

# Severity of diseases (STODS)

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|  |  |                     |
|--|--|---------------------|
| Full name: Severity of diseases  |  |                     |
| Abbreviated name: -  |  |                     |
| Availability in STODS:<br>Survey data collected 1998-2003, i.e. SALT study originally from the Swedish Twin Registry (STR) (available in STODS for twins born 1925-1958)   |  |                     |
| Short description:<br>Presence of self-reported common illnesses/diseases/chronic conditions are categorized in relation to how life-threatening they are considered to be. The categorization of "Severity of Diseases" is a development of previous work done by Gold et al., and Svedberg et al., see key references at the end of this document and see the note below on the use of this development in STODS.  |  |                     |
| Note on use of Severity of diseases:<br>A list of questions about the presence of common illnesses and conditions was asked to all twins participating in the SALT-study (data collected by the STR). Participants were asked to respond "yes" or "no" to the question "Do you have or have you had [then came the list of health problems and conditions]?". In order to obtain a measure that reflects seriousness of health problems instead of a summary variable of number of self-reported conditions, Gold and co-authors' ratings of severity of health problems were applied to the SALT data (Gold et al. 2002). An expert panel was asked to rate conditions in terms of their degree of being "life-threatening" according to the following categories: "very life-threatening", "somewhat life-threatening", "not at all life-threatening". For conditions available in SALT but not previously evaluated by Gold and colleagues, a four-member expert panel of physicians evaluated the conditions in terms of their degree of being life threatening (Svedberg et al 2006). If there was no unanimity on the seriousness of a particular condition, the majority rating was used. The rater reliability (calculated as an intraclass correlation) was .78 (Winer 1971). See Table at the end of this document for the list of conditions in each of these three categories.<br>Thereafter a variable "number and severity of chronic conditions" was created for each individual coded 0 if no conditions at all were reported, 1 if conditions were "not at all life-threatening", 2 if any of the subject's conditions were "somewhat life-threatening" and finally, 3 if any conditions present were "very life-threatening". If a person had several conditions, the code for chronic conditions was combined to represent any combinations (such as "Chronic conditions, not at all life-threatening and somewhat life-threatening"). Altogether eight categories can be used, developed for STODS (See Ropponen et al, 2011, 2014, 2020). <i>Principles here described may apply to other data collections as well.</i> |  |                     |
| Items (Swedish)  | Items (English)  | Variable name       |
| Hjärtsvikt   | <i>Heart failure</i>                                     | HJARTSVIKT          |
| Kärlkramp i bröstet (angina pectoris)  | <i>Angina pectoris</i>                                   | KARLKRAMP_I_BROSTET |
| Hjärtinfarkt   | <i>Heart attack</i>                                      | HJARTINFARKT        |
| Blodpropp i benet (Ventrombos)   | <i>Clot in the leg (venous thrombosis)</i>               | BLODPROPP           |
| Hjärnblödning eller blodpropp i hjärnan (slaganfall eller stroke)  | <i>Cerebral hemorrhage or clot in the brain (stroke)</i> | HJARNBLODNING       |

|  |   |   |
|--|---|---|
| M.S. - Multiple Skleros  | <i>Multiple sclerosis</i>   | M_S_MULTIPLE_SKLEROS  |
| Cancer, tumörsjukdom eller leukemi   | <i>Cancer, tumor disease or leukemia</i>  | CANCER  |
| För högt blodtryck   | <i>High blood pressure</i>  | FOR_HOGT_BLODTRYCK  |
| Kärlkramp i benen (fönstertittarsjuka eller claudicatio)   | <i>Vascular spasm in the legs (intermittent claudication)</i>   | KARLKRAMP_I_BENEN   |
| Emfysem  | <i>Emphysema</i>  | EMFYSEM   |
| Kronisk bronkit (luftrörskatarr)   | <i>Chronic bronchitis (bronchitis)</i>  | KRONISK_BRONKIT   |
| Tuberkulos   | <i>Tuberculosis</i>   | TUBERKULOS  |
| Astma<br>Allergi<br>Nässelutslag/urtikaria<br>Glutenallergi/celiaki  | <i>Asthma<br/>Allergy<br/>Hives/urticaria<br/>Gluten allergy/ceciac disease</i>   | ASTMA<br>ALLERGI<br>NASSELUTSLAG<br>GLUTENALLERGI           |
| Epilepsi<br>Krampanfall, tex i samband med feber<br>Små epileptiska anfall, sk absenser eller "petit mall" | <i>Epilepsy<br/>Seizures, e.g., in connection with fever<br/>Minor epileptic seizures, so called absence epilepsy or "petit mall"</i> | CHILDHOOD_EPILEPSY<br>KRAMPANFALL<br>SMA_EPILEPTISKA_ANFALL |
| Parkinsons sjukdom   | <i>Parkinson's disease</i>  | PARKINSONS_SJUKDOM  |
| Psykiska besvär  | <i>Mental problems/illness</i>  | PSYKISKA_BESVAR   |
| Polio  | <i>Polio</i>  | POLIO   |
| Ledgångsreumatism  | <i>Rheumatoid arthritis</i>   | LEDGANGSREUMATISM   |
| Benskörhet (Osteoporos)  | <i>Osteoporosis</i>   | BENSKORHET  |
|  |   |   |
| Sockersjuka (diabetes) (inkl ålderssocker, åldersdiabetes, ekl. graviditetsdiabetes)                       | <i>Diabetes (incl old age diabetes)(excl pregnancy diabetes)</i>  | SOCKERSJUKA   |
| Ulcerös kolit  | <i>Ulcerative colitis</i>   | ULCEROS_KOLIT   |
| Leversjukdom (t.ex cirros)   | <i>Liver disease (for example, cirrhosis)</i>   | LEVERSJUKDOM  |
| Njursjukdom  | <i>Kidney disease</i>   | NJURSJUKDOM   |
| Prostatibesvär   | <i>Prostate problems</i>  | PROSTATABESVAR  |
| Livmodersoperation   | <i>Uterine or ovary surgery</i>   | LIVMODERSOPERATION  |
|  | <i>Do you sometimes get cold sore (herpes) around your mouth?</i>   | SLE_LUPUS   |
| Hösnuva  | <i>Hey fever</i>  | HOSNUVA   |
| Blodfettsubbning, tex högt kolestero eller höga triglycerider  | <i>Lipid disorder, for example high cholesterol or high triglycerides</i>   | BLODFETTSTRUBBNING  |
| Oregelbunden hjärtrytm eller så kallad hjärtflimmer  | <i>Irregular cardiac rhythm/atrial fibrillation</i>   | OREGELBUNDEN_HJARTRYTM                                      |
| Blåsljud på halskärnen eller förträngning av halskärl  | <i>Murmurs in the carotid arteries (arteriacarotis) or narrowint of neck arteries</i>   | BLASLJUD  |
| Migrän   | <i>Migraine</i>   | MIGRAN  |

| Yrsel  | <i>Dizziness</i>   | YRSEL                            |
|--|--|----------------------------------|
| Har ögonläkare konstaterat att Du har glaukom, ibland kallat grön starr eller högt ögontryck, som behandlas med droppar? | <i>Have you been diagnosed by an eye doctor as having glaucoma, pressure of the fluid within the eye, which is treated with drops?</i> | GLAUKOM                          |
| Har ögonläkare konstaterat att Du har grå starr?   | <i>Have you been diagnosed by an eye doctor as having cataract?</i>  | CATARACT                         |
| Har Du någon synskada?<br>Om ja: Gäller det båda ögonen eller bara ett öga?  | <i>Do you have impaired vision?</i>  | SYNSKADA                         |
| Knäledsbesvär  | <i>Knee joint problem</i>  | KNALEDSBESVAR                    |
| Höftledsbesvär   | <i>Hip joint problem</i>   | HOFTLEDSBESVAR                   |
| Psoriasis-eksem  |  | PSORIASIS_EKSEM                  |
| Struma<br>Körtelsjukdom (inkluderar alla utom struma)  | <i>Goiter<br/>Glandular disease(incl everything but goiter)</i>  | STRUMA<br>KORTELSJUKDOM          |
| Mag- eller tarmbesvär  | <i>Stomach or intestine problems</i>   | MAG_ELLER_TARMBESVAR             |
| Gallbesvär   | <i>Gall bladder problem</i>  | GALLBESVAR                       |
| Gikt   | <i>Gout</i>  | GIKT                             |
| Återkommande urinvägsbesvär  | <i>Recurring urinary tract problems</i>  | ATERKOMMANDE_URINVAGSBESVAR      |
| Nackledsbesvär   | <i>Neck pain</i>   | NACKLEDSBESVAR<br>AXELLEDSBESVAR |
| Eksem  | <i>Eczema</i>  | EKSEM                            |
| Ischias  | <i>Sciatica</i>  | ISCHIAS                          |
| Ryggbesvär   | <i>Back pain</i>   | RYGGBESVAR                       |
| Skolios  | <i>Scoliosis</i>   | SKOLIOS                          |

*/\*code in SAS\*/*

*/\*data on ovary operations - women section\*/*

```

if operation_inner_organ=998 or operation_inner_organ=999 then
ovary_op=.;
if operation_inner_organ=1 then ovary_op=1;
if operation_inner_organ=0 then ovary_op=0;
keep twinnr ovary_op;

```

*/\*Combine above with data on all individuals and the reported conditions [sick-list], then see below further categorization\*/*

*/\*Very life-threatening conditions\*/*

```

/*if any then very life-threatening code 1, else 0 or missing eq .*/
very_lt=0;
some_lt=0;
not_lt=0;

```

```

if malca ne 1 then malca=.;
if Blodpropp=998 or Blodpropp=999 then Blodpropp=.;
if Hjarnblodning=998 or Hjarnblodning=999 then Hjarnblodning=.;
if Hjartinfarkt=998 or Hjartinfarkt=999 then Hjartinfarkt=.;
if Hjartsvikt=998 or Hjartsvikt=999 then Hjartsvikt=.;

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if Karlkramp_i_brostet=998 or Karlkramp_i_brostet=999 then
Karlkramp_i_brostet=.;
if TIA_attacker=998 or TIA_attacker=999 then TIA_attacker=.;
if M_S_Multiple_Skleros=998 or M_S_Multiple_Skleros=999 then
M_S_Multiple_Skleros=.;

if Blodpropp=1 or Hjarnblodning=1 or Hjartinfarkt=1 or Hjartsvikt=1 or
Karlkramp_i_brostet=1 or
TIA_attacker=1 or M_S_Multiple_Skleros=1 or malca=1 then
very_lt=1; else
if (Blodpropp=. and Hjarnblodning=. and Hjartinfarkt=. and Hjartsvikt=.
and Karlkramp_i_brostet=. and
TIA_attacker=. and M_S_Multiple_Skleros=. and malca=.) then
very_lt=.;

/*Somewhat life-threatening conditions*/
/*if any of the conditions are present then code=1, else 0, missing on
all eq .*/

if Tuberkulos=998 or Tuberkulos=999 then Tuberkulos=.;
if Allergi=998 or Allergi=999 then allergi=.;
if Astma=998 or Astma=999 then astma=.;
if Benskorhet=998 or Benskorhet=999 then Benskorhet=.;
if Blasljud=998 or Blasljud=999 then blasljud=.;
if Blodfettssrubbnig=998 or Blodfettssrubbnig=999 then
Blodfettssrubbnig=.;
if Sockersjuka=998 or Sockersjuka=999 then Sockersjuka=.;
if Emfysem=998 or Emfysem=999 then Emfysem=.;
if For_hogt_blodtryck=998 or For_hogt_blodtryck=999 then
For_hogt_blodtryck=.;
if Karlkramp_i_benen=998 or Karlkramp_i_benen=999 then
Karlkramp_i_benen=.;
if Oregelbunden_hjartrytm=998 or Oregelbunden_hjartrytm=999 then
Oregelbunden_hjartrytm=.;
if Parkinsons_sjukdom=998 or Parkinsons_sjukdom=999 then
Parkinsons_sjukdom=.;
if Polio=998 or Polio=999 then Polio=.;
if Prostatabesvar=998 or Prostatabesvar=999 then Prostatabesvar=.;
if SLE_Lupus=998 or SLE_Lupus=999 then SLE_Lupus=.;
if Struma=998 or Struma=999 then Struma=.;
if childhood_epilepsy=998 or childhood_epilepsy=999 then
childhood_epilepsy=.;
if Sma_epileptiska_anfall=998 or Sma_epileptiska_anfall=999 then
Sma_epileptiska_anfall=.;
if Kronisk_bronkit=998 or Kronisk_bronkit=999 then Kronisk_bronkit=.;
if Kortelfeber=998 or Kortelfeber=999 then Kortelfeber=.;
if leversjukdom=998 or leversjukdom=999 then leversjukdom=.;
if Ledgangsreumatism=998 or Ledgangsreumatism=999 then
Ledgangsreumatism=.;
if Hosnuva=998 or Hosnuva=999 then Hosnuva=.;
if Ryggreumatism=998 or Ryggreumatism=999 then Ryggreumatism=.;
if Njursjukdom=998 or Njursjukdom=999 then Njursjukdom=.;
if Psykiska_besvar=998 or Psykiska_besvar=999 then Psykiska_besvar=.;
if Rorelsehinder=998 or Rorelsehinder=999 then Rorelsehinder=.;

if ovary_op=1 or Tuberkulos=1 or Allergi=1 or Astma=1 or Benskorhet=1 or
Blasljud=1 or Blodfettssrubbnig=1 or
Sockersjuka=1 or Emfysem=1 or For_hogt_blodtryck=1 or Karlkramp_i_benen=1
or Oregelbunden_hjartrytm=1 or
Parkinsons_sjukdom=1 or Polio=1 or Prostatabesvar=1 or SLE_Lupus=1 or
Struma=1 or childhood_epilepsy=1 or

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```

Sma_epileptiska_anfall=1 or Kronisk_bronkit=1 or Kortelfeber=1 or
leversjukdom=1 or Ledgangsreumatism=1 or
Hosnuva=1 or Ryggreumatism=1 or Njursjukdom=1 or Psykiska_besvar=1 or
Rorelsehinder=1 then
some_lt=1;
if (ovary_op=. and Tuberkulos=. and Allergi=. and Astma=. and
Benskorhet=. and Blasljud=. and Blodfettstrubbning=. and
Sockersjuka=. and Emfysem=. and For_hogt_blodtryck=. and
Karlkramp_i_benen=. and Oregelbunden_hjartrytm=. and
Parkinsons_sjukdom=. and Polio=. and Prostatabesvar=. and SLE_Lupus=. and
Struma=. and childhood_epilepsy=. and
Sma_epileptiska_anfall=. and Kronisk_bronkit=. and Kortelfeber=. and
leversjukdom=. and Ledgangsreumatism=. and
Hosnuva=. and Ryggreumatism=. and Njursjukdom=. and Psykiska_besvar=. and
Rorelsehinder=.) then
some_lt=.;

/*Not at all life-threatening condition*/
/*if any of these conditions are present then code=1, else 0, missing on
all eq .*/

if Crohn_s_sjukdom=998 or Crohn_s_sjukdom=999 then Crohn_s_sjukdom=.;
if Eksem=998 or Eksem=999 then Eksem=.;
if Gallbesvar=998 or Gallbesvar=999 then Gallbesvar=.;
if Gikt=998 or Gikt=999 then Gikt=.;
if Hoftledsbesvar=998 or Hoftledsbesvar=999 then Hoftledsbesvar=.;
if Ischias=998 or Ischias=999 then Ischias=.;
if Knaledsbesvar=998 or Knaledsbesvar=999 then Knaledsbesvar=.;
if Mag_eller_tarmbesvar=998 or Mag_eller_tarmbesvar=999 then
Mag_eller_tarmbesvar=.;
if Migran=998 or Migran=999 then Migran=.;
if Nackledsbesvar=998 or Nackledsbesvar=999 then Nackledsbesvar=.;
if Nasselutslag=998 or Nasselutslag=999 then Nasselutslag=.;
if Psoriasis=998 or Psoriasis=999 then Psoriasis=.;
if Ryggbesvar=998 or Ryggbesvar=999 then Ryggbesvar=.;
if Skolios=998 or Skolios=999 then Skolios=.;
if synskada=1 or synskada=2 then synskada=1; /*else there are no problems
= 0 */
if synskada=998 or synskada=999 then synskada=.;
if Ulceros_kolit=998 or Ulceros_kolit=999 then Ulceros_kolit=.;
if Yrsel=998 or Yrsel=999 then Yrsel=.;
if Aterkommande_urinvagsbesvar=998 or Aterkommande_urinvagsbesvar=999
then Aterkommande_urinvagsbesvar=.;
if Axelledsbesvar=998 or Axelledsbesvar=999 then Axelledsbesvar=.;
if Crohn_s_sjukdom=1 or Eksem=1 or Gallbesvar=1 or Gikt=1 or
Hoftledsbesvar=1 or Ischias=1 or Knaledsbesvar=1 or
Mag_eller_tarmbesvar=1 or Migran=1 or Nackledsbesvar=1 or Nasselutslag=1
or Psoriasis=1 or Ryggbesvar=1 or
Skolios=1 or synskada=1 or Ulceros_kolit=1 or Yrsel=1 or
Aterkommande_urinvagsbesvar=1 or Axelledsbesvar=1 then
not_lt=1;
if (Crohn_s_sjukdom=. and Eksem=. and Gallbesvar=. and Gikt=. and
Hoftledsbesvar=. and Ischias=. and Knaledsbesvar=.
and Mag_eller_tarmbesvar=. and Migran=. and Nackledsbesvar=. and
Nasselutslag=. and Psoriasis=. and Ryggbesvar=. and
Skolios=. and synskada=. and Ulceros_kolit=. and Yrsel=. and
Aterkommande_urinvagsbesvar=. and Axelledsbesvar=.) then
not_lt=.;

/*frequencies */
proc freq; tables very lt some lt not_lt; run;

```

Key references:

Gold CH, Malmberg B, McClearn GE, Pedersen NL, Berg S. Gender and health: a study of older unlike-sex twins. *J Gerontol B Psychol Sci Soc Sci*. 2002 May;57(3):S168-76. doi: 10.1093/geronb/57.3.s168.

Svedberg P, Bardage C, Sandin S, Pedersen NL. A prospective study of health, life-style and psychosocial predictors of self-rated health. *Eur J Epidemiol*. 2006;21(10):767-76. doi: 10.1007/s10654-006-9064-3.

Ropponen A, Narusyte J, Alexanderson K, Svedberg P. Stability and change in health behaviours as predictors for disability pension: a prospective cohort study of Swedish twins. *BMC Public Health*. 2011 Aug 31;11:678. doi: 10.1186/1471-2458-11-678.

Ropponen A, Svedberg P. Single and additive effects of health behaviours on the risk for disability pensions among Swedish twins. *Eur J Public Health*. 2014 Aug;24(4):643-8. doi: 10.1093/eurpub/ckt168.

Ropponen A, Narusyte J, Silventoinen K, Svedberg P. Health behaviours and psychosocial working conditions as predictors of disability pension due to different diagnoses: a population-based study. *BMC Public Health*. 2020 Oct 6;20(1):1507. doi: 10.1186/s12889-020-09567-8.

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**Table** Conditions included in the summary subscales of self-reported health conditions in the SALT-study on the basis of severity of conditions as rated by physicians.

| <b>Very Life-Threatening Condition</b> | <b>Somewhat Life-Threatening Condition</b> | <b>Not at All Life-Threatening Condition</b> |
|--|--|--|
| Heart insufficiency                    | High blood pressure                        | Migraine                                     |
| Angina pectoris                        | Vascular spasm in legs                     | Dizziness                                    |
| Heart attack                           | Emphysema                                  | Glaucoma                                     |
| Thrombosis in leg                      | Chronic bronchitis                         | Cataract                                     |
| Stroke                                 | Tuberculosis                               | Other eye disorders                          |
| Multiple sclerosis                     | Allergies and Asthma                       | Knee problems                                |
| Cancer                                 | Epilepsy                                   | Hip problems                                 |
|  | Parkinson's disease                        | Psoriasis                                    |
|  | Mental conditions                          | Goiter/other gland problems                  |
|  | Polio                                      | Stomach/intestinal problems                  |
|  | Rheumatoid arthritis                       | Gall disorders                               |
|  | Osteoporosis                               | Gout   |
|  | Disabled                                   | Urinary tract disorder                       |
|  | Diabetes                                   | Neck and shoulder problems                   |
|  | Ulcer                                      | Eczema                                       |
|  | Liver disorders                            | Sciatica                                     |
|  | Kidney disease                             | Back problems                                |
|  | Prostate disorders                         | Scoliosis                                    |
|  | Uterus or ovary operation                  |  |
|  | SLE (Lupus)                                |  |
|  | Osteoporosis                               |  |
|  | Hay fever                                  |  |
|  | Dyslipidemia                               |  |
|  | Cardiac arrhythmia                         |  |
|  | Cardiac murmur                             |  |