

Active military service may heighten women's risk of having low birthweight babies

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Active military service may heighten a woman's risk of having a low birthweight baby, suggests a review of the available scientific evidence published online in the journal *BMJ Military Health*.

The findings highlight the need for more research specifically focused on women in the armed forces, and their [reproductive health](#) in particular, conclude the study authors.

Worldwide, increasing numbers of women are on active service in their country's armed forces. The UK Armed Forces, for example, has set a target of 30% female representation by 2030. And more and more countries are deploying women in combat units, and in other challenging environments, such as submarines, note the study authors.

Mounting evidence suggests that stress experienced during pregnancy is associated with birth complications, such as preterm delivery and low birthweight. And a military career and lifestyle expose service personnel to a wide range of physical, mental, and environmental stressors that could potentially influence pregnancy outcomes.

The study authors therefore wanted to explore the potential impact of active military service on the risks of preterm labor and birth, low birthweight, and stillbirth.

They scoured research databases for relevant studies, and included 21 that met all the eligibility criteria in their analysis. The studies, which involved 650,628 women serving in the US military, were all published between 1979 and 2023.

Ten of the studies included a comparison group—usually the wives of active service personnel. By way of a proxy for those that didn't include a comparator, the study authors drew on national data from the US National Vital Statistics for any given year.

Analysis of the study results indicated no heightened risk of preterm birth among pregnant active service women. But there were significant methodological differences; most studies had a moderate to high risk of

bias; and several included only small sample sizes, caution the study authors.

There was no observed association between branch of military service and increased risk of preterm birth, although again this should be interpreted cautiously as 5 studies included mixed service samples and the study design varied considerably, say the study authors.

There was no clear evidence for an increased risk of stillbirth among women on active military service, either.

But nearly two thirds (62.5%) of the studies concluded that women on active service may be at heightened risk of having a low birthweight baby, including one study with the lowest risk of bias. And 4 of the 5 studies that included a comparison group also indicated an increased risk of low birthweight.

Seven of the 8 studies reporting on low birthweight were carried out in single-service settings. Both of those from the US Air Force suggested a higher prevalence of low birthweight babies born to active duty military personnel.

But some 53% and 38% of the studies reporting on preterm birth and low [birthweight](#), respectively, didn't have a matched comparison group and relied on a proxy drawn from national statistical data.

This introduces a risk of systematic error as the baseline characteristics of the two groups are inherently different, caution the study authors.

Women on active military service will also be medically screened before any tours of duty and will have fewer co-existing conditions, while national data will include high risk and multiple pregnancies, they explain.

Only [observational studies](#) were included in the review, and the data collection methods and/or adjustment for influential factors varied, acknowledge the study authors. Only 8 studies reported on smoking status despite a high prevalence of smoking in the military and the fact that smoking is associated with several health issues before and during pregnancy.

The data also focused exclusively on the US military, which, although unsurprising given that it is one of the largest in the world, does limit the generalizability of the findings to armed forces personnel elsewhere, say the study authors.

Nevertheless, they conclude, "This review highlights a need for more female-specific research in armed forces, beyond the US military setting, to inform military maternity pathways and policies in ways that safeguard mothers and their babies while enhancing military readiness."

More information: Effect of active-duty military service on neonatal birth outcomes: a systematic review, *BMJ Military Health* (2024). [DOI: 10.1136/military-2023-002634](#)

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