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How Many Lived to Maturity?

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Abstract

Calculations have been made of the total child and adolescent mortality in Finland in the 1700s and 1800s and the beginning of the 1900s. The author examines the cohort mortality of children and adolescents in different periods, regions and social groups. He does this by using the family reconstruction method with the aid of genealogical tables. The study focuses on five populations. In these cases the common allegation that during preindustrial period half the children died before reaching maturity is somewhat exaggerated.

Keywords: mortality decline, child mortality, adolescent mortality, mortality, historical demography, Finland

Child and adolescent mortality in the 18th and 19th centuries

The substantial decline in mortality which has occurred in Finland during the past century and a half did not take place at an even pace in different age classes. From the earliest quite reliably recorded decade, the 1750s, total mortality in Finland declined from 29.1 per thousand to 23.5 per thousand in 1841–1850, or by 19 percent, but infant mortality declined by 23 percent. From the latter point of time to the five-year period of 1911–15, total mortality dropped to 14.95 per thousand or by 36 percent, but infant mortality by an entire 47 percent (Strömmer 1969[1]; Turpeinen 1987, 298–300, 381–383; cf. Turpeinen 1984). Corresponding calculations have not been made of the mortality of children past their first year, i.e. those aged 1 to 9, nor of older children and adolescents (aged 10 to 19), but when we know that smallpox, which had been a threat to the former age group, had been overcome, it can be expected that the decline in mortality in these age groups also occurred in earlier decades than for the adults and the elderly. The first vaccination decree was given in 1825, and the mortality of children aged 1 to 9 from smallpox in 1825–65 was only one-fifth of what it had been in 1776–1800, when no effective vaccine was yet known; the decree mentioned did not, however, make vaccination obligatory (Turpeinen 1987, 336). If the mortality of each group in 1776–1825 is marked by one hundred, this gives, accord-

[1] Figures have been taken or calculated from Table 1 and 8 and Appendix Table of Statistics I.

ing to Turpeinen, a value of 88 in 1826–65 for infants, 95 for 1- to 2-year-olds, 94 for 3- to 4-year-olds, 91 for 5- to 9-year-olds and 100 for 10- to 19-year-olds. In the last-mentioned age group, the death toll had already been small earlier. At the same time that smallpox was being successfully overcome, whooping cough, diphtheria, scarlet fever and the measles began to carry off a growing number of victims (Turpeinen 1987, 339–346). Mortality among 10- to 14-year-olds did not even decline yet in the period between the 1870s and the 1910s. The mortality curve of children aged 1 to 2 began to drop sharply in the 1870s, that of children aged 3 to 4 at the end of the century, and that of children aged 5 to 9 in the beginning of the new century (Turpeinen 1987, 410–412).

Methods and material used

The pre-maturity mortality of cohorts born in different decades and belonging to different social groups and regions can only be studied through microanalysis using family reconstruction. When applying this method, it is also possible to answer the question of how large a share of the children born to an average family lived to maturity. Family reconstruction has been implemented in the following by taking a short-cut, i.e. using genealogical tables compiled of families belonging to different social groups. This has been done not only to economize the work entailed but also because by taking this route we gain a notable research advantage. In the family reconstruction, made usually according to parish, persons who move to another parish, then also leave the sample, and their demographic behavior may be different from that of the people who remained stationary, whereas, in the genealogies, all the branches and families are taken into consideration regardless of their domicile.

The study focuses on five populations. The peasantry is represented first by the Tavastia and Satakunta-based families of Bjong-Rapola, Pohjola–Uotila–Paasikivi, Melkas–Tiura–Nuutila and Hörtsänä–Turtola (Rapola 1929; Poppius 1948a, 1948b, 1949) and secondly by the large Osthrobotnian family Ilkka (Sarvela 1979), because it is well-known that this province differs in its demographic behavior. The bourgeoisie is represented by the surveyed Kristinestad families of Backman, Berg, Björkman, Brunck, Holmström, Lebell, Sundman and Uddman (Björkman and Hedman 1929). When searching for a suitable clerical line of descent, the Lagus family (Uusi Sukukirja 1949) was chosen after some deliberation, because it is one of the most populous of the families of standing studied, so that there is little random effect, and because the data cover the entire period. The families of the nobility have been chosen so that the sample includes in alphabetical order every tenth family raised to the nobility after the Peace of Uusikaupunki (Adlercreutz, Bruncrona, Ehrnrooth, von Friesendorff, Gyldenstolpe, Jägerhorn af Storby, Ladau, von Marquard, Pistolekors, Ridderborg, Stiernschantz, Teetgren and Örnhielm) (Carpelan 1954, 1958 and 1965–1966). In three cases there has been a leap over to the eleventh family, because the tenth family would have had very few members and/or was a family who had died out early. Thus, Gyldenstolpe was replaced by Gyllenbögel, von Marquard by Mellin and Ridderborg by Ridderstad.

To what extent does the sample represent the social groups of the entire Finnish population? In addition to landowners, the peasant families include many tenant farmers, cottagers, rural artisans and, when Finland was part of the Swedish realm, soldiers whose equipment and maintenance were the responsibility of a given piece of land. It is well-founded to analyze the peasants as one group, for according to earlier research results based on samples, mortality among the peasantry was quite even, among the landless infant mortality may even have been lower than among the landed (Turpeinen 1987,

317). On the other hand, the picture of the peasantry is disturbed somewhat, especially in the 1800s, by the young people moving to the cities as artisans and merchants, gradually also as workers and finally as officials. In the Bjong–Rapola family, the branch which took the name of Törnroth was excluded: the first ancestor in this line of descent moved to Turku in 1814 apprenticed to a goldsmith and the line includes members of the bourgeois and officials for over a century (22 tables out of a total of 129). In the Hörtsänä–Turtola family some moves occurred starting in the mid-1800s, but in the Melkas–Tiura–Nuutila family and the Pohjola–Uotila–Paasikivi family the few moves that took place to the towns did not occur until the end of the 1800s. Separating these individual families from the sample would have been arbitrary. In the bourgeois families of a coastal town, the majority were merchants and master artisans – they also included a fisherman or two, who must also be considered persons carrying on a trade – but, as in general in Ostrobothnia towns, also a fair share of seamen and several pilots, as well as shop assistants, that is the top level of paid workers. Mainly at the end of the period, some of the members of the families being studied became officials. This data did not enable contact with the actual urban proletariat, but before industrialization it was very small.

It is impossible to find a purely clerical family in the 1700s, and even less so in the 1800s. Even the Lagus family also included both officials and some farmers and landless persons. On the other hand, the families of the nobility were rather homogenous socially. They were mainly composed of officers and officials living in the countryside, and they usually owned estates or had official residences at their disposal. These family lines also included some families who had "sunk among the common people", but they have not been screened out except for one special case, where it has been possible without being arbitrary. The Ehrnrooth family contains two branches matriculated into the House of Knights as numbers 73 and 85 and a third, peasant branch, which was not accepted into the House of Knights.

The earliest cohorts whose phases can be followed were born in 1700–09 and 1710–19 (although data on the Ilkka family is available for the two previous ten-year cohorts). However, the records in the genealogies at that time appear to be incomplete to such an extent that these data have not been included in the total sums for the various groups. The last cohort that was followed is composed of those born in the 1930s, but in some families the genealogical study has been completed so early that it has been necessary to stop at an earlier cohort. Unfortunately, the Ilkka family from Ostrobothnia cannot be followed further than the 1790s, and both this and the previous cohort include only some of the descendants of the forebears. Thus, the decline in the high infant mortality of the rural areas in Ostrobothnia cannot be dated with our material.

Except for the Pohjola–Uotila–Paasikivi family, the peasant families also include the branches continuing on the female side. This can in no way affect the picture of mortality.

The data on the earliest decades contains cases where the child has been recorded as having died, but age at death is not given. Those recorded as having died as 'small children' are included among children dying as infants, 'children' among those dying at ages 1 to 9 and 'adolescents' among those dying at ages 10 to 19. A possibly erroneously recorded date in an individual case has no impact at all on the total mortality of minors, nor does it significantly distort the age distribution of those who died as minors, because the number of cases in question is so small. Persons whose fate – often because of emigration – has been recorded as 'unknown', are assumed to have reached the age of 20. This method gains support by the fact that almost all the persons recorded in Kristinestad as 'being absent in year X' would have been at least 20 years old in that given year.

In the sum totals, the cohorts are divided into three chronological groups: those born in 1720–99, in 1800–69 and in 1870–1919 (1939). The first limit is determined by the smallpox vaccination introduced in 1802 and the second by the fact that there were no population catastrophes after the years of famine in 1867–68 and that the onset of industrialization began to raise the standard of living. If a cohort shrinks, when going from one decade to another, one should not reach the conclusion that there was a decline in the birth rate: the reason may merely be that the following of a branch of a family has been discontinued in the genealogies being used as a source. This procedure has no effect on the mortality rates.

Some extreme examples

The cause of death is mentioned in the sources only as an exception, but some conclusions can be made about some correlation between family size and mortality among minors.

Even a cursory glance at the family tables will show that the number of children among Ostrobothnian peasant families was greater than among families in Southern Finland. Gigantic families, where the same father or even mother have more than a dozen children, are seen primarily in the Ostrobothnian population. Because of the arbitrariness of drawing limits and the variety found among the cases, no statistical comparisons have been made between an exceedingly high number of children and an exceptionally high mortality among minors; instead, we will settle for listing some case examples. The cause-and-effect relationship may work in both directions. When there were only short intervals between births, the care of the children was neglected, with the birth rate thus raising mortality. On the other hand, in families where it was customary to breastfeed children, the death of an infant cut short breastfeeding and this led more quickly to the birth of the next child.

The following cases can be found in the Ilkka family from Ostrobothnia:

Juha Kylmäjyrä and his first wife Maija Krekola (married in 1728) and his second wife Kirsti Kylmäjyrä (married in 1741) had 21 children, of whom 16 died before reaching maturity.

Maria Birling and her first husband Taneli Kylmäjyrä (married in 1743) and her second husband Martti Tuokko (married in 1767) had 17 children, of whom 14 died under the age of three.

Matti Välkki and his first wife Vappu Matti's daughter (married in 1746) and his second wife Aune Soini (married in 1766) had 17 children, of whom seven died under the age of two.

Juha Birling and Riitta Hälli (married in 1723) had 16 children, of whom 12 died under the age of three.

Maija Hannu's daughter and Esa Talonen (married in 1689) had 15 children, of whom 11 died before reaching maturity.

Maija Heiska and Juha Vähä-Kurikka (married in 1748) had 15 children, of whom eight died under the age of six.

Leena Kohlu and Matti Niiles's son (married in 1752) had 15 children, of whom 10 died as infants.

Sanna Iso-Kurikka and Heikki Pantti (married in 1764) had 15 children, of whom 11 died under the age of four.

Maija Kylmäjyrä and Pietari Jouppila (married in 1678) had 14 children, of whom 10 died when 'small'.

Juha Tuomas' son and Anna Jouppila (married in 1708) had 14 children, of whom 12 died before reaching maturity.

Social and regional differences

The tables demonstrate that the rough allegation appearing in the historical literature, that at a time when people lived at the mercy of nature, half of the children who were born died before reaching maturity, is somewhat exaggerated already when talking about the 1700s (See Appendix tables). Only in particularly disadvantageous conditions, in the rural areas of Southern Ostrobothnia, did the percentage of deaths actually rise to 50. In the Ostrobothnia town studied almost three children out of five reached maturity, in the families of the clergy and in the peasant families of Southern Finland somewhat more than three out of five and, in the families of the nobility, as many as seven out of ten. The lower mortality among the nobility compared to other social groups appears to show that, at least on country estates, people could to some extent protect themselves against epidemics by isolating themselves. If the difference in mortality had been caused by the standard of living, it would also have been apparent in the families of the clergy, for people living in pastorages did not suffer from want, either, but mortality in families of the clergy was at the same level as in the peasant families of Southern Finland.

Even the distribution of child and adolescent mortality according to age group shows interesting social and regional differences. The fact that in the cohorts of the 1700s in the rural areas of Southern Ostrobothnia, one out of two children was lost before coming of age, was due to a terribly high infant mortality. This is not an unexpected result, in fact, this has already been known on the basis of studies using other methods and narrative sources; and the reason is also known: mothers generally neglected to breastfeed their children (Lithell 1981, 18, 23, 33–36; Turpeinen 1979). What is new, however, is that almost as a compensation for these losses, mortality among 1-to 9-year-olds in the rural areas of Southern Ostrobothnia did not rise as high as in the peasant or bourgeois families or the families of the clergy or nobility in Southern Finland. Perhaps infant mortality had eliminated the weakest of the group in Southern Ostrobothnia. In the peasant families of Southern Finland it was the mortality of the middle age group which deviated unfavorably from the corresponding figures for the upper social groups. Among the 10- to 19-year-olds, so few died in any of the groups that little room was left for later improvement: the unweighed average mortality for the different social groups in this age group was 2.6 % in 1720–99 and 1.0 % in 1870–1919 (1939).

Even before the economic transition, which took place around 1870, mortality began to decline, most weakly in the peasant families of Southern Finland. Among the nobility, now only one child out of four was lost. In all the groups, the decline was strongest among infants, while mortality among 1- to 9-year-olds only declined among the burgher families, remained stable in the families of the nobility and actually rose in the peasant and clerical families of Southern Finland. Apparently the same phenomenon could have been noted in Ostrobothnia, if the verdant branches of the Ilkka family could have been followed further than the year 1800; this assumption is supported by the fact that infant mortality was already declining there, starting with the cohorts born in the 1770s. As a result of reprimands and propaganda dispersed by officials, a change was occurring in breastfeeding practices (Turpeinen 1979, 14 and 1987, 292–300). Vaccination against smallpox had not had the expected impact on mortality among 1- to 9-year-olds, for as this most deadly disease declined, other epidemic illnesses carried off an increasing number of victims.

An unqualified improvement in living conditions was experienced first by the cohorts born in and after the 1870s. More exact dating is hindered by the smallness of the populations so that random factors may affect the cohorts of different decades, at least within one social group. Without presenting mortality rates, it can still be stated

that an acute change occurred in Kristinestad already in the cohort born in the 1870s and that, beginning with the cohorts of the 1890s, not a single child or adolescent died in the families being studied. In the families of the clergy, the change occurred at the turn of the century and then became permanent. In the families of the nobility, slow progress can be seen starting with the cohorts born in the 1890s. On the other hand, the peasant families of Southern Finland show both a decline and a rise in mortality, with an even greater share of the 1900–09 cohort dying before maturity than of the 1870s cohort and, similarly, a larger percentage of the cohort of the 1910s dying than of the 1890s cohort. Tuberculosis was hardly the reason for this step backwards; at the age of 10 to 19, a rather small number of adolescents died, although a relatively greater number in the peasant families than in any other social group.

In 1741–43, 1788–90 and 1808–09, the wars led to a population crisis for Finland also among civilians and, thus, also among children and adolescents, and in 1867–68, crop failure and the epidemics which had already started to spread earlier led jointly to a population catastrophe. If the mortality rates for these decades are calculated separately – even though the populations in each social group will thus be quite small – no exceptional rise in mortality can be seen. On the contrary, in ten cohorts the mortality rate is lower than for the entire period under consideration (that is, 1720–99 or, correspondingly, 1800–69) and higher in only eight cohorts. One reason may be that cohort studies which use even decades as a limit do not reveal the impact of wars, which could more readily be seen, if the cohorts had been formed in some other way.

References

Björkman, H.J. and Hedman, K. (1929). Äldre köpmanssläkter i Kristinestad (Older merchant families in Kristinestad). Suomen Sukututkimusseuran Vuosikirja 22.

Carpelan, T. (1954, 1958, 1965–1966). Ättartavlor för de på Finlands Riddarhus inskrivna ätterna I–III (Genealogical tables for the families inscribed in the House of Knights I–III).

Lithell, U.-B. (1981). Breast-feeding and Reproduction. Studia historica Upsaliensia 120. Uppsala: Uppsala universitet. Doctoral dissertation.

Poppius, L. (1948a). Hämäläisiä sukuja (Families from Tavastia). Hörtsänä–Turtola. Jalmari Finnen säätiön julkaisuja I.

Poppius, L. (1948b). Hämäläisiä sukuja (Families from Tavastia). Melkas–Tiura–Nuutila. Jalmari Finnen säätiön julkaisuja II.

Poppius, L. (1949). Hämäläisiä sukuja (Families from Tavastia). Pohjola–Uotila–Paasikivi. Jalmari Finnen säätiön julkaisuja III.

Rapola, M. (1929). Hämäläinen Bjong-suku (The Bjong family of Tavastia).

Sarvela, J. (1979). Jaakko Ilkan suku (The Family of Jaakko Ilkka). Suomen Sukututkimusseuran Vuosikirja 41.

Strömmer, A. (1969). Väestöllinen muuntuminen Suomessa: analyyttinen kuvaus syntyvyyden, kuolevuuden ja luonnollisen kasvun tähänastisesta kehityksestä ja alueellisesta vaihtelusta (The demographic transition in Finland: an analytic description of the development and regional variation in the fertility, mortality and natural increase of the Finnish population 1722–1965). Publications of the Population Research Institute, Series A:13. Helsinki: Väestöpoliittinen tutkimuslaitos.

Turpeinen, O. (1979). Infant mortality in Finland. Scandinavian Economic History Review 27:1–21.

Turpeinen, O. (1984). The percentage of deaths under one year of age of all deaths in Finland in 1749–1865. Yearbook of Population Research in Finland 22:46–59.

Turpeinen, O. (1987). Lastensuojelu ja väestönkehitys: lastensuojelun lääkinnöllinen ja sosiaalinen kehitys Suomessa (Child welfare and population development: the medical and social development of child welfare in Finland). In: Suomen lastensuojelun historia (History of child welfare in Finland). Helsinki: Lastensuojelun Keskusliitto.

Uusi Sukukirja II. (New Genealogical Handbook). 1949.

Appendix tables

Four peasant families in Southern Finland (in Tavastia–Satakunta)

Cohort's year of birth	Cohort's size	Number dying			
		Under 1 year of age	1 to 9 years of age	10 to 19 years of age	Total
1700–09	10	–	2	1	3
1710–19	13	5	1	1	7
1720–29	12	4	–	–	4
1730–39	29	7	6	–	13
1740–49	31	4	5	–	9
1750–59	28	8	3	–	11
1760–69	36	7	5	2	14
1770–79	39	8	5	–	13
1780–89	49	6	14	–	20
1790–99	62	14	17	–	31
1720–99	286	58	55	2	115
1800–09	49	4	14	3	21
1810–19	35	4	9	3	16
1820–29	52	5	7	2	14
1830–39	45	8	8	2	18
1840–49	48	4	10	4	18
1850–59	62	7	12	5	24
1860–69	67	12	8	1	21
1800–69	358	44	68	20	132
1870–79	63	6	3	3	12
1880–89	121	10	11	5	26
1890–99	121	3	9	1	13
1900–09	121	8	15	2	25
1910–19	132	3	11	1	15
1870–1919	558	30	49	12	91
1720–99		% 20.3	17.3	0.7	38.3
1800–69		12.3	19.0	5.6	36.9
1870–1919		5.4	8.8	2.2	16.4

Peasant families from Ostrobothnia

Cohort's size	Number dying			
	Under 1 year of age	1 to 9 years of age	10 to 19 years of age	Total
43	29	4	–	33
34	16	4	–	20
52	17	5	–	22
62	20	13	–	33
75	30	8	2	40
138	63	23	2	88
201	96	13	5	114
158	38	15	4	57
72	29	2	3	34
15	1	2	1	4
773	294	81	17	392
1720–99	% 38.0	10.5	2.2	50.7

Bourgeois families from Kristinestad						Family belonging to the clergy				
Cohort's year of birth	Cohort's size	Number dying				Cohort's size	Number dying			
		Under 1 year of age	1 to 9 years of age	10 to 19 years of age	Total		Under 1 year of age	1 to 9 years of age	10 to 19 years of age	Total
1700–09	..	..	..	..	..	4	1	–	–	1
1710–19	8	–	–	1	1	8	1	–	–	1
1720–29	17	6	1	–	7	7	2	–	3	5
1730–39	41	11	9	–	20	12	4	–	1	5
1740–49	53	12	5	1	18	10	1	2	–	3
1750–59	49	20	5	2	27	8	1	–	–	1
1760–69	32	4	5	1	10	22	3	4	–	7
1770–79	49	10	6	1	17	29	6	4	1	11
1780–89	43	8	10	2	20	20	7	3	1	11
1790–99	33	9	6	2	17	16	2	1	1	4
1720–99	317	80	47	9	136	124	26	14	7	47
1800–09	41	6	3	1	10	26	5	6	1	12
1810–19	42	5	3	2	10	32	4	2	–	6
1820–29	22	8	1	2	11	18	2	3	2	7
1830–39	25	5	3	2	10	15	3	3	2	8
1840–49	35	4	7	1	12	22	2	2	–	4
1850–59	14	3	3	–	6	43	3	5	2	10
1860–69	15	4	1	–	5	23	1	5	–	6
1800–69	194	35	21	8	64	179	20	26	7	53
1870–79	10	1	–	–	1	9	–	–	–	–
1880–89	15	–	1	–	1	27	2	4	–	6
1890–99	5	–	–	–	–	33	1	4	–	5
1900–09	5	–	–	–	–	24	1	–	–	1
1910–19	9	–	–	–	–	28	–	1	–	1
1920–29	..	..	..	..	..	35	–	–	–	–
1930–39	..	..	..	..	..	20	–	–	–	–
1870–1919	44	1	1	–	2	176	4	9	–	13
1720–99		% 25.2	14.8	2.8	42.8		% 21.0	11.3	5.6	37.9
1800–69		18.0	10.8	4.1	32.9		11.2	14.5	3.9	29.6
1870–1919		2.3	2.3	–	4.6		2.3	5.1	–	7.4

Thirteen families belonging to the nobility

Cohort's year of birth	Cohort's size	Number dying			
		Under 1 year of age	1 to 9 years of age	10 to 19 years of age	Total
1700–09	24	3	2	–	5
1710–19	13	–	–	2	2
1720–29	26	9	3	–	12
1730–39	52	7	8	–	15
1740–49	45	12	2	–	14
1750–59	30	7	3	1	11
1760–69	43	6	5	1	12
1770–79	66	8	11	2	21
1780–89	48	6	5	–	11
1790–99	32	4	4	1	9
1720–99	342	59	41	5	105
1800–09	39	5	2	2	9
1810–19	62	5	8	1	14
1820–29	49	4	9	2	15
1830–39	62	8	4	2	14
1840–49	44	6	10	2	18
1850–59	53	7	8	1	16
1860–69	40	5	2	–	7
1800–69	355	40	43	10	93
1870–79	32	3	2	3	8
1880–89	48	4	6	1	11
1890–99	60	1	6	1	8
1900–09	52	2	1	1	4
1910–19	26	–	1	–	1
1920–29	60	2	1	–	3
1930–39	33	–	–	–	–
1870–1939	511	12	17	6	35
1720–99		% 17.3	12.0	1.5	30.8
1800–69		11.3	12.1	2.8	26.2
1870–1939		3.9	5.5	1.9	11.3