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Some Demographic Features of the Disabled Population in Pakistan

MOHAMMAD AFZAL

1. INTRODUCTION

Although disability has been the area of concern in the domain of such disciplines as social welfare and public health, the serious concern on the demography of disability as an important research subject has emerged only recently. In the less developed countries where most of the world population lives, the rapid decline in mortality with little reduction in fertility, under the conditions of underdevelopment, nutritional deficiencies, insufficient coverage for health, inadequate sanitation and safe water facilities, has been contributing to the increasing number of disabled persons. This is because the availability of modern medicine, even to an inadequate extent, has contributed to the reduction in mortality, but many of those who survive become permanently disabled. Apart from the differences in data collection systems in different countries and the problems associated with such approaches, the variations in prevalence of disability are partly attributed to such factors as differential chronic and infectious disease patterns; differential life expectancy; the age structure of populations and population composition; differential nutritional status; differential rates of exposure to environmental, occupational and traffic hazards; and variations in public health practice [United Nations. (1990)]. In developed countries where the increase in life expectancy had started to occur earlier than the developing countries, the decline in fertility led to the growing proportions of the elderly in their population. As the proportion of the elderly population in the total population gets larger the proportion of the disabled become conspicuous. This is because in both developed and developing countries the age structure of the disabled population is predominantly elderly in comparison to the overall population age structure. It has been observed that in such developed countries where the ageing process has gone furthest, the number of disabled persons have increased rapidly. [Okoliski (1986).]

Mohammad Afzal is presently Chief of Research at the Pakistan Institute of Development Economics, Islamabad.

The purpose of this paper is to provide some estimates of disability prevalence in Pakistan with a focus on age distribution of the disabled in relation to the age distribution of the population. In order to examine how much of the life span is affected by the impact of disability, estimates of Disability Free Life Expectancy (DFLE) at different ages have been worked out in the paper.

2. SOURCES OF DATA

In Pakistan a beginning to collect information about the disabled population was made in the 1961 Population Census. Later, the 1973 Housing, Economic and Demographic (HED) Survey (which was a part of the 1972 Census) and the 1981 Census also provided data on disability. A national sample Survey of Disabled Persons was carried out in 1984-85 with the aim of collecting more details about the disabled persons in the country.

The data collected from the census or surveys in Pakistan provide the number of disabled persons according to the concepts used in each source, classified by their age-sex characteristics. In the 1961 census a person was enumerated as disabled on being reported as totally blind, deaf and dumb, or crippled. In the 1973 HED Survey the category of other disabled was added to these three categories, and in the 1981 Census mentally retarded and insane persons were also to be taken as disabled.[1] Although the concepts used changed over time to include additionally some other kinds of disabilities, the coverage and reporting remained extremely poor.

3. DISABILITY PREVALENCE

The prevalence of disability is measured by crude and age-specific disability rates. The crude disability rate is defined as the number of disabled persons in relation to the total population enumerated in a census. When the number disabled in an age – sex group is related to the number of persons enumerated in that group, the rate is taken to be specific to that group. If Di is the number of disabled persons in an age group (i) and the corresponding population for that age group is taken as Pi than the age-specific disability rate is given by $Di/Pi \times 100$. The crude disability rate would thus be $\Sigma Di/\Sigma Pi \times 100$. The crude disability rate from the 1961 Census

[1]According to the International Classification of Impairments, Disabilities and Handicaps (ICIDH) issued by World Health Organisation the term Disability refers to a restriction or lack (resulting from an impariment) of ability to perform an activity in the manner or within the range considered normal for a human being. Impairment is any loss or abnormality of psychological, physiological and anatomical structure of function, including defects or loss of limb, organ or other body structure or loss of mental function. [United Nations (1990).]

is 0.34 percent; from the 1972 Census-related 1973 HED Survey it is 1.90 percent, and from the 1981 Census, it is 0.45 percent. These rates, apart from being extremely low, also show erratic variations between them. One evidence from within the country, that these rates are far lower than the levels expected for the country, comes from a survey of Islamabad and Rawalpindi, carried out by the Directorate of Special Education in 1986 showing that the disabled persons formed 2.6 percent of the enumerated population [Pakistan Directorate of Special Education, (1986)]. The other evidence comes from the national level Survey of Disabled Persons which was conducted by the Federal Bureau of Statistics in 1984-85 (Pakistan, Statistics Division). Although the statistical report published on this survey does not provide data on the denominator population an indirect approach was used to estimate disability rates in the country based on this source.[2] The estimated crude disability rate for Pakistan from the 1984-85 disability survey comes out to be 4.9 percent, which is almost twice the rate given by the survey of the twin cities of Islamabad and Rawalpindi, and 11 times the rate given by the 1981 census. Although this rate is much higher than those given by any other data source in Pakistan but when compared with the much higher rates reported for the developed countries, even this estimate seems low. Keeping in view the conditions of low socio-economic status and higher levels of poverty the level of disability prevalence in Pakistan (and other similarly placed developing countries) should be higher than those reported for the developed countries. In other words, even much improved reporting of disabilities through a sample survey like the 1984-85 disability survey has fallen short of reflecting the actual situation. Although such shortfalls are more due to inadequacies and inaccuracies of data collection systems than due to the differentials by the level of socio-economic development yet the high rates for developed countries are partially due to the use of broader definitions of disability which included some minor impairments. The expected association of higher disability prevalence with lower socio-economic status is, however, clearly visible from within the country comparisons using the same source of data. For example, the effect of variations in living conditions including socio-economic differences are reflected from the rural-urban differentials in disability prevalence as depicted by the ratio of rural/urban disability rates. From the 1981 Census this ratio comes out to be 1.5 and from the 1984-85 survey it is 3.3, which implies that the risks of disability are much higher in rural areas than in urban areas. In comparison to Pakistan the ratio

[2]A detailed description of the estimates from these sources and the procedure used for indirect estimation of disability rates from the 1984-85 Survey of Disabled persons are provided in a companion paper which is being published in *The Pakistan Development Review* [Afzal (1992)]. Another description of the disabled population in Pakistan from different sources is provided in Rukanuddin and Farooqui (1988).

of rural to urban prevalence of disability for the United States in 1980 was 1.2, and for China it was 1.1 in 1983 [UN. (1990)].

4. DISABILITY RISKS AND AGE

A comparison of age distribution of the population and the age distribution of disabled persons enumerated in that population will provide some indication of the age structures influence on disablement.

Table 1 shows that for Pakistan the proportion of population in ages less than 15, is substantially higher than the corresponding proportions for Canada and Austria primarily because fertility levels are higher in Pakistan than the other two developed countries. For Pakistan, Egypt and Turkey the proportions of population in ages 60 years and over, are lower than for Canada and Austria. For these two developed countries the proportions of the disabled in the elderly ages are also higher than those reported for Pakistan (more than twice), Egypt and Turkey. The table shows that in comparison to the proportions of population in the elderly ages the proportions of the disabled in the older ages are high for all the countries, but for Canada and Austria the respective proportions in the ages 60 years and over are conspicuously high.

5. DISABILITY FREE LIFE EXPECTANCY

Life table models have been the basis of a variety of complex analysis used in demography, biostatistics, gerontology and some other disciplines. Following a similar approach efforts have also been made to estimate Disability Free Life Expectancy (DFLE) for a number of countries [Robine, (1989)]. Just as life tables are prepared from age-specific mortality rates to provide expected mean duration of life at different ages, the Disability Free Life Expectancy tables are worked out on the basis of age-specific mortality rates combined with the age-specific disability prevalence rates, to provide estimates of mean expected duration of life in good health. Good health here does not imply life expectancies without the effects of illness. The measure of DFLE in any country is subject to the concepts of disability used and the accuracy in measurement of mortality and disability prevalence. The method used in this paper to work out DFLE estimates for Pakistan (in Table 2) was developed by Sullivan (1971). The estimates of age-specific disability rates used in the preparation of this table are based on the 1984-85 disability survey, and the age-specific mortality rates, have been taken from the 1988 Pakistan Demographic Survey (PDS).

Table 1

Percentage distribution of Population and Disabled Persons for Pakistan and Some other Countries

Country Date Source	Age Group					
	Total	0–14	15–24	25–59	60+	Not Avail
Pakistan 1981						
(Census) Disabled	100	19.8	12.8	32.7	34.7	–
Population	(100)	(44.5)	(17.1)	(31.5)	(7.0)	–
Ratio of Percentages	–	*0.43*	*0.75*	*1.04*	*4.96*	–
Pakistan 1984-85						
(Survey) Disabled	100	23.5	16.3	39.9	24.3	–
Population	(100)	(45.7)	(17.5)	(30.8)	(6.0)	–
Ratio of Percentages	–	*0.51*	*0.93*	*1.30*	*4.04*	
Egypt 1976						
(Census) Disabled	100	17.2	17.5	47.6	18.1	0.1
Population	(100)	(39.9)	(19.3)	(34.5)	(6.2)	0.0
Ratio of Percentages	–	*0.43*	*0.90*	*1.38*	*2.91*	–
Egypt 1979-1981						
(Survey) Disabled	100	28.0	11.0	29.3	30.2	1.4
Population	(100)	(54.9)	(12.4)	(24.8)	(7.3)	0.6
Ratio of Percentages	–	*0.51*	*0.88*	*0.88*	*4.14*	–
Turkey 1975						
(Census) Disabled	100	29.0	11.7	33.6	19.3	7.4
Population	(100)	(39.9)	(19.3)	(34.5)	(6.2)	(0.2)
Ratio of Percentages	–	*0.72*	*0.60*	*0.97*	*3.11*	–
Canada 1983						
(Survey) Disabled	100	11.0	14.4	21.1	53.5	–
Population	(100)	(21.8)	(35.4)	(23.9)	(18.9)	–
Ratio of Percnetages	–	*0.50*	*0.41*	*0.88*	*2.63*	–
Austria 1976						
(Survey) Disabled	100	3.5	6.2	37.3	53.1	–
Population	(100)	(21.8)	(35.4)	(23.9)	(18.9)	–
Ratio of Percentages	–	*0.16*	*0.18*	*1.56*	*2.80*	–

Sources: Pakistan. Statistics Division (1986). United Nations (1990).

Table 2

Disability Free Life Expectancy Based on Estimated Age-Specific Disability Rates from 1984-85 Disabled Survey and Survivorship from 1988 Life Tables for Pakistan

Age X	Survivors Sx	Years of life between X and $X + n$	Disability Rate between X and $X + n$	Years of Disability between X and $X + n$	Years without disability between X and $X + n$	Cumulative Years without Disability	Disab. Free Life Expectancy (DFLE) (g)/(b)
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
			For Males				
0–4	100000	440044	0.0117	5148	434896	5199013	51.99
5–9	86039	428266	0.1182	50621	377645	4764117	55.37
0–14	85268	424217	0.0547	23204	401013	4386472	51.44
15–19	84419	419787	0.0638	26782	393005	3985459	47.21
20–24	83496	416126	0.0611	25425	390701	3592454	43.02
25–29	82955	408745	0.0798	32618	376127	3201753	38.60
30–34	80543	399124	0.0596	23788	375336	2825626	35.08
35–39	79106	393564	0.0699	27510	366054	2450290	30.97
40–44	78319	386571	0.0964	37265	349306	2084236	26.61
45–49	76309	373789	0.0843	31510	342279	1734930	22.74
50–54	73207	353827	0.0826	29226	324601	1392651	19.02
55–59	68324	331106	0.1121	37117	293989	1068050	15.63
60–64	64119	303873	0.1399	42512	261361	774061	12.07

Continued

Table 2–*(Continued)*

65+	57431	690133	0.2571	177433	512700	512700	8.93
				For Females			
0–4	100000	442197	0.0078	3449	438748	5578678	55.77
5–9	86095	429082	0.0652	27976	401106	5139930	59.70
10–14	85537	427153	0.0214	9140	418013	4738824	55.40
15–19	85324	424391	0.0301	12774	411617	4320811	50.64
20–24	84433	419959	0.0257	10793	409166	3909194	46.30
25–29	83551	414850	0.0238	9873	404977	3500028	41.89
30–34	82389	407867	0.0184	7505	400362	3095051	37.57
35–39	80758	407869	0.0232	9462	398407	2694689	33.37
40–44	79079	390130	0.0373	14552	375578	2296282	29.03
45–49	76973	375843	0.0441	16575	359268	1920704	24.95
50–54	73365	362116	0.0686	24841	337275	1561436	21.28
55–59	71482	347082	0.0639	22178	324904	1224161	17.12
60–64	67351	320950	0.1026	32929	288021	899257	13.35
65+	61029	804575	0.2403	193339	611236	611236	10.02

The method includes the use from the 1988 Life Table of the following information:

1. The number of survivors from mortality at the beginning of the age group (X), given in Table 2 under column (a).
2. The person-years of life completed between age X and (X + n), given under column (c).

The estimates of age-specific disability rates from the 1984-85 survey of disability, corresponding to age group X to $(X + n)$ are given under column (d). Years of disability (e) between age X and $(X + n)$ are then calculated by multiplying the values under columns (c) by the values under column (d). These values are then deducted from the years lived between each age interval to get the number of years lived without disability (f). In column (g) the cumulative totals (from the highest age to lower ages) of the person-years to be lived without disability have been worked out from the values given under column (g) beginning from the bottom of the table (highest age group) and going upwards step by step for each group. The cumulative totals (under column g) against age (x representing the beginning of the age group) have been divided by the number of survivors at age X given under column (b), to get the Disability Free Life Expectancy (DFLE) from age (X), the estimates for which are provided under column (h). The estimates of DFLE between two ages can also be obtained by dividing the difference of the cumulative number of person-years of disability free life to be completed after the respective ages, and dividing it by the number of survivors at the beginning of the age.

Table 2 shows that the DFLE estimate at birth (age zero) for males are about four years less than that for females, which means that in comparison to women the overall effect of disabilities on the life span of men is more prolonged. In fact, the pattern of lower DFLE for men in comparison to women is indicated for all age groups. The salient results from Table 2 are given in Table 3 which provides a comparative view of the Life Expectancy estimates from the 1988 life table and the corresponding Disability Free Life Expectancies at some selected ages for males and females in Pakistan. In Table 3 that DFLE at birth is 90.1 percent of the Life Expectancy (LE) for males and 93.5 for females. The pattern for the whole life span broken into selected age groups show that male/female differentials in the ratios of DFLE and LE are maximum from birth till age 15 with the differences between the two as 5.4. For the interval between age 15 years to 60 years the differences between the corresponding ratios for the two sexes is 4.3, and from age 60 till end the difference is 2.3. From age 65 till end this difference is, however, 1.4. In other words such differences between the ratios are higher at younger age intervals and less for the older age intervals.

Table 3 also provides estimates of DFLE, life expectancy and their ratios relating to age spans zero to end, and 65 years to end, for some developed countries. Keeping in view that the developed countries used broader definitions of disability by including even some minor impairments, and that the coverage

of disability in such countries is better than Pakistan, the higher DFLE/LE ratios for Pakistan should not be taken to reflect longer disability free spans within the life expectancy for the respective age intervals. In fact, from the longer average life expectancies in the developed countries more than twenty percent is affected by disabilities of different kinds. From age 65 years nearly a half of the life, on the average, is affected by disabilities. In Pakistan the proportion surviving till age 60 or 65 is still much less than the proportion surviving in developed countries. Since disability rates are inversely related to level development the DFLE (and the DFLE/LE ratios) for Pakistan should be logically higher than those for the developed countries. The higher estimates for Pakistan are due more to the inadequate coverage of disabilities while the higher prevalence of disability in the developed countries, in addition to better data collection systems, is due to the use of broad concepts including minor impairments among the reported disabilities. If the systems of data collection and the quality of coverage of disability and related data in Pakistan were comparable to those of the developed countries, and similar broader concepts were used, than the comparison between them would have more meaningful and interesting.

Looking at the male/female differentials in the DFLE/LE ratios in Table 3, lower ratio for males than females are indicated for Pakistan (all age intervals) and for the USA (birth till end only). For the other three countries the ratios are lower for females than for males and the differences are higher during the older ages as compared to those for the whole life span.

6. SUMMARY AND CONCLUSION

The demography of disability is a relatively new field of interest in the world. The primary reason for this interest is the increasing number of the disabled especially among the growing proportions of elderly population in developing countries and the increasing prevalence of disabilities resulting from wars and human conflicts. A renewed international emphasis on demographic assessment of disability from a decade back, has been due to the adoption of the World Programme of Action concerning Disabled Persons, by the United Nations General Assembly in 1982. This programme emphasised the development of suitable systems for regular collection and dissemination of information on disability. Following this recommendation the Statistical Office of the United Nations, has developed an International Disability Statistical Data Base called DISTAT [United Nations (1990)]. The paper provides some estimates of disability prevalence in Pakistan out of the available data with a focus on age

Table 3

Life Expectancy (LE) and Disability Free Life Expectancy (DFLE) for Selected Ages for Male and Females in Pakistan: 1981–88, and for Some other Countries

Country and Year	Ages Involved	Male			Female		
		LE	DFLE	DFLE/LE (Percent)	LE	DFLE	DFLE/LE (Percent)
Pakistan							
(1984-88)	0 to End	57.7	52.0	90.1	59.7	55.8	93.5
	0 to 15	12.9	12.1	93.8	13.0	12.9	99.2
	15 to 60	41.2	38.0	92.3	41.5	40.1	96.6
	60 to end	15.5	12.1	77.9	16.7	13.4	80.2
	65 to end	12.0	8.9	74.4	13.2	10.0	75.8
United States of America							
1970	0 to End	67.0	54.8	81.8	74.6	60.4	81.0
1980	0 to end	70.1	55.5	79.2	77.6	60.4	77.8
1980	65 to End	14.2	6.6	46.5	18.4	8.9	48.4
England and Wales							
1981	0 to End	71.1	58.5	82.3	77.1	60.6	78.6
1986	0 to end	71.8	58.7	81.8	77.7	61.5	79.2
1985	65 to End	13.4	7.7	57.5	17.7	8.9	50.9
Canada							
1978	0 to End	70.8	59.2	83.6	78.3	62.8	80.2
1978	65 to End	14.4	8.2	56.9	18.7	9.9	52.9
France							
1982	0 to End	70.7	61.9	87.6	78.9	67.2	85.2
1982	65 to End	14.3	9.1	63.6	18.5	9.9	53.5

Source: Pakistan. Statistics Division (1986); Robine (1989).

distribution of the disabled in relation to the age distribution of the population. In order to see the effect of age-specific disability prevalence on the average expected life span, estimates of Disability Free Life Expectancy (DFLE) at different ages have been worked out in the paper. The estimates based on the 1984-85 disability survey show that in Pakistan the disability free life expectancy for females is higher than that for males and that the aging process brings higher risks of disability which under favourable circumstances can only be postponed for some time. A comparison with corresponding estimates for some of the developed countries bring to light somewhat more clearly the inadequacies of data in Pakistan, but the results also indicate some commonalities. The results provided in this paper clearly point to the need of more serious assessments of disability statistics in Pakistan especially through appropriately designed surveys. The development and use of more appropriate and standardised concepts for identifying the prevalence of different kinds of impairments and disabilities should be made through mutual consultations by the medical, public health, statistical and demographic experts. The United Nations and the World Health Organisation have already taken important initiatives and place great importance for improvement in the collection of disability statistics and their appropriate analysis. In Pakistan the need for data collection on disabled persons was felt decades back, but the time has come to make fresh efforts in this direction. Also, the available data must be thoroughly but carefully utilised for research and analysis so that the policy-makers, programme planners and health authorities get a further insight about the disability level and patterns in the country.

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Comments on "Some Demographic Features of the Disabled Population in Pakistan"

I agree with the author that the analysis of disability data is a new area for demographers to assist social welfare policy-makers to understand the levels, patterns and determinants of various disabilities. The growing interest in the social well-being of the disabled population of Pakistan takes its roots both from social and religious aspects and comes not only from the Resolutions passed by various bodies of the UN but also the growing awareness and intellectual understanding of 'life' and matter of 'life'.

With the increasing population of Pakistan, the body of disabled population is also growing. Over the years, there has been a complete absence of any sociological or demographic studies done on the disabled in Pakistan. I would like to thank the author for initiating this analysis. The interest of in this paper lies in the estimation of disability prevalence rates, and gender and regional differentials. The important contribution is the estimation of Disability-Free Life Expectancy (DFLE) tables for Pakistan. The author utilises the traditional life expectancy method to estimate these tables for males and females. The significance of these estimations lies within the realm of the labour force and dependency on the working population. The matter of importance here is that the growing disabled population not only takes away the potential labour force but also increases the dependency on the working population. These estimates are much higher than several countries like US, Canada, England where the LE is much higher than Pakistan. The high ratio for Pakistan are not explained adequately in the paper but my guess this difference is due to the high rate of underreporting at younger ages.

It is my feeling here that the analysis done in the paper with respect to DFLE is rather premature. The reasons for making this statement are several. The main reason I have found is the highly inaccurate and underreported data in Pakistan. I have a paper that I will be publishing soon entitled 'Disabled Statistics of Neglected People' I have found that there are a number of data problems. As we all may have experienced that disability is taken as a stigma. This disability could be both physical or mental in nature. The stigma associated with various disabilities originate from a consideration of a threat to family status. As such the information on disability is concealed when a family expects to draw social discrimination or any embarrassment to family members. Furthermore, the disability information are underreported as a part of 'exchange'

aspect of marriage. The major problem lies with definitions of disability used various data collection efforts. The data collected covered only physical disabilities in the 1961 and 1973 HED surveys and its scope was broadened in the 1981 Census wherein both physical and mental disabilities were recorded. My major concern is the training of Census enumerators to collect highly specialised data on various disabilities. The recording of such data could have introduced tremendous interviewers and respondent's biases. One major problem that I have found is the heavy dependence on the respondents' judgement of conceiving and reporting disability data. Furthermore, the absence of data on the duration of various disabilities (temporary or permanent) raises the question about the efficacy of such data. Certain physical disabilities and mental illness as are curable and temporary in nature. My observation on the various age distribution of disabled population reveals a high rate of underreporting at younger ages especially for those less than age 10. The genetic perspective is also important. Recently, growing interest have been reported regarding the high incidence of mental retardation and congenital malformations for intracousin marriages in Pakistan. The work done by Dr K. Tareen[1] of King Edward College, Lahore and Mr. Shami[2] of Quaid-i-Azam University is worth mentioning. Bittles[3] has worked with Pakistanis living in the UK and suggests that societies practicing inbreeding over several generations should expect increased levels of autosomal recessive diseases. In this regard let me mention here that the PDHS conducted by the NIPS in 1991 have found that 52 percent of all marriages in Pakistan are with first-cousins and that this pattern has been on the rise in recent times. With this in mind, both population and health planners should expect higher rates of mental and physical disorders and malformations in the younger generations. High mental retardation and crippled population at young ages are reported by the 1981 Census and 1984-85 Survey of Disabled Population. Furthermore, greater care needs to be taken while interpreting the rates and differentials obtained from the 1981 Census. In this respect it is asserted that the higher risk of disability in the rural areas (as reported in the paper) is just an artifact of data because of high under-reporting by urban families.

Now I would like to focus on the issue of life table analysis. As you are familiar

[1]'Inter-marriages causing mental retardation among children' *The News*, August 25, 1991.

[2]Shami, S. A. *et. al.* (1989) Consanguinity Related Prenatal and Postnatal Mortality of the Populations of Seven Pakistan Punjab Cities *Journal of Medical Genetics.* 26: 2–67–271.

[3]Bittles, A. H. *et al.* (1991) Reproductive Behaviour and Health in Consanguineous Marriages. *Science* May.

that a life table depends on age-specific death rates experienced by various age groups in a cross section of population over a period of time. We assume that the death rates remain constant in the future also. The life table is thus a model of what would happen to a hypothetical birth cohort if the age-specific death rates for a given period were to remain constant and were to apply throughout the experience of an entire generation. The life table begins with births during one year and no factor other than mortality is considered to deplete the population cohort. The life table was modified by demographers to incorporate reoccurring events over a life time and are termed as multiple decrement tables. For instance, entry and exit from the labour market or married life. The paper lacks to identify what method was used to reach at the life tables. The disabilities are either temporary or permanent in nature. The life table analysis utilised in the paper seems to consider the disability event as a permanent rather than of temporary nature. It is this concern of mine which I feel that the estimation of DFLE should have considered the time duration aspect of any disability. The nature of disability data available in Pakistan is quite crude and as such renders estimations subject to error.

Moreover, another impression that I get from the paper is that 'disability is a function of age'. I would like to differ from this impression by stating that various types of disabilities occur at various stages of the life cycle. Disabilities can occur because of congenital problems at birth or can occur at post-natal and childhood stages. The problems associated with the later two stages are related to malnutrition, dehydration and the impact of genetics. The types of disabilities occurring at these stages are mental retardation and physical malformation. The following stage entitled 'societal exposure' where people are exposed to physical threats through wars, accidents, rivalries, and various types of violence besides health hazards related to work behaviour and the environment. Finally, there is the 'old age' stage, which is a hot topic in the West for gerentologists because of the aging population. At the societal exposure and work-related aspects more men are exposed to the risk of such disabilities than women. Therefore, we should expect higher disabled men in ages between 15 and 60. The 'old age' stage represents the cumulative effect of disabilities of all previous ages and also old age both in terms of physical and mental health.

Another issue that I would like to takeup is the estimation of 'survival ratios' based on Lx values. The interest here is what proportion of people will not experience any disability in a certain age group relative to another. I have calculated the survival ratios based on col. 6 of Table 3 for males and females and have found that the chances of occurrence of any disability are very low till age 50 for males and females (given below). The proportion of persons experiencing disability is a

bit higher after age 50. These ratios are very high because of underreporting of disability at younger ages.

Ages	Males	Females	Ages	Males	Females
0–4					
5–9	96.5	96.6	45–49	96.7	96.2
10–14	99.0	99.1	50–54	93.9	95.3
15–19	99.1	98.8	55–59	92.6	95.4
20–24	99.1	98.4	60–64	90.4	89.6
25–29	98.3	98.1	65–69	84.5	83.1
30–34	97.5	98.2	70–74	75.2	73.0
35–39	98.6	98.5	75–79	61.9	57.8
40–44	98.0	97.7	80+	22.4	17.6

I am critical because of the data underlying this analysis. I would like to see better quality data that accounts for underreporting at younger ages. Moreover, disability is not a function of age but a function of multiple factors. Finally, the DFLE need to consider disability both a temporary and permanent component of the analysis.

Tauseef Ahmed

National Institute of
Population Studies,
Islamabad.