisting at 18 or older. This difference is shown to be larger still after accounting for estimated training drop-out rates. There are no clear differences in fatality risk between those enlisting at age 17 vs. 18+ or 18 vs. 19+.

Explaining the differences in fatality rates

The elevated fatality risk among those who enlisted at age 16 is in line with our hypothesis and, as outlined in the introduction, we believe it is likely to reflect a combination of two factors:

1. The over-representation of minors enlisting in the Infantry,⁵⁵ where the fatality rate has been approximately six times higher than in the rest of the Army;⁵⁶ and
2. The longer average career length among minors who do not drop out of training, at 10 years for Infantry recruits, compared with adults, at 7.6 years, resulting in a longer period of potential exposure to warfare.⁵⁷

There was no evidence for our hypothesis that the 17 year old enlistment group would also face a higher fatality risk. This finding does not seem to reflect a lower probability of the 17 year old enlistment group joining the Infantry, as the number of 16 and 17 year old Infantry recruits in each age group has been similar between 2007-08 and 2011-12 (figures are not available for earlier years).⁵⁸ A more plausible explanation involves the duration of potential

exposure to the Afghanistan war. Of the 209 soldier fatalities in our study sample, we found that those who enlisted aged 16 had served for an average of 8.6 years, whereas those who enlisted at 17 or 18 had served for an average of 6.1 years and 6.0 years, respectively.⁵⁹ Those enlisting at 16 would not have been deployable until age 18, but their period of potential exposure to the Afghanistan war would still be longer than those enlisting at other ages; this could partly account for our different findings for the 16 and 17 year old enlistment age groups.

We conclude that the relative risks associated with Infantry and non-Infantry roles, as well as the differing periods of potential exposure to warfare, are important explanatory factors for the differing fatality rates in each enlistment age group.

Do minors face higher risks in other respects?

Although the substantially higher risk of fatality among the 16 year old enlistment group is cause for concern, it is important to stress that fatalities among British forces have been uncommon. However, there are good grounds to speculate that the elevated risk among the 16 year old enlistment group also indicates higher odds of incurring non-fatal physical injury and trauma-related mental health problems, both of which are much more common than fatalities.

The fatality rate in Afghanistan, despite fluctuating annually, has shown a constant relationship to the rate of non-fatal physical casualties at a ratio of approximately 5:1.⁶⁰ This indicates that the fatality

rate among British Forces in Afghanistan may serve as a proxy for the rate of non-fatal injuries, with the 16 year old enlistment group disproportionately affected accordingly.

A similarly constant relationship has been found in historical wars between rates of fatalities and psychiatric casualties.⁶¹ In addition, studies of UK personnel deployed to Iraq and/or Afghanistan have found a higher prevalence of mental health problems among those with front-line roles. For example, post-traumatic stress disorder (PTSD) has been more common in personnel with combat roles,^{62 63 64} including the Infantry,⁶⁵ and/or who spend significant time in forward areas in battle.⁶⁶ Intensity of exposure to the traumatic events of warfare, such as coming under fire, killing people and handling dead bodies, is also associated with higher risk of PTSD.^{67 68} These findings repeat those of other studies investigating the mental health effects on British and other nations' forces of current and past wars.^{69 70 71 72 73 74 75} Another factor is the relatively greater vulnerability of young people from

disadvantaged backgrounds to the mental health effects of warfare, including PTSD.^{76 77 78 79 80} This social group is not only the most vulnerable to trauma, but also more likely than others to occupy the most dangerous armed forces roles.

The relationship between fatalities, non-fatal injuries and psychiatric disorders permits the hypothesis that recruits who enlist into the British Army at 16 face a higher risk not only of fatality, but also of physical and psychiatric harm. Although there has been no British study of the relationship between enlistment age and mental health to date, evidence from US studies of Vietnam veterans appears to support this conclusion. One US study found that young age and low educational attainment predicted intensity of war-zone exposure;⁸¹ another found that recruits who enlisted youngest were more likely than others to develop PTSD.⁸²

Therefore, we believe there are strong grounds for concern regarding the risks faced by those who enlist as minors with respect to non-fatal injuries and mental health trauma.

CONCLUSION

Our study indicates that in the British Army, soldiers who enlisted youngest have faced a relatively greater risk of fatality in Afghanistan. Previous research indicates that these young recruits are also likely to have come from the poorest backgrounds and may also be at higher risk of non-fatal injuries and trauma-related mental health problems.⁸³

Whilst minors in the Army are protected from the risks of deployment until they reach adulthood at age 18, they have still been at proportionally greater risk of fatality in Afghanistan than have soldiers who enlisted as adults. We believe this is due to the way in which recruitment policy channels the youngest, most disadvantaged recruits into some of the most dangerous armed forces roles, as well as the longer career length of recruits who enlist youngest and successfully complete their training.

Had the minimum age for armed forces recruitment been 18 during the ten-year period we studied, we cannot say with confidence whether this would have protected individuals who would otherwise have enlisted at 16 or 17. It is possible that a 16 year old without good GCSE results would still enlist at age 18 without gaining further qualifications in the meantime. In this case, the individual would be no

less likely to join the Infantry at age 18 than he would, had it been possible to enlist at age 16. Alternatively, the individual might have re-sat GCSEs or gained other qualifications before enlisting at 18, thereby becoming eligible for a wider variety of armed forces roles.

What can be said with confidence is that raising the minimum enlistment age to 18 would end the present situation which allows long-term risks to be borne disproportionately by recruits who are legally minors when they enlist.

The military situation in Afghanistan is changing. A large-scale draw-down of British troops is anticipated and so the results of our study cannot be a reliable guide to the future. Nonetheless, any future ground war is likely to deploy the Infantry in a key front-line role involving relatively high exposure to risk. If the current recruitment structure of the British Army remains the same then disproportionately large numbers of 16 year olds will continue to join the Infantry and face consequently higher risks from deployment than will adult recruits.

APPENDIX: ADDITIONAL TABLES

Table 3: Number and proportion of regular soldiers who enlisted in the Army aged under 18 and 18 or above and who left before completion of their Phase Two training since 2007.⁸⁴

<i>Financial year</i>	<i>Number enlisted in each year⁸⁵</i>		<i>Number enlisted in each year who subsequently dropped out before completion of Phase Two training⁸⁶</i>		<i>Proportion dropped out</i>	
	<i>Aged <18</i>	<i>Aged 18+</i>	<i>Aged <18</i>	<i>Aged 18+</i>	<i>Aged <18</i>	<i>Aged 18+</i>
2007-08	4750	9785	2000	2400	42.1%	24.5%
2008-09	4135	10375	1570	2210	38.0%	21.3%
2009-10	3630	10555	1480	2360	40.8%	22.4%
2010-11	2400	5640	1050	1710	43.8%	30.3%
2011-12	2930	7550	930	1900	31.7%	25.2%
Total	17845	43905	7030	10580	39.4%	24.1%

Table 4: Fatality rates of British Infantry and non-Infantry personnel across the duration of the Afghanistan war, estimated based on known relative size of Army and Infantry in 2013 (including officers and other ranks).

<i>Financial year</i>	<i>a) Strength (trained and untrained) (January/February 2013)^{87 88}</i>	<i>b) Fatalities in Afghanistan to 31 March 2013⁸⁹</i>	<i>c) Risk of fatality per 10,000 (B / A x 10,000)</i>
1. Army	94,610	358	38/10,000
2. Infantry	23,272 (24.6% of total)	236 (65.9% of Army total)	101/10,000
3. Rest of Army	71,338 (75.4% of total)	122 (34.1% of Army total)	17/10,000
		Relative risk of Infantry fatality vs. rest of Army (c2 / c3)	5.93

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This work represents independent research conducted by David Gee and Anna Goodman on behalf of ForcesWatch and Child Soldiers International.

SPONSORING ORGANISATIONS

Child Soldiers International is an international human rights research and advocacy organisation. We seek to end the military recruitment and the use in hostilities, in any capacity, of any person under the age of 18 by state armed forces or non-state armed groups. We advocate for the release of unlawfully recruited children, promote their successful reintegration into civilian life, and call for accountability for those who unlawfully recruit or use them.

ForcesWatch is a British-based campaigning organisation. We seek to scrutinise the ethical basis of the recruitment of young people into the armed forces. We advocate changes to policy, raise public awareness of the issues and challenge the armed forces on their recruitment practices, especially those aimed at the youngest and most disadvantaged groups.

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