Physical Disabilities in a Post-War context in Jaffna Society – A Statistical Review

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Abstract: This study focuses on the nature of physical health conditions in post-war Jaffna society, which was carried out in 2014. This is a follow-up study of the original study named "Jaffna Socioeconomic Health Study 1999" (JSEHS-1999). The study subjects were husbands or / and wives of both single parent and two parents families. The sample of the study is the same as the sampled 1121 families of JSEHS-1999. A sub-sample of 1036 families from the original study is used. Altogether 1121 families were drawn using two-stage stratified sampling technique. An interviewer administrated questionnaire, similarly prepared with modification to the present situation, was employed to collect follow-up information on physical disability measures. In the present study, the general measure of physical fitness or disability employed was "mobility measure" that includes "Walking Conditions" and "Travelling Conditions". The specific measures of physical disabilities were formulated in five dimensions, which are, "Behavior Disability", "Communication Disability", "Personal Care Disability", "Body Disposition Disability" and "Situational Disability". Socio-Economic variables employed to review the background were "Occupational Levels", "Per Capita Income", "Per Capita Expenditure", "Per Capita Energy Consumption" and "Per Capita Protein Consumption". The data collected on these variables were coded or modified according to the requirement of Statistical Analysis in this study. Exploratory data analysis, Factor analysis, Canonical correlation analysis and Canonical variate analysis were adopted to extract results in this study. The walking and travelling conditions of the parents have not shown any adverse effects in this post-war scenario. We report a severe effect in Behavioral Disability which is validated by a major factor "Disability in Self-awareness and knowledge acquisition" of 23% explanation. We further report a considerable effect in Communication Disability which is validated by a major factor "Disability in Writing and Symbolic Communication" of 22% explanation. The effect in Personal Care Disability is minimal, however two major factors "Disability in personal hygiene, clothing and feeding" for husbands and wives respectively shown 20% and 18% explanation. We also report that moderate effects in Body Disposition and Situational Disabilities are seen validated by two major factors "Disability in Household activity, Dependence & Environment" for husbands and wives each having 22% explanations. We also found and reported valid gender specific disability situations by factor analysis with higher percentage of explanations. Canonical correlation analysis revealed that all the above described disability measures under combined dimensions are highly or moderately correlated which show meaningful disability analysis with validated results. We also highlighted socioeconomic influence in various physical disabilities using Canonical Discriminant analysis and Cluster analysis to form meaningful clusters of couples or families indicating distinctions by socioeconomic influences.

Key Words : Mobility measure, Behavior disability, Communication disability, Personal Care disability, Body disposition disability, Situational disability, Socioeconomic impacts.

1. Introduction

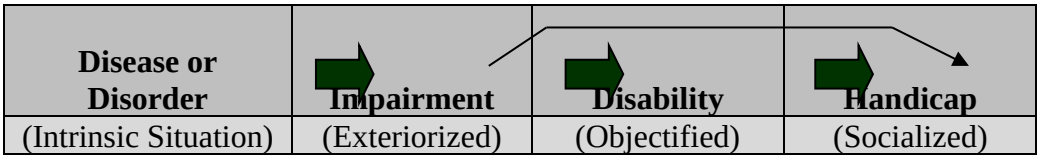
In the original study named "Jaffna Socioeconomic Health Study 1999", abbreviated as JSEHS-1999 [1], we had analyzed and described about general health conditions of the people of Jaffna peninsula. Three types of self-assessed health statuses of the parents of the families were the indicators in that

assessment. The general self-assessment of their physical, mental, and social health statuses were recorded, analyzed and reported by Elankumaran [2], Elankumaran and Sivagnanasundram [3].

The physical health status expressed by them were later verified and cross-examined by the researcher in detail by **'Physical disability measures'**. These disability measures mostly the activities of daily living, were compiled under different dimensions of disabilities and batteries of questions. In the description of the analysis of general physical health statuses, it was mentioned that detailed studies are conducted later. Hence the present study deals with the detailed study of 'Physical Health Status'. These are detailed self-assessments and subjected to verifications and cross-examinations and thereby producing more meaningful information from the respondents.

The 'Disability', which includes most of the physical disabilities and some mental disabilities, was first defined and classified by WHO [4]. This is known as ICIDH (**I**nternational **C**lassification of **I**mpairments, **D**isabilities, and **H**andicaps). This includes all types of mental and behavioral disorders. The ICIDH is intended to offer a conceptual framework for information. This is relevant to the long-term consequences of disease, injuries or disorders, and applicable to both personal health care and to the mitigation of environmental and social barriers. The ICIDH basically contains three distinct and independent classifications, each relating to a different plane of experience consequent upon diseases or disorders, which are impairments, disabilities, and handicaps. Figure 1 views the relationships among them. The definitions are also given below.

Figure 1.1 : A schematic view of the classifications of states of 'Disability'.



*In the context of health experience, an **impairment** is any loss or abnormality of psychological, physiological, or anatomical structure or function.*

*In the context of health experience, a **disability** is any restriction or lack (resulting from impairment) of ability to perform an activity in the manner or which the range considered normal for a human being.*

*In the context of health experience, a **handicap** is a disadvantage for a given individual, resulting from an impairment or a disability, that limits or prevents the fulfillment of a role that is normal (depending on age, sex, etc) for that individual.*

Handicap is more problematical. The structure of the handicap classification is radically different from all the disease-related classifications. Circumstances can be expected to place such individuals at a disadvantage in relation to their peers when viewed from the norms of society. Hence, our research concentrates on the intermediate stage '**disability',** which is least controversial according to WHO. According to ICIDH of WHO, the disability has been classified and listed under various dimensions. We selected a number of disabilities most suitable to Jaffna society and compiled them under different headings. The details are given in Table 3.1.

2. Physical Impacts of War in Jaffna peninsula

The overall objective of the original research was concentrated with the cross-sectional study conducted in the entire population of our study area, which was completely affected by a mass exodus took place in 1995. The pre exodus situation in the study area was an atmosphere of severe continuous military battles between the security forces and rebels. The post exodus situation was also similar, but a different atmosphere of war. Hence the direct impacts of war affects on the population of the study area is more important for analysis. The direct impacts on the people are of either physical or mental or both.

The study on the effects of war by Sivarajah [5], on the same population which resettled during 1996 and 1997 after the exodus 1995 gave a clear picture about the physical disabilities of the population and motivated to expand the same in this research. This study has highlighted the physical effects of the population on the basis of 296 patients admitted at the Jaffna general hospital due to war injuries during the one year period from May 1996. About 70% of the patients were injured due to gun shots, landmines, claymore mines, shell blasts and other related events. It was mentioned in this study that these data did not include the patients treated in the other hospitals, outpatient departments, and private hospitals. Hence the effects would have been more.

The direct war was not effective in the study area at that time. However, the effects prior to and during exodus would be more severe and disastrous as the war was directly affecting the population due to the battles carried out by the security forces on the study area which the rebels were controlling. There were no official data or studies during the exodus. No other documentary evidence are available to describe the physical impairments due to war in the peninsula.

Our study given in this paper is directed in a slightly different way. That is, we concentrate on all type of physical impairments and disabilities in terms of activities of daily living including mobility of walking and travelling. This is more meaningful in the sense that, for example, most of the people have been affected on their sight and hearing prior to and during exodus. All activities of daily living as listed in the following section have direct relationships with the atmosphere of war and war related events. These are categorized in general by behavior, communication, personal care, body disposition and situational disabilities.

A small scale study was conducted on a 101 randomly selected civilians by interview related to war and related events in a small area of the peninsula by Somasundram, et. al. [6]. It was found that 64% of the persons had developed recognizable psycho-social sequelae. Among them somatization was identified on 42% of the persons. Similarly PTSD 27%, Anxiety disorder 6%, major depression 25%, hostility 19%, relationship problems 13%, alcohol and drug abuse 15%, and functional disability 18% were reported. All these mental health outcomes are the cause and effect of war and related atmosphere and prove the prevalence of mental disorders of the Jaffna society. This study was conducted between the commencement of large-scale war in 1990 and the exodus took place in 1995. But the severity would be more after exodus disaster.

Our methodology in the present study is, we carried out the assessments of physical impairments or disabilities on the parents of the family only. The parents of the nuclear section of the family are younger compared to the parents in the extended section of the family. The physical impairments and disabilities in adults are also naturally age-related problems and hence avoiding the old couples of the families make more meaningful analysis in our research. Hence we chosen all the 1036 couples available in all the 1121 responded families.

3. Available Data and Statistical Methods

We review some data types used in some other related studies. The measures ADL (Activities of daily living) and IADL (Instrumental Activities of Daily Living) are most common in disability studies by Ebrahim, et. al. [7]; Thorslund, et al., [8]; Norstrom and Thorslund, [9]; Kai, et. al., [10]; and Kempen and Suurmeijer [11]. Our disability measures under different dimensions have been constructed with necessary deletions and modifications of the measures proposed in these studies. Different dimensions of impairments, disabilities, and handicaps have been proposed to study the severity of physical fitness by McLennan [12] on the basis of WHO [4].

The attitudes and behaviors of humans in epidemiological studies have been analyzed by categorical variables successfully with ordered scores explaining the degrees of severity in the responses related to the attitude or behavior by Janet Reis, [13]. In our study the definitions of the ADL items defined carry ordered categorical scores and hence fit with the international standards. Disability indices are another types of data which are very similar to the ADL items we introduced in our study due to Jagger, et. al., [14].

The measures of disability, more specifically physical disabilities, have been defined under five different dimensions: **Behavior disability, Communication disability, Personal care disability, Body disposition disability**, and **Situational disability**. Each dimension has been further described by a number of disability items, which are measures of **Activities of daily living** (ADL). In addition, we include an overall dimension called **Mobility** which includes **walking conditions** and **travelling conditions**. All the measures of these dimensions are scored by the values from 0 to 5. The value **0** represents '**no disability'**, **1** represents a '**mild disability'**, and finally **5** represents a '**severe disability'**. The values 2, 3, and 4 represent similar degrees of measures between mild and severe disabilities.

The data related to 'Physical Disability' are ordered categorical with values from 0 to 5. With the above description of various data to be used in this paper, we prepared the following list of variables under two sections.

(a) Physical Disabilities

(1) Mobility
- (i) Walking condition of Husband (WACH)
- (ii) Travelling condition of Husband (TRCH)
- (iii) Walking condition of Wife (WACW)
- (iv) Travelling conditions of Wife (TRCW)

(2) Behavior Disability
(3) Communication Disability
(4) Personal Care Disability
(5) Body Disposition Disability
(6) Situational Disability

} Details are given in Table 3.1

(b) Socio-economic factors

(1) Occupational level of husband (OcLeH)
(2) Occupational Level of Wife (OcLeW)
(3) Per Capita Total Expenditure of the family (PCExp)
(4) Per Capita Income/Revenue of family (PCInc)
(5) Per Capita Energy consumption (PCEnC)

(6) Per Capita Protein consumption (PCPrC)

Table 3.1 : List of variables included in the dimensions of physical disabilities of parents.

		Variable names	Husband	Wife
Physical Disability Dimensions	Behavior	Self-awareness	BEDH1	BEDW1
		Identification	BEDH2	BEDW2
		Personal safety	BEDH3	BEDW3
		Knowledge acquisition	BEDH4	BEDW4
		Family role	BEDH5	BEDW5
		Occupational role	BEDH6	BEDW6
	Communication	Understanding speech	CODH1	CODW1
		Talking	CODH2	CODW2
		Listening	CODH3	CODW3
		Visual tasks	CODH4	CODW4
		Writing	CODH5	CODW5
		Symbolic communication	CODH6	CODW6
	Personal Care	Excretory	PCDH1	PCDW1
		Bathing	PCDH2	PCDW2
		Personal Hygiene	PCDH3	PCDW3
		Clothing	PCDH4	PCDW4
		Feeding	PCDH5	PCDW5
		Transfer	PCDH6	PCDW6
	Body Disposition	Subsistence activity	BDDH1	BDDW1
		Household activity	BDDH2	BDDW2
	Situational	Dependence	SIDH1	SIDW1
		Environment	SIDH2	SIDW2

We begin our analysis with *Exploratory Data Analysis* (EDA) applied on physical disabilities. We constructed frequency distributions for all the 22 variables of specific physical disabilities for both husbands and wives. We also described the two general physical disability measures of mobility by *EDA*.

At the second stage of the analysis, we performed *Factor Analysis* (FA) individually to all the dimensions. By considering the number of variables included in the dimensions, we combined the two dimensions 'body disposition disabilities' and 'situational disabilities' together. In this dimension wise analysis we did not consider the gender, but gave importance to the disability dimensions only. Further, we employed *Factor Analysis* on all the dimensions together, separately for physical and mental disabilities. Here we considered the gender separately to see any possible differences.

In the third stage of the analysis we employed *Canonical Correlation Analysis* (CCA) to find out the relationships between the dimensions of physical disabilities. In all the combinations of these analyses, we also considered gender to find out the differences within the dimensions and between them. In the fourth stage of the analysis we analyzed the interrelationships of disabilities with socio-economic status. We first employed *Canonical Variate Analysis* (CVA) with the disability variables on the already established socio-economic classes to find out any relationships.

At the final stage of the analysis, we employed *CVA* on the selected socioeconomic variables as listed above on the basis of the clusters formed on the basis of disability measures separately. Consequently, we employed nominal logistic regression and ordinal logistic regression on the characterized clusters on the basis of the six selected socioeconomic variables as explanatory variables to explore any relationships.

4. Results and Discussions on Physical Disabilities

Altogether 1035 couples were selected for the analysis as one of the couples (51st family of J73) did not respond to this inquiry. As mentioned above the most influential factor 'age' on physical disability has been minimized by selection of the parents of nuclear sections of the families, which are young families compared to the elderly couples in the extended and dependent sections of the families.

4.1 Mobility

We first consider the general physical disability which is mobility as explained by walking and travelling conditions of parents. These two characteristics are scored by values from 0 to 5. Table 4.1 produces the corresponding frequency distributions. It seems that about 95% of the husbands and 91% of the wives are in good walking conditions. About 4% of the husbands with slight walking disability and 1% in higher order walking disabilities. Also 9% of the wives in slight walking disability. Also, there are 2 wives and 2 husbands with severe walking disabilities or unable to walk.

Table 4.1 : The frequency distributions of mobility items of husbands and wives.

Score	Walking (WACH / WACW)		Traveling (TRCH / TRCW)	
	Husband	Wife	Husband	Wife
0	985 (95.17)	942 (91.01)	977 (94.40)	256 (24.73)
1	41 (03.96)	91 (08.79)	38 (03.67)	741 (71.59)
2	4 (00.39)	0 (00.00)	6 (00.58)	25 (02.42)
3	3 (00.29)	0 (00.00)	8 (00.77)	8 (00.77)
4	2 (00.19)	1 (00.10)	6 (00.58)	5 (00.48)
5	0 (00.00)	1 (00.10)	0 (00.00)	0 (00.00)

(Percentages are given within the parenthesis)

If we consider the travelling conditions, it seems that about 94% of the husbands are in good health conditions in terms of cycling. About 4% of the husbands can not do cycling and have slight travelling disabilities. Further, the balance 2% of the husbands has higher order travelling disabilities. If we consider the travelling conditions of wives the interpretation is slightly different as about 25% of the wives can do cycling and are in higher mobility status. However, about 71% of the wives, who can not do cycling, are also in good traveling conditions. Only about 4% of the wives can not freely travel and have some difficulties in travelling.

The walking and travelling conditions of the parents have not shown any adverse effects. This may be because these characteristics are usually age related and not much affected in our sample of young couples. Further the war atmosphere would not have given direct effects on these mobility conditions, in fact those effect would have been very low. The two husbands and two wives responded (see the table above) as unable to walk was observed during the survey and this was due to stroke.

4.2 Individual Disability Dimensions

The general disability measure 'mobility' described above did not show any effects. However, JSEHS-1999 showed in the same sample that about 61% of the couples had unsatisfactory physical health status. We shall now concentrate on the specific physical disability measures. We first individually describe the five physical disability dimensions.

4.2.1 Behavior Disability

The behavior disability has been described with six characteristics: self-awareness (BED1), identification (BED2), personal safety (BED3), knowledge acquisition (BED4), family role (BED5), and occupation role (BED6). We produced the frequency distributions of these six variables. Tables 4.2 and 4.3 give the results for husbands and wives respectively.

Table 4.2 : Frequency distributions of behavior disability items of **husbands**.

Score	BEDH1	BEDH2	BEDH3	BEDH4	BEDH5	BEDH6
0	402 (38.84)	757 (73.14)	864 (83.48)	238 (23.00)	870 (84.06)	862 (83.29)
1	429 (41.45)	255 (24.64)	148 (14.30)	375 (36.23)	133 (12.85)	143 (13.82)
2	163 (15.75)	21 (02.03)	16 (01.55)	322 (31.11)	24 (02.32)	16 (01.55)
3	36 (03.48)	2 (00.19)	5 (00.48)	70 (06.76)	6 (00.58)	9 (00.87)
4	5 (00.48)	0 (00.00)	2 (00.19)	27 (02.61)	1(00.10)	4 (00.39)
5	0 (00.00)	0 (00.00)	0 (00.00)	3 (00.29)	1 (00.10)	1 (00.10)

(Percentages are given within the parenthesis)

Table 4.3 : Frequency distributions of behavior disability items of **wives**.

Score	BEDW1	BEDW2	BEDW3	BEDW4	BEDW5	BEDW6
0	207 (20.00)	683 (65.99)	459 (44.35)	152 (14.69)	702 (67.83)	249 (24.06)
1	571 (55.17)	312 (30.14)	548 (52.95)	403 (38.94)	310 (29.95)	724 (69.95)
2	211 (20.39)	36 (03.48)	23 (02.22)	337 (32.56)	22 (02.13)	57 (05.51)
3	46 (04.44)	4 (00.39)	2 (00.19)	121 (11.69)	0 (00.00)	4 (00.39)
4	0 (00.00)	0 (00.00)	2 (00.19)	20 (01.93)	1 (00.10)	1 (00.10)
5	0 (00.00)	0 (00.00)	1 (00.10)	2 (00.19)	0 (00.00)	0 (00.00)

(Percentages are given within the parenthesis)

The above tables reveal that only about 39% of the husbands **(H)** and 20% of the wives **(W)** have no disabilities in '**self-awareness'**. Further, about 41% and 55% of the H and W have slight disability and the rest about 20% and 25% of H and W have severe disability. That is, most of the people, slight and severe, have disturbance of the ability to develop or maintain a mental representation of the identity of the individual's self or body and its continuity over time. Further, disturbance of behavior resulting from interference with conscious-ness or sense of identity and confusion. About 73% of the husbands and 66% of the wives have no disabilities in '**identification'**. Further, about 25% and 30% of the H and W have slight disability and the rest about 2% and 4% of H and W have severe disability. This means that, a considerable number of persons have disturbances of the ability to correctly locate the external objects, understand the events, identify persons, and himself in relation to the dimensions of time and space.

About 83% of the H and 44% of the W have no disabilities in '**personal safety'**. Further about 14% and 53% of H and W have slight disability and the rest 3% and 3% of H and W have severe disability. Hence, it is clear that a considerable number of persons, slight and severe, have disturbance of the ability to avoid hazards to the integrity of the individual's body, such as being in hazard from self-injury or from inability to safeguard self from danger. About 23% of the H and 15% of the W have no disability in '**knowledge acquisition'**. But, about 36%, 39% slight and 41%, 46% severe disabilities are prevalent. This means, a general disturbance is prevalent on the ability to learn new things, to intellect himself/herself on new skills, and to retain new information.

About 84% of the H and 68% of the W have no disability in '**family role'**. But about 13%, 30% slight and 3%, 2% severe disabilities visible. That is, a small group of persons are unable to participate in household activities, to help the spouse on important family matters, to properly behave a parent of the children. About 83% of the H and 24% of the W have expressed no problems in their '**occupational role'**. The percentage for wives seems to be smaller because most of them are housewives and were unable to respond positively. As a result 14%, 70% of H and W expressed slight disability and the rest expressed severe disability. Hence we can conclude that, a smaller number of husbands and most of the wives have developed disturbance on the ability to organize and participate in the routine occupational activities. This was suitable for the housewives in the household activities and programs.

We applied factor analysis on all the above twelve variables to explore any structural features among the variables. We extracted four and five factors as suitable. However, the four-factor extraction was more sensible with reality. With the inspection of factor loadings, we were able to interpret the factors as shown in Table 4.4.

Table 4.4 : The factors extracted from the variables of Behavior Disabilities

Factor	Name of the Factor	Explained (%)
1	Disability in Self-awareness and knowledge acquisition	23.0%
2	Disability in Personal safety & family/occupational role of husband	18.3%
3	Disability in Identification	15.5%
4	Disability in Personal safety & family/occupational role of wife	13.8%

These extracted four factors together explain 70.6% of the total variation explained by the data. The FA results reveal that about 23% of the time the behavior disabilities of the persons are prevalent with their self-awareness and knowledge acquisition. The prevalent of behavior disability is about 16% of the times on their disability in identification. Further the disabilities of personal safety, family role and occupational role of the persons also influence the behavior disability. The prevalent of this disability is about 18% and 14% for husbands and wives respectively. Hence we can conclude that the disability in self-awareness and knowledge acquisition of the parents play an important role in the disability of their behavior.

4.2.2 Communication Disability

The communication disability has been described with six characteristics: understanding speech (COD1), talking (COD2), listening (COD3), visual tasks (COD4), writing (COD5), and symbolic communication (COD6). We produced the frequency distributions of these six variables. Tables 4.5 and 4.6 give the results for husbands and wives respectively. These tables reveal that, about 66% of

the husbands and 57% of the wives have no disability in '**understanding speech'**. However, about 32%, 39% of them with slight and 2%, 4% of them with severe disability prevalent. That is, these persons have loss or restriction of the ability to understand the meaning of verbal messages. About 97% of the husbands and 96% of the wives have no disability in '**talking'**. This means that only a few people have lost or restricted ability to produce audible verbal messages and to convey meaning through speech.

About 90% of the H and 91% of the W have expressed no disability in '**listening'**. But, about 8%, 7% of H and W have slight listening problems and about 2%, 2% of H and W have severe problems. This means that, this smaller group of people has reduced ability in hearing verbal messages. Some of them expressed that they lost hearing due to bombing and shelling in their neighborhood. About 40% of the H and 47% of the W have no disability in '**visual tasks'**. Further, about 24%, 26% of H and W have slight and the rest 36%, 27% of H and W have severe vision problems. This reveals that a considerable number of people have lost or reduced ability to execute tasks requiring adequate peripheral vision and activities such as reading, writing, recognition, and visual manipulation. None of the parents are blind, but it was observed that some members of the extended families have blindness or reduced vision due to war related incidents.

Table 4.5 : Frequency distributions of communication disability items of **husbands**.

Score	CODH1	CODH2	CODH3	CODH4	CODH5	CODH6
0	681 (65.80)	1007 (97.29)	930 (89.86)	410 (39.61)	437 (42.22)	287 (27.73)
1	327 (31.59)	22 (02.13)	83 (08.02)	250 (24.15)	394 (38.07)	448 (43.29)
2	24 (02.32)	4 (00.39)	17 (01.64)	362 (34.98)	134 (12.95)	249 (24.06)
3	1 (00.10)	2 (00.19)	4 (00.39)	9 (00.87)	47 (04.54)	35 (03.38)
4	0 (00.00)	0 (00.00)	0 (00.00)	4 (00.39)	18 (01.74)	13 (01.26)
5	2 (00.19)	0 (00.00)	1 (00.10)	0 (00.00)	5 (00.48)	3 (00.29)

(Percentages are given within the parenthesis)

Table 4.6 : Frequency distributions of communication disability items of **wives**.

Score	CODW1	CODW2	CODW3	CODW4	CODW5	CODW6
0	593 (57.29)	991 (95.75)	945 (91.30)	487 (47.05)	445 (43.00)	138 (13.33)
1	402 (38.84)	41 (03.96)	76 (07.34)	273 (26.38)	375 (36.23)	522 (50.43)
2	39 (03.77)	2 (00.19)	10 (00.97)	271 (26.18)	154 (14.88)	319 (30.82)
3	0 (00.00)	0 (00.00)	1 (00.10)	3 (00.29)	45 (04.35)	44 (04.25)
4	1 (00.10)	0 (00.00)	3 (00.29)	1 (00.10)	11 (01.06)	11 (01.06)
5	0 (00.00)	1 (00.10)	0 (00.00)	0 (00.00)	5 (00.48)	1 (00.10)

(Percentages are given within the parenthesis)

About 42% of the H and 43% of the W have no disability in '**writing'**. Further, about 38%, 36% have slight and the rest 20%, 21% have severe disability in writing. This severe disability includes completely disabled 5 husbands and 5 wives who can not even put their signatures in any documents. This completely depended on their literacy and occupation and we did not notice any disability happened due to war effects. About 28% of the H and 13% of the W have no disability in '**symbolic communication'**. Further about 43%, 50% slight and 29%, 44% of H and W have severe disability in communicating with symbols. That is, a higher number of persons are not aware of signs and symbols associated with conventional codes and unable to understand and read schematic representation of objects. This may not be a sole reason for literacy, but may be due to the destructed socio-cultural and socio-political environment due to the war.

We now produce the results of factor analysis applied on all the above twelve variables to explore any structural features among the variables. Here also we extracted four and five factors as suitable. However, the five-factor extraction was more sensible with reality. With the inspection of factor loadings, we interpret the factors as shown in Table 4.7.

Table 4.7 : The factors extracted from the variables of Communication Disabilities

Factor	Name of the Factor	Explained (%)
1	Disability in Writing and symbolic communication	21.9%
2	Disability in Visual tasks.	12.8%
3	Disability in Talking and listening of wives	12.6%
4	Disability in Understanding speech	12.1%
5	Disability in Talking and listening of husbands	11.7%

These extracted five factors together explain 71.1% of the total variation explained by the data. The FA results reveal that about 22% of the time the communication disabilities of the persons are prevalent with their disability on writing and symbolic communication. The prevalent of communication disability is about 13% of the times on their disability in visual tasks and about 12% of the times with their inability in understanding speech. Further the disabilities of talking and listening of the persons also influence the communication disability. The prevalent of this disability is about 13% and 12% for wives and husbands respectively. Hence we can conclude that the disability in writing and symbolic communication of the parents play an important role in the disability of their communication.

4.2.3 Personal Care Disability

The personal care disability has been described with six characteristics: excretory (PCD1), bathing (PCD2), personal hygiene (PCD3), clothing (PCD4), feeding (PCD5), and transfer (PCD6). We produced the frequency distributions of these six variables. Tables 4.8 and 4.9 give the results for husbands and wives respectively. These tables reveal that, about 79% of the H and 83% of the W have no difficulties in '**excretory'**. But, about 20%, 16% slight and 1%, 1% severe excretory difficulties reported. About 88% of the H and 92% of the W have no disability in '**bathing'**. However, about 9%, 6% and 3%, 2% of H and W said slight and severe disability in bathing. Hence, a smaller group of persons have bathing problems, that is, washing the body and drying self thereafter.

About 99% of the H and 99% of the W have no disability in performing their '**personal hygiene'**. Only 1% of them has slight disability which includes washing face and hair, care of hands and feet, post-excretion hygiene, dental hygiene and gender specific care. About 97% of the H and 99% of the W have said they have no disability in '**clothing'**. However, the rest 3% and 1% have slight disability in clothing themselves. About 99% of H and W have no difficulty in '**feeding'**. However, 1% of them have slight disability in feeding their drinks and foods which includes dispensing beverages, holding drinking and eating utensils, and making food ready etc. Further, about 64% of the H and 74% of the W have no disability in '**transfer'**. Also about 31%, 23% of H and W have slight disability and the rest 5%, 3% of H and W have severe disability in transfer their body, which includes lying, sitting, standing, and reaching bed, chair etc.

Table 4.8 : Frequency distributions of personal care disability items of **husbands**.

Score	PCDH1	PCDH2	PCDH3	PCDH4	PCDH5	PCDH6

0	819 (79.13)	917	1023	1009	1027	666 (64.35)
1	204 (19.71)	(88.60)	(98.84)	(97.49)	(99.23)	326 (31.50)
2	5 (00.48)	97 (09.37)	9 (00.87)	22 (02.13)	6 (00.58)	39 (03.77)
3	6 (00.58)	16 (01.55)	3 (00.29)	2 (00.19)	2 (00.19)	2 (00.19)
4	1 (00.10)	5 (00.48)	0 (00.00)	2 (00.19)	0 (00.00)	2 (00.19)
5	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)
		0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)	

(Percentages are given within the parenthesis)

Table 4.9 : Frequency distributions of personal care disability items of **wives**.

Score	PCDW1	PCDW2	PCDW3	PCDW4	PCDW5	PCDW6
0	860 (83.09)	951	1023	1027	1028	772 (74.59)
1	164 (15.85)	(91.88)	(98.84)	(99.23)	(99.32)	240 (23.19)
2	10 (00.97)	65 (06.28)	11 (01.06)	5 (00.48)	7 (00.68)	21 (02.03)
3	0 (00.00)	17 (01.64)	1 (00.10)	3 (00.29)	0 (00.00)	2 (00.19)
4	1 (00.10)	2 (00.19)	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)
5	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)
		0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)	

(Percentages are given within the parenthesis)

We shall now discuss the results of factor analysis applied on all the above twelve variables to explore any structural features among the variables. Here also we extracted four and five factors as suitable. However, the four-factor extraction was more sensible with reality. With the inspection of factor loadings, we were able to interpret the factors as shown in Table 4.10.

Table 4.10 : The factors extracted from the variables of Personal care Disabilities

Factor	Name of the Factor	Explained (%)
1	Disability in personal hygiene, clothing and feeding of husband	20.2%
2	Disability in personal hygiene, clothing and feeding of wife	18.4%
3	Disability in excretory, bathing and transfer of husband	17.6%
4	Disability in excretory, bathing and transfer of wife	17.1%

These extracted four factors together explain 73.3% of the total variation explained by the data. The FA results reveal that about 38% of the times the personal care disabilities of the persons are prevalent with their disability on personal hygiene, clothing, and feeding. Further, about 35% of the times the personal care disabilities of the persons are prevalent with their disability on excretory, bathing, and transfer.

4.2.4 Body Disposition and Situational Disabilities

The body disposition disability has been described with two characteristics: subsistence activity (BDD1) and household activity (BDD2). We produced the frequency distributions of these two variables. Table 4.11 gives the results for husbands and wives. This table reveals that about 80% of the H and 82% of the W have no disability in '**subsistence activity'**. Further about 18%, 17% slight and the rest 2%, 1% severe disability in subsistence activities reported which includes shopping in the immediate neighborhood, preparing and serving food, cleaning the utensils, etc. About 34% of the H and 59% of the W have no disability in '**household activity'**. Also about 59%, 38% of H and

W and the rest 7%, 3% of H and W have slight and severe disability in household activities which includes washing cloths, helping children, cleaning the house and compound etc.

Table 4.11 : Frequency distributions of body disposition disability items of **husbands** and **wives**

Score	Husband		Wife	
	BDDH1	BDDH2	BDDW1	BDDW2
0	830 (80.19)	349 (33.72)	849 (82.03)	606 (58.55)
1	184 (17.78)	616 (59.52)	175 (16.91)	394 (38.07)
2	16 (01.55)	61 (05.89)	10 (00.97)	31 (03.00)
3	2 (00.19)	5 (00.48)	0 (00.00)	3 (00.29)
4	3 (00.29)	4 (00.39)	0 (00.00)	0 (00.00)
5	0 (00.00)	0 (00.00)	1 (00.10)	1 (00.10)

(Percentages are given within the parenthesis)

Table 4.12 : Frequency distributions of situational disability items of **husbands** and **wives**

Score	Husband		Wife	
	SIDH1	SIDH2	SIDW1	SIDW2
0	532 (51.40)	652 (63.00)	628 (60.68)	663 (64.06)
1	230 (22.22)	317 (30.63)	258 (24.93)	295 (28.50)
2	238 (23.00)	56 (05.41)	136 (13.14)	69 (06.67)
3	30 (02.90)	9 (00.87)	13 (01.26)	6 (00.58)
4	5 (00.48)	1 (00.10)	0 (00.00)	2 (00.19)
5	0 (00.00)	0 (00.00)	0 (00.00)	0 (00.00)

(Percentages are given within the parenthesis)

The situational disability has been described with two characteristics: dependence (SID1) and environment (SID2). We produced the frequency distributions of these two variables. Table 4.12 gives the results for husbands and wives. This table reveals that about 51% of the H and 61% of the W have no disability in '**dependence'**. About 18%, 17% of H and W and the rest 31%, 22% of H and W have slight and severe disability in dependence which includes circumstantial dependence such as existence and activity upon life-sustaining equipment and medicine, special diet, special care, etc. About 63% of the H and 64% of the W have no disability in '**environment'**. Further, about 31%, 29% of H and W have slight disability and the rest 6%, 7% of H and W have severe environmental disabilities. This includes disabilities relating to climatic conditions, noise, tolerance of illumination, tolerance of work stresses, and other environmental factors.

Finally we discuss the results of the factor analysis applied on the combined dimensions of body disposition and situational with all the eight variables. Here we extracted three factors. With the inspection of factor loadings, we were able to interpret the factors as shown in Table 4.13.

Table 4.13 : The factors extracted from the variables of Body disposition and situational Disabilities

Factor	Name of the Factor	Explained (%)

1	Disability in household activity, dependence, & environment of	22.4%
2	wife	22.3%
3	Disability in household activity, dependence, & environment of husband	18.8%
	Disability in Subsistence activity	

These extracted three factors together explain 63.4% of the total variation explained by the data. The FA results reveal that about 45% of the times the disabilities of the persons are prevalent with their disability on household activity, dependence and environment. Further, about 19% of the times the disabilities of the persons are prevalent with their disability on subsistence activity.

4.3 Overall Physical Disabilities

In the above section we discussed about the physical disabilities by dimensions, where we did not consider the gender effects within the dimensions. However, we found that some of the extracted factors are gender specific. We shall now consider the entire gender-specific-physical disability space and try to find out the common causes associated with gender. That is, all the 22 variables for husbands were considered separately and similarly for wife. Again factor analysis was suitable. We first employed FA on the 22 physical disability variables of husbands and then for wives. The extracted factors and their factor loadings for husbands and wives are not produced to minimize the length of this paper.

The inspection of factor loadings, enable us to extract eight factors, which are given in Table 4.14 and 4.15. We examined 7, 8, 9, and 10 factors, but we found that 8-factor formation was sensible for both husbands and wives. All the eight factors for husbands together explain 72.5% of the total variation and similarly all the eight factors for wives explain 68.6% of the variation. These two tables reveal that the extracted eight disability factors have been formed by a more meaningful manner and it is also slightly different from the factor formations within the dimensions considered with their spouses. The gender difference in physical disabilities could be compared if we consider the formations of factors for husbands and wives. If we examine the factors as shown by both of these tables, it is clear that almost all the factors are identical except some minor differences regarding disabilities in understanding speech and subsistence activity. Further, the percentages of explanations of the factors are also slightly different.

Table 4.14 : The factors extracted from the physical disability variables for husbands.

Factor	Name of the Factor	Explained (%)
1	Disability in self-awareness, knowledge acquisition, understanding	14.4%
2	speech, writing, and symbolic communication	12.2%
3	Disability in excretory, bathing, transfer, and household	11.6%
4	activity	
	Disability in personal hygiene, clothing and feeding	10.4%
5	Disability in identification, personal safety, family role	06.7%
6	and occupational role	06.6%
7	Situational Disability	05.8%
8	Disability in talking and listening	04.9%
	Disability in subsistence activity	
	Disability in visual tasks	

Table 4.15 : The factors extracted from the physical disability variables for wives.

Factor	Name of the Factor	Explained (%)
1	Disability in self-awareness, knowledge acquisition, writing, and symbolic communication	13.0%
2	Disability in excretory, bathing, transfer, and household	11.8%
3	activity	10.3%
4	Disability in personal hygiene, clothing and feeding	
	Disability in identification, understanding speech,	07.8%
5	and subsistence activity	07.2%
6	Disability in personal safety, family role, and occupational role	06.8%
7	Situational Disability	06.7%
8	Disability in talking and listening	05.1%
	Disability in visual tasks	

5. Relationship among the dimensions of Disabilities

We shall now describe the relationships between all the physical disability dimensions included in the list of variables in Section 3. We employed canonical correlation analysis (CCA) for this purpose.

We shall first consider the relationships among the four physical disability dimensions: 'Behavior Disability' (BED), 'Communication Disability' (COD), 'Personal Care Disability' (PCD), and 'Body Disposition and Situational Disabilities' (BSD). As in the previous section here also we combined the last two dimensions. We consider all combinations of the relationships between husbands and wives on all the dimensions. Table 5.1 describes the first canonical correlations of all the possible combinations.

Table 5.1 : First canonical correlations among physical disability dimensions between husbands and wives.

First CC		BED		COD		PCD		BSD	
		Husb	Wife	Husb	Wife	Husb	Wife	Husb	Wife
BED	Husb	---							
	Wife	**0.75**	---						
COD	Husb	**0.80**	**0.52**	---					
	Wife	**0.58**	**0.73**	**0.67**	---				
PCD	Husb	**0.57**	0.45	0.44	0.36	---			
	Wife	0.24	0.43	0.26	0.36	0.41	---		
BSD	Husb	**0.53**	**0.52**	0.41	0.32	**0.61**	0.29	---	
	Wife	0.35	0.41	0.30	0.32	0.31	**0.60**	**0.57**	---

The above table reveals that the behavior disability of husband is highly and reasonably correlated with his all other physical disabilities and reasonably associated with his wife's behavior and communication disabilities. Similarly, wife's behavior disability is highly and reasonably correlated with her communication disability and her husband's communication, body disposition, and situational disabilities. In addition, the husbands and wives seem to have reasonable common

communication, body disposition, and situational disabilities. Further, it is also clear that individually their personal care and body disposition and situational disabilities are reasonably correlated.

We investigated further the above highlighted relationships with the help of standardized canonical coefficients. It is clear that the associations of physical disabilities between husbands and wives is mainly due to their common disabilities in identification, knowledge acquisition, symbolic communication, and subsistence activities. If we consider the associations of different disabilities of husbands it is clear that the disability in knowledge acquisition further enable the disability in symbolic communication. His disabilities in personal safety and personal hygiene are interrelated. His family role is related to his subsistence activities (minor household activities). Further, his body transfer and household activities are also related. Regarding the associations of wife's disabilities, we may conclude that knowledge acquisition disability causes the disabilities in symbolic communication. Transfer and household activities are also related.

6. Socio-Economic Influences on Physical Disability

In JSEHS-1999, we exhibited the prevalence of physical, mental, and social health statuses and their possible relationships with socio-economic status. We found the existence of four groups of couples with different self-assessed health conditions. In the preceding sections of this paper we analyzed in details about the physical disabilities and established some relationships between various dimensions and variables. Now we shall concentrate on the possible socio-economic influence on the physical health conditions.

With the outcome of our analyses of socio-economic status in JSEHS-1999, we selected some key socio-economic variables for this purpose. That is, we use six socio-economic variables: 'occupation of parents', 'per capita income', 'per capita expenditure', 'per capita energy consumption', and 'per capita protein consumption'. Altogether 1034 couples (cases) were included. Working with higher number of variables become statistically cumbersome. Hence, in order to reduce the dimensionality of our problem we applied CDA on all the variables by dimensions and gender separately and then by the whole lot of variables. But, it was not possible to find out the variables, which are least important and giving less influence in discrimination. Hence, we concluded that all disability variables are equally important.

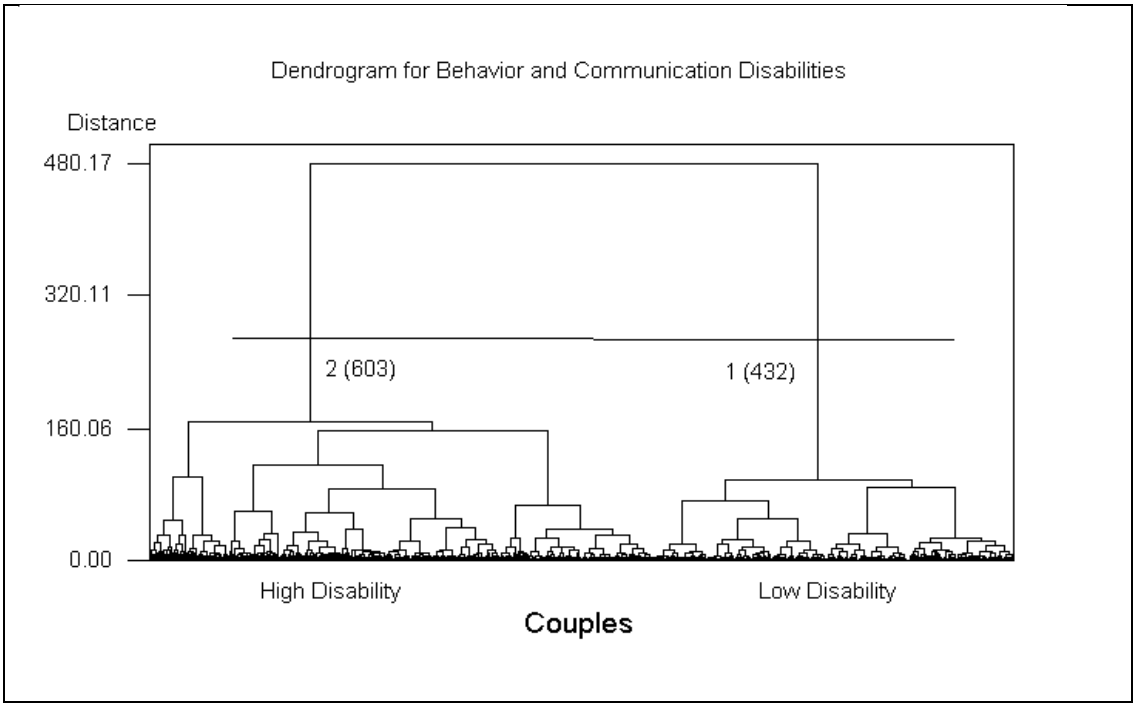
The purpose of this investigation was to find out the influence of any of our disability measures on these four groups. We applied CDA on all the variables by dimensions and gender separately and then by the whole lot of variables with the four socio-economic groups. We found that the present combinations of physical disability or mental disorder measures do not have any direct influence on the socio-economic groups. Hence we wanted to approach the problem in a different way. That is we wanted to find out distinct disability groups of couples on the basis of the disability measures in combinations and then interrelate with some selected socio-economic variables.

As mentioned above, we wanted to know the clusters of couples, which have distinct physical disabilities. By considering the number of variables and similarities of dimensions we combined behavior and communication disabilities together and personal care, body disposition, and situational disabilities together. We included the variables of husbands and wives together as our focus is on families. We applied our usual hierarchical cluster analysis with Ward's minimum variance method to find out the different clusters of couples, which possess distinct features of physical disabilities. We then applied CDA to characterize the features of the clusters of couples.

6.1 Influence on Behavior and Communication disabilities

We first consider the case of behavior and communication disabilities, which are closely interrelated. Figure 6.1 describes the dendrogram of the couples for the combined disabilities. This figure clearly reveals that there are two distinct groups of couples who possess different behavior and communication disabilities. To identify the features of the above two clusters, we employed CDA. In fact, the second variate is redundant as the first variate explains 100% of the variation. With the help of linear discriminant analysis, we confirmed that 89% of the observations were correctly classified.

Figure 6.1 : Dendrogram showing the clusters of couples
for behavior and communication disabilities.



We inspected the pooled within class standardized canonical coefficients of the CDA to identify the features of these clusters. We found that the cluster 2 of 58% of the couples is influenced by the higher degree of disabilities in self-awareness, knowledge acquisition, understanding speech, and symbolic communication of husbands and in identification, understanding speech, and listening of wives. The incidences of these characteristics are low in the cluster 1 of about 42% of the couples. Other disabilities do not seem to dominate in the discrimination of these two clusters. Hence we could name the clusters 1 and 2 as 'Couples of low disability in behavior and communication' and 'Couples of high disability in Behavior and Communication' respectively.

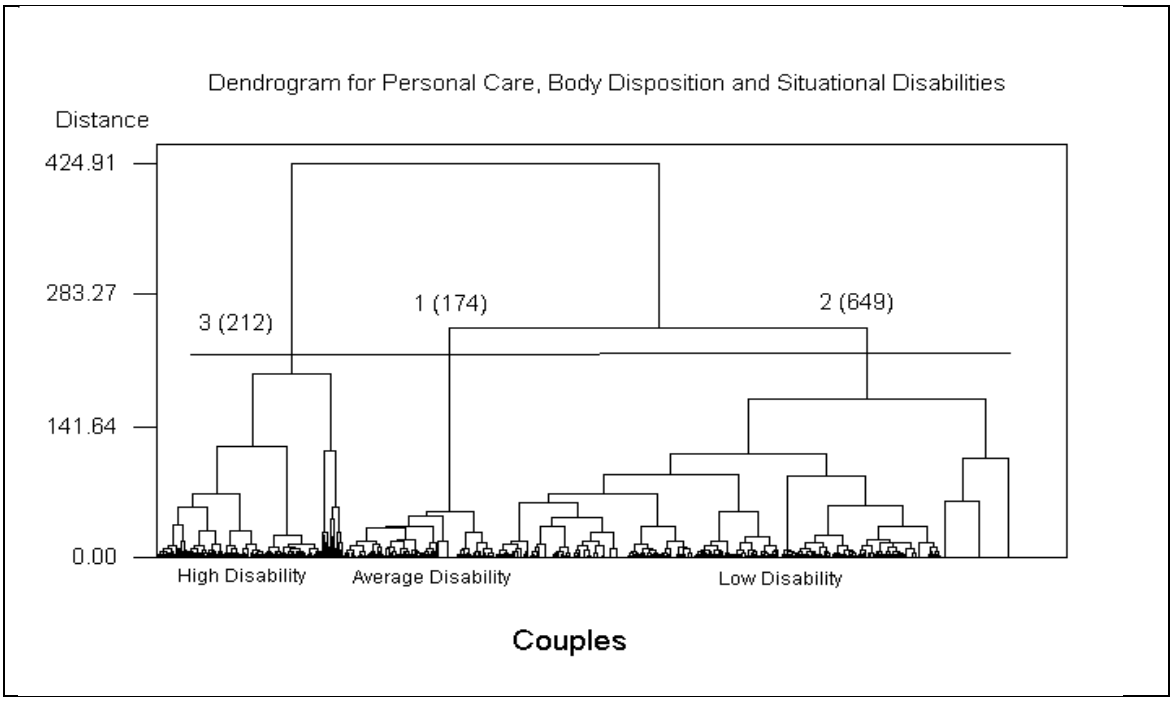
We employed CDA on the two clusters with the six socio-economic variables mentioned above as predictors. We found that the selected variables clearly discriminating the two groups. Here also the second canonical variate is redundant. To explore the influences of the six socio-economic variables on these clusters we inspected the standardized canonical coefficients. We found that higher occupational level of husbands is strongly associated with the cluster of the couples of low disabilities in behavior and communication. Higher occupational level of wives seems to have reasonable association with this cluster of couples. Further, higher per capita income and expenditure also seem to have average association with this cluster. Food consumption seems to have no effect on the disability in behavior and communication. Hence we can conclude that higher behavior and

communication disabilities are prevalent in the people of low occupation and low monetary status. This is true in about 58% of the couples.

6.2 Influence on Personal Care, Body Disposition and Situational disabilities

We now consider the case of personal care, body disposition, and situation disabilities, which all are interrelated. Figure 6.2 describes the dendrogram of the couples for the combined disabilities.

Figure 6.2 : Dendrogram showing the clusters of couples
for personal care, body disposition, and situational disabilities.



This figure reveals that the number of clusters must be between two and five. However, we fixed the number of clusters be three with the aid of linear discriminant analysis, which provided the maximum correct classification 95%. We applied CDA on these three clusters with the corresponding disability measures and confirmed about the existence of three clusters. The first two canonical variates together explain 100% of the variation.

We also inspected the pooled within class standardized canonical coefficients to identify the distinct features of these clusters. The coefficients show that the cluster 2 has no influence from any of the variables. Further, the cluster 3 has been discriminated by higher values of CV2 and low values of CV1 and hence majority of the variables influences the cluster. We also used cluster wise descriptive statistics to identify the features of the clusters as shown in Table 6.1. This table reveals that about 20% of the people have higher and about 17% of the people have average personal care and related disabilities. The rest 63% of the people have mild or no personal care and related disabilities.

Table 6.1 : Characteristics of the clusters of couples on personal care, body disposition, and situational disabilities.

Cluster (Size%)	Personal Care	Body Disposition	Situational	Overall
1 (16.8%)	Low	Average	Average	Average
2 (62.7%)	Average	Low	Low	Low
3 (20.5%)	High	High	High	High

The question now arises what are the socio-economic variables associated with these clusters. We employed CDA on these clusters with the six socio-economic variables as predictors. However the method yielded no proper results as the score plot did not show any discrimination of clusters. Therefore we employed nominal logistic regression with the six variables as predictors. We did not apply the ordinal logistic regression as the ranking of these three clusters is not completely supported by all the 20 variables included in this analysis. The application of nominal logistic regression has been executed by considering the cluster 3 as the reference group. The cluster 3 is chosen as reference group, because this is the vulnerable cluster, which has the most affected or disabled people and to be compared.

Table 6.2 : Nominal logistic regression table for personal care and related disabilities against socio-economic variables.

Predictor	Coef	StDev	Z	P	Odds Ratio
Logit 1: (Average Disability / High Disability)					
Constant	0.5587	0.3658	1.53	0.127	
OcLeH	0.018383	0.008337	2.21	0.027	1.02
OcLeW	0.03171	0.01271	2.49	0.013	1.03
PCExp	-0.0008301	0.0002400	-3.46	0.001	1.00
PCInc	0.0000447	0.0001133	0.39	0.693	1.00
PCEnC	-0.0000202	0.0002169	-0.09	0.926	1.00
PCPrC	0.013593	0.007902	1.72	0.085	1.01
Logit 2: (Low Disability / High Disability)					
Constant	-0.7847	0.4689	-1.67	0.094	
OcLeH	-0.00834	0.01141	-0.73	0.465	0.99
OcLeW	0.00983	0.01852	0.53	0.596	1.01
PCExp	-0.0008903	0.0003282	-2.71	0.007	1.00
PCInc	0.0000697	0.0001484	0.47	0.639	1.00
PCEnC	0.0001431	0.0002588	0.55	0.580	1.00
PCPrC	0.017421	0.009434	1.85	0.065	1.02
Test all slopes are zero: G = 42.905, DF = 12, P-Value = 0.000					
Goodness-of-Fit Tests : Chi-Square=2055.524, DF=2054, P=0.486					

The nominal variable 'Personal care and related disability' has been categorized as 'High', 'Average', and 'Low' as shown in the above table. Table 6.2 describes the results of nominal logistic regression. This table reveals that there is insufficient evidence to conclude that the changes in income and energy consumption have affected the low disabled people to become highly disabled. However, it is evident that the changes in occupational levels, expenditure, and protein consumption have affected the low disabled people to become high disabled. In fact, the declines in occupational levels and protein consumption had more impact on these changes.

If we consider the logit of average disability against high disability, there is insufficient evidence to conclude that the changes in occupational levels, income, and energy consumption have affected the people to become high disabled. However, it is clear that the changes in expenditure and protein consumption have affected the average disabled people to become high disabled. In general we can conclude that the higher disability in personal care, body disposition, and situational disabilities have been caused or stimulated by the decline of occupational levels, household expenditure, and protein consumption.

7. Findings and Conclusions

7.1 Nature of Physical Disabilities

If we consider the general disability in terms of mobility, it seems that about 95%, 91% of the husbands and wives can walk properly. About 94% of the husbands and 25% of the wives can do cycling, i.e., women do not cycle as much as men.

The behavior disability is described by self-awareness, identification, personal safety, knowledge acquisition, family role and occupation role. We found that about 61% of the husbands and 80% of the wives are disabled in 'self-awareness'. The percentages of husbands and wives who have disability in the other items are: identification 27 and 34, personal safety 17 and 56, knowledge acquisition 77 and 85, family role 16 and 32, and occupational role 17 and 76 respectively. We extracted four factors, which together explain 70.6% of the total variation of behavior disability. About 23% of the time the behavior disabilities of the persons are prevalent with their self-awareness and knowledge acquisition. The prevalence of behavior disability is about 16% of the times on their identification. Further the disabilities of personal safety, family role and occupational role of the persons also influence the behavior disability. The prevalent of this disability is about 18% and 14% for husbands and wives respectively.

The communication disability is described by understanding speech, talking, listening, visual tasks, writing, and symbolic communication. We found that, about 34% of the husbands and 43% of the wives does not understand speech. The percentages of husbands and wives who have disability in the other items are: talking 3% and 4%, listening 10% and 9%, visual tasks 60% and 53%, writing 58% and 57%, and symbolic communication 72% and 87% respectively. This may not be solely by literacy, but may be due to the destructed socio-cultural and political environment by the war. We extracted five factors where about 22% of the time the disabilities of the persons are prevalent with their disability on writing and symbolic communication. The prevalent of communication disability is about 13% of the times on visual tasks and about 12% of the times with their inability in understanding speech. Further the disabilities in talking and listening of the persons also influence about 13% and 12% of the times.

The personal care disability is described by excretory, bathing, personal hygiene, clothing, feeding, and transfer. We found that, about 21% of the husbands and 17% of the wives have difficulties in 'excretory'. Similarly the percentages of other disabilities for husbands and wives are about 12% and 8% for bathing, 1% and 1% for personal hygiene, 3% and 1% for clothing, 1% and 1% for feeding, and 36% and 26% for transfer respectively. We extracted four factors where about 38% of the times the personal care disabilities of the persons are prevalent with their disability on personal hygiene, clothing, and feeding. Further, about 35% of the times this is prevalent with their disability on excretory, bathing, and transfer.

The body disposition disability is described by subsistence activity and household activity. We found that about 20% of the husbands and 18% of the wives have disability in subsistence activity. About 66% and 41% of them have disability in household activity. The situational disability is described by dependence and environment. We found that about 49% of the husbands and 39% of the wives have disability in dependence. Similarly about 37% and 36% of them have disability in environment. We extracted three factors on the combined dimensions of body disposition and situational disabilities. The results reveal that about 45% of the times the disabilities of the persons are prevalent with their disability on household activity, dependence and environment. Further, about 19% of the times the disabilities of the persons are prevalent with their disability on subsistence activity.

To explore the more general, but gender specific nature, all the variables for husbands were considered separately and similarly for wife. We found eight-factor formation sensible for both husbands and wives. The extracted eight disability factors have been formed by a more meaningful manner and it is also slightly different from the factor formations within the dimensions considered with their spouses. The gender difference in physical disabilities could be compared if we consider the formations of factors for husbands and wives. If we examine the factors, it is clear that almost all the factors are identical except with some minor differences regarding disabilities in understanding speech and subsistence activity.

7.2 Socio-Economic Impacts

We found that the behavior disability of husband is highly correlated with his all other physical disabilities and reasonably associated with his wife's behavior and communication disabilities. Similarly, wife's behavior disability is highly correlated with her communication disability and her husband's communication, body disposition, and situational disabilities. In addition, the husbands and wives seem to have reasonable common communication, body disposition, and situational disabilities. It is also clear that their personal care, body disposition and situational disabilities are reasonably correlated.

It is also clear that the associations of physical disabilities between husbands and wives have been mainly due to their common disabilities in identification, knowledge acquisition, symbolic communication, and subsistence activities. If we consider the associations of different disabilities of husbands it is clear that the disability in knowledge acquisition further enable the disability in symbolic communication. This is also true for wives. Husband's disabilities in personal safety and personal hygiene are interrelated and family role is related to his subsistence activities. Further, his body transfer and household activities are also related. Regarding the associations of wife's disabilities, transfer and household activities are related.

We considered the socio-economic variables: 'occupation of parents', 'per capita income and expenditure', 'per capita energy and protein consumption' with the above disabilities. We found some homogeneous clusters of couples in relation to 'Behavioral and communication disabilities',

'Personal care and related disabilities', 'Psychological disorders', and 'Physiological and related disorders'. In the case of behavior and communication disabilities, we found two distinct groups of couples who possess different disabilities. We found that the cluster of 58% of the couples is influenced by the higher degree of disabilities in self-awareness, knowledge acquisition, understanding speech, and symbolic communication of husbands and in identification, understanding speech, and listening of wives. These characteristics are low in the other cluster. Other disabilities do not seem to dominate in the discrimination of these two clusters. We also found that higher occupational level of husbands is strongly associated with the cluster of the couples of low behavior and communication disabilities. Higher occupational level of wives, higher per capita income and expenditure also seems to have reasonable association.

If we consider the other physical disabilities, we found the existence of three clusters. We found that about 20% of the people have higher and about 17% of the people have average personal care and related disabilities. The rest of the people have mild or no personal care and related disabilities. We found that there is insufficient evidence to conclude that the changes in income and energy consumption have affected the low disabled people to become high disabled. However, it is evident that the changes in occupational levels, expenditure, and protein consumption have affected the low disabled people to become high disabled. In fact, the declines in occupational levels and protein consumption have made these changes. If we consider average disability against high disability, there is insufficient evidence to conclude that the changes in occupational levels, income, and energy consumption have affected the people to become high disabled. However, it is clear that the changes in expenditure and protein consumption have affected the average disabled people to become high disabled. In general we can conclude that the higher disability in personal care, body disposition, and situational disabilities have been caused or stimulated by the decline of occupational levels, household expenditure, and protein consumption.

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