

The survival model adopted for this report, to derive the mean duration of PTSD from published survival curves, was developed using linear regression to estimate the parameters of a linear transformation of the observed Kaplan–Meier estimates for duration of PTSD symptoms in identified studies. A parametric survival function (Weibull) was estimated and assessed for goodness of fit to the observed data by visual inspection.

For a Weibull distribution the survival function is given by

$$S(t) = \exp(-\lambda t^\gamma) \tag{3}$$

with scale parameter λ and shape γ . Taking the log of both sides gives

$$\log(S(t)) = -\lambda t^\gamma \tag{4}$$

Taking the log of both sides again, gives

$$\log(-\log(S(t))) = \log(\lambda) + \gamma \log(t) \tag{5}$$

which is a linear function and can be fit using least squares methods to provide estimates of $\log(\lambda)$ and γ .

General method for extracting data from published curves

Figures presenting Kaplan–Meier estimates for duration of PTSD symptoms in identified studies were scanned from the original publications and imported into Engauge software (<http://digitizer.sourceforge.net>). The process of extracting data from a chart usually begins with the user identifying key reference points on the chart (e.g. indicating the location of the origin and points along the x- and y-axes). Engauge software will indicate what appear to be data points in the imported image or the user can select individual data points to be extracted using the mouse. Points along the curve were selected at approximately 3-month intervals and the raw data (without any interpolation) were extracted to a text file and imported in Excel (Microsoft Corporation, Redmond, WA, USA).

The following table reports the parameter estimates for linear regression for the Weibull survival function.

	$\log(\lambda)$	γ
Weibull	-2.82786	0.61006

The mean duration of symptoms can be estimated using the following equation:¹⁵⁰

$$(1/\lambda)^{(1/\gamma)} \times \Gamma[1 + (1/\gamma)] \tag{6}$$

where Γ is the mathematical gamma function. Therefore, mean duration of PTSD symptoms is estimated as $(1/\exp(-2.82786))^{(1/0.61006)} \times \Gamma[1 + (1/0.61006)] = 151.80$ months, or 12.7 years.

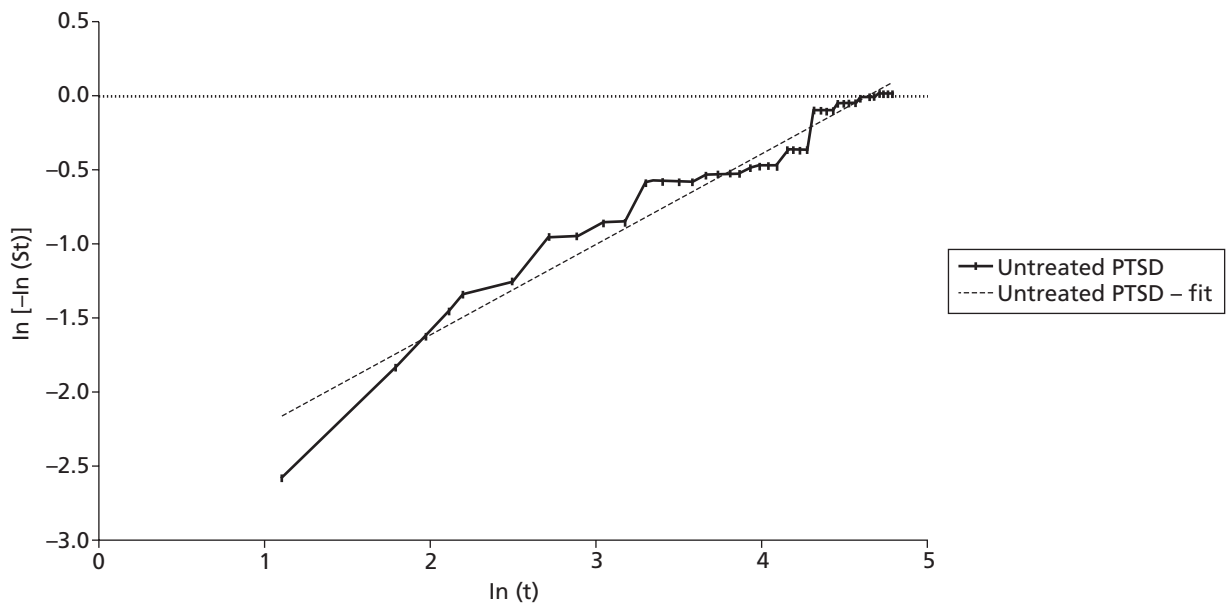


FIGURE 15 Transformed survival curve for duration of PTSD symptoms and linear fit.