

# Age and Sex Pattern of Children's Disability and Its Severity in Parila Union of Rajshahi, Bangladesh

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**Abstract**—This study examines age and sex patterns of children's disability in the Parila union of Rajshahi, Bangladesh. For this we assumed that (1) prevalence of disability patterns and its severity in the middle childhood are higher than in the infancy or latter childhood in the Parila union of Rajshahi, (2) prevalence of disability patterns and its severity among the boys compared to girls are higher in the study area of Bangladesh. In order to examine the assumptions 102 samples, including their mothers were selected based on snowball process and the respondents were individually interviewed with semi-structured questionnaire method. The results of the study suggest that disability patterns and its severity among the male children were two-fold higher than the female children. In addition, these patterns of children's disability and its severity in the middle childhood were also higher than in the infancy or latter childhood. Further study should conduct how socio-structural factors influence age and sex patterns of children's disability patterns and its severity in Bangladesh.

**Keywords**—Age, Bangladesh, Children's Disability Pattern, Sex, Severity.

## I. INTRODUCTION

**D**ISABILITY is the bio-medical and psychological problem around the world. Because an individual with his or her physical (body structures, e.g. anatomical parts, the chromosomal disorders) or psychological (language, learning and cognitive disorders) disability or both cannot act normally and play role effectively in social situations according to social and cultural expectations in any society [1-35]. These human disabilities begin at and gradually go through from mild to severe situations across the individual life cycle. In order to analyze and explain these disability patterns and its severity several approaches (viz. medical, social, market, spectrum, moral, expert/professional, tragedy/charity, legitimacy, social adaptation and economic model) have been suggested in interdisciplinary sciences. This study prefers bio-

psycho-social developmental model to do so. Based on the approach several researchers [1-4] define disability as the impairment of individual person's physical and mental ability with which he or she cannot function effectively in social situations across the life cycle. Likely, children's disability aged from 0 to 18 years refers to the physical, emotional, cognitive and social impairment in their human development with which they cannot act or play effective social roles in his or her present life [14-26]. Following this definition and interdisciplinary approach (viz. bio-psycho-social model) this study focuses on age and sex patterns of children's disability and its severity in rural Bangladesh.

Based on bio-psycho-social approach several studies in social and behavioral sciences, including human development indicate that age and sex patterns of children's disability: physical, mental/intellectual, visual, speech/hearing and multiple and its severities are socio-culturally constructed in every society and these patterns of children's disability, including its severities are increasing day by day because of biological mismatching for marriage and sexuality where most of the couples' (husband and wife's) genetic and chromosomal structures are not positively fitted for healthy birth outcome as well as increase in birth complexity. As a result many of children born in the marital or extra-marital sexual relation are bio-genetically defective. In addition several social and structural factors such as poverty, ignorance and illiteracy, complex social interaction are also responsible for children's healthy physical, emotional, cognitive, and social development. These bio-psycho-social factors not only affects proper human development but also help increase children's disability patterns and its severity across the world societies [1-36]. For example, McKay and Atkinson [25] in their study found that out of 14,000 children aged 3-16 2.5% were working problems, 2.7% for intellectual, 2.9% for physical health, 6.9% for speech and hearing, 8.5% for sensory, and 48% for severe long-term health problems which could differ between the sexes: males and females, rates of the disability were somewhat higher for boys (4.9%) than for girls (3.6%). For both genders, rates of disability rose steadily from birth until around age 6 or 7, at which point they tended to vary less with age, although they peaked at age 12 for boys and 15 for girls. They also explored that the low rates for very young children may simply reflect the length of time taken to get a diagnosis of the potential problem. Another study group investigated children's disability patterns and its severity in

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Australia [34]. For this study they selected 296,400 children aged 0-14 years. Of the children selected 7.6% were almost disabled and 3.7% had severe in disability. In disability patterns and its severity, they found, both intellectual/learning (3.7%) and physical (3.7%) were two fold higher than the other patterns, sensory /speech (3.1%), psychiatric (1.1%), ABI (0.3%), but intellectual/learning (2.1%) and sensory/speech (2%) in severity were almost twice as many as other disability patterns. In sex-wise analysis the study found that boys (192,800 or 9.6%) compared to girls (103,600 or 5.4%) were two-fold higher in disability patterns and its severity. Another study group [35] conducted in metropolitan Atlanta, U. S. found that children with age 3-10 irrespective of age, sex and race were from 5.2 to 16.6 per 1,000 for mental retardation in which 1/3 of the children were severe retardation (i.e. an intelligence of <50). The rate of moderate to severe hearing impairment was 1.1 per 1,000 in which black males were more severe hearing problems than were other sex and race, whereas rate of vision impairment was also slightly different between the groups studied. In a recent study Bizier et al. [36] examined disability patterns and its severity across the age and sex groups in Canada. Of the age and sex groups rate of children's (>15) disability was 3.7%. It was 1.7% for 0 to 4 age group and 4.6% for 5-14 ones. This study also explored that disability patterns and its severity were to some extent higher for boys than for girls. Likely, a study group in New Zealand [37] examined 716,500 respondents to determine disability patterns and its severity. Of the respondents 7256 were disabling: 22% for adults and 11% children. Among the children sex and age differences in disability were also note worthy: 13% for boys and 9% for girls.

Several researches in Bangladesh [36-46] indicate that disability patterns and its severity are also increasing day-by-day, like many other developed and underdeveloped regions of the world. Regarding this current statistics in Bangladesh reveal that among 12,000,000 disabled persons 6-8% were children [43]. In a study Khan et al. [38] reported that out of 310 samples aged 13+ (girls and women) 37.33% girls were physically disabled. In addition, speech, hearing and intellectual disabilities were next positions and about 10% were multiple disabilities. In severity, there were 36.13% for moderate and 9.35% for profound disabilities. In another study N. Anam [43] of the 120 street children aged 0-16 years prevalence of male children's disability pattern and its severity was higher than the female children's ones (39.17% boys and 12.5% girls for physical disability, 10% boys and 5% girls for speech and hearing, 10% both for visual, 7.5% boys and 2 girls for intellectual, and 2 boys and 4.17% girls for multiple). In the middle age group, 6-15 prevalence of disability and its severity was also higher than the other age groups of the selected samples. Based on literatures reviewed this study draws assumptions in the following way: (1) Prevalence of disability patterns and its severity in the middle childhood are higher than in the infancy or latter childhood in the *Parila* union of *Rajshahi* of Bangladesh, (2) prevalence of disability patterns and its severity among the boys compared

to girls are higher in the study area of Bangladesh. Based on the assumptions findings of the study may contribute to psychological and human developmental sciences.

## II. DATA AND METHOD

### a. Samples

Bangladesh is an agriculture-based country where most of the people are Muslims with socio-economically and/or socio-culturally backward. Paba Upazila of Rajshahi, Bangladesh as a selected area of this study is no exception. Based on the several specific assumptions derived from the relevant literatures review mentioned above this study investigated age and sex patterns of children's disability and its severity in rural Bangladesh. In so doing, *Parila* union, situated in *Paba Upazila* of *Rajshahi* district, Bangladesh was purposefully selected for this study, where near about 13,000 children aged 0-18 years (6820, 52% male and 6268, 48% female) were dwelt. Firstly, 530 (4.06%) children were identified as disabled through snowball process in which 102 children (61.76% male and 38.24% female) who were symptomatically disabled were selected for observation. In addition, every mother of the children aged 20-50 years, who were ethnically Muslims and socio-economically backward, was included in the study for interview, because many of the children with their severe disability and early age were not able to interact with us for the study purpose. All of the children, including their mothers were actively participated in the study.

### b. Variables and Measures

The main aim of the study was to examine and measure age and sex patterns of children's disability and its severity in the *Parila* union of Bangladesh. Although several studies quantitatively measured children's disability patterns and its severity, this study followed qualitative approach to do so. Based on the approach, especially symptom characteristics this study defined and measured children's disability patterns and its severity in the following ways: (1) *Physical disability* refers to impairment/ difficulty in the ability to manipulate and use of bodily structure to balance and move; (2) *Intellectual disability* refers to impairment/ difficulty to understand logical arguments compared to peers; (3) *Hearing and Speech disability* refers to impairment/ difficulty in the ability to listen and speak fruitfully and successfully compared to peers; (4) *Visual disability* refers to impairment or difficulty in the ability to see objects compared to peers; and (5) *Multiple disabilities* refer to impairment or difficulty in two or more abilities excluding speech as secondary to MR or hearing compared to peers [25-37]. These patterns of disability were coded accordingly [30-37]. Whereas severity of children's disability was measured and coded as (1) *Mild* (some kind of disability with which children did not require regular help or assistive aids for social functioning), (2) *Moderate* (children needed some assistive aids or equipments or help and (3) *Severe* (children needed comprehensive aids or help for daily social functioning).

### c. Instrument and Procedure

This study used descriptive survey design that focused on prevalence of cross-age and sex patterns of children's disability and its severity in the *Parila* union of Rajshahi, Bangladesh. This design was dependent measure of the variables, especially children's disability patterns (physical, intellectual, visual, hearing and speech and multiple) and its severity (mild, moderate and severe) used. For this semi-structural questionnaire with open-ended and close-ended questions on the dependent variables was designed, following from several qualitative or narrative studies [1-30]. As most of the respondents were children and their mothers with low socio-cultural statuses, interview technique with the questionnaire was applied for data collection. According to the questionnaire formulated authors were individually asked every respondent for relevant questions and accordingly they all responded. Sometimes the questions were proved to the specific respondents who could not understand.

Field work for this research was conducted from July to September, 2008. In order to collect real and valid data from the selected women, including disabled children with the questionnaire the authors built up rapport with the respondents to create consciousness about the research purposes and objectives, to make easy them for conversation and to encourage them to active participation in the research. It continued until the completion of data collection. First month of the data collection period was used to build up rapport with the respondents and the next 2 months were worked for data collection. Most of the respondents especially the mothers in the study area were religious-culturally conservative in which respective husbands were agreed to converse to us for the study purpose. The necessary data were collected at afternoon when the respondents were leisured, and each mother and her son or daughter was met within the family setting where they were intensively interviewed for one hour. After completion the interview especial thanks were given to each woman for further contact. In so doing the authors conversed in *Bengali* language with the respondents because they all did converse in Bengali language and then the responses of the selected respondents were converted in English by authors, because they were skillful in both languages: Bengali as a mother tongue and English as a second language.

### d. Reliability

The responses given by the selected respondents on the qualitative variables of children's disability patterns and its severity were reliable in the sense that the interview technique with the semi-structural questionnaire was applied in which both the open-ended and close-ended questions were included and the authors as an interviewer was skillful in that technique.<sup>1</sup> In so doing the authors built up rapport with the

respondents in which interpersonal trust between the interviewer (authors) and the respondents was developed. Based on the interpersonal relationship (subjectivity) the author intensively interviewed every mother and her child with the questionnaire schedule aimed to collect objective data within one hour in their personal and familial settings. In addition, the authors also considered cultural and status factors of both the parties (interviewer and respondents) when they interacted with the respondents for data collection [1-37]. However, although there were many quantitative methods to test reliability of the collected data, this research followed qualitative techniques: rapport building with the respondents, one hour structural interview for per woman and her disabled child, interview in personal and familial settings, and controlled interpersonal cultural factors to collect reliable responses presented in the result section.

### e. Data Analysis

Purpose of this study was to examine age and sex patterns of children's disability in the *Parila* union of Rajshahi, Bangladesh. For this study purpose we assumed that (1) prevalence of disability patterns and its severity among the boys compared to girls are higher in the *Parila* union of Rajshahi of Bangladesh, (2) disability patterns and its severity in the middle childhood are higher than in the infancy or latter childhood in the study area of Bangladesh, mentioned above. Based on the main research objective, including the assumptions the analysis of collected data with interview method and questionnaire was carried out by SPSS. In so doing descriptive techniques, especially frequency distributions and its percentages were applied to find out differences in the prevalence of age and sex patterns of children's disability and its severity in the study area selected, because as most of the variables and the assumptions used in this study were qualitative and descriptive in nature, these techniques for data analysis were more appropriate. The findings of the data analysis with frequency distribution and percentages on the age and sex patterns of children's disability and its severity were presented by cross-tabulation.

## III. RESULTS

### A. Age of Children's Disability Pattern and Severity

Table 1 and reveals data on children's disability patterns and its severity by age structure in the *Parila* union, Rajshahi, Bangladesh. Data given in the table 1 show that middle childhood (45.09%) with multiple disabilities (29.41%) was higher than the early childhood (20.58%) or late childhood (34.31%) with single disability symptoms, such as physical (22.55%), intellectual (17.65%), visual (9.80%) and hearing and speech (2058%) impairments. In addition, children's disability patterns were categorized into mild, moderate and severe. Data presented in the table 2 show that severe

<sup>1</sup> Because he was a data collector in the "Child Survival Project" of UNICEF at Rajshahi office at two phases, on 1 July – 30 August 1993, 1 January – 30 March 2005. In addition, he himself collected data for his Ph. D. research

entitled "Family Structure in a Village of Bangladesh: A Cross-Cultural Study. He also involved in periodical researches for doing field work.

disability patterns (66.66%) across the childhood were higher than the mild (only 5 cases) or moderate (28.43%) ones. It is interesting to note that severe disability patterns (63%) in the middle childhood was also higher than the mild or moderate ones in the early or late childhood.

TABLE I  
PROPORTION OF TYPES OF CHILDREN'S DISABILITY BY AGE,  
PARILA UNION, BANGLADESH 2008

Disability Patterns	Age of Children			Total
	Early	Middle	Late	
Physical	9	6	8	23
Intellectual	1	8	9	18
Visual	1	4	5	10
Hearing & Speech	4	11	6	21
Multiple	6	17	7	30
<b>Total</b>	<b>21</b>	<b>46</b>	<b>35</b>	<b>102</b>

TABLE II  
PROPORTION OF TYPES OF CHILDREN'S DISABILITY AND ITS  
SEVERITY BY AGE, PARILA UNION, BANGLADESH 2008

Age	Disability Patterns	Severity of Children's Disability			Total
		Mild	Moderate	Severe	
Early	Physical	-	3	6	9
	Intellectual	-	-	1	1
	Visual	-	1	-	1
	Hearing /Speech	1	-	3	4
	Multiple	-	-	6	6
<b>Total</b>		<b>1</b>	<b>4</b>	<b>16</b>	<b>21</b>
Middle	Physical	-	3	3	6
	Intellectual	1	5	2	8
	Visual	-	2	2	4
	Hearing /Speech	1	2	8	11
	Multiple	-	3	14	17
<b>Total</b>		<b>2</b>	<b>15</b>	<b>29</b>	<b>46</b>
Late	Physical	-	1	7	8
	Intellectual	1	4	4	9
	Visual	-	2	3	5
	Hearing /Speech	-	2	4	6
	Multiple	1	1	5	7
<b>Total</b>		<b>2</b>	<b>10</b>	<b>23</b>	<b>35</b>

#### B. Sex of Children's Disability Pattern and Severity

Table 3 and 4 distributes data on proportions of children's disability patterns and its severity by sex (male and female) in the union studied. Data clearly show that males (61.76%) compared to females (38.23%) across the disability patterns were more disable, including its severity. Based on disability patterns data reveal that males' multiple disability (15.69%) including physical (14.71%), intellectual (12.75%), hearing and speech (11.76%), and visual (7 cases) compared to the females' ones (13.73% for multiple, 8.82% for hearing and speech, 7.84% for physical and only 5 and 3 cases for intellectual and visual respectively) was higher in the union. It is noteworthy here that severity of males' disability patterns was also higher than its counter part, females in the study area. For example, table 4 shows that males' severity of disability patterns was 39.22% for severe, 20.59% for moderate and only 2 cases for mild, while females' severity of

disability patterns was 27.45% for severe, 7.84% for moderate and only 3 cases for mild. In addition, males' physical (9.8%) and multiple disabilities (12.75%) in severity were also higher than the females (5.88% for physical and 11.76% for multiple disabilities respectively).

TABLE III  
PROPORTION OF TYPES OF CHILDREN'S DISABILITY BY SEX,  
PARILA UNION, BANGLADESH 2008

Disability Patterns	Sex of Children		Total
	Male	Female	
Physical	15	8	<b>23</b>
Intellectual	13	5	<b>18</b>
Visual	7	3	<b>10</b>
Hearing & Speech	12	9	<b>21</b>
Multiple	16	14	<b>30</b>
<b>Total</b>	<b>63</b>	<b>39</b>	<b>102</b>

#### IV. DISCUSSION

Purpose of the study was to compare age and sex patterns of children disability and its severity in the *Parila* union, Rajshahi, Bangladesh. In so doing we assumed that males' disability patterns and its severity were higher than the females' ones in the study area. In order to examine and compare the assumption 102 children (63 for male and 39 for female) were identified through snowball process. Based on interview and non-participant observation methods we observed symptoms of disability patterns and its severity of the children identified and then based on the symptoms observed the children were categorized into the physical, intellectual, visual, hearing and speech and multiple disability patterns and its severity into the mild, moderate and severe. Based on symptomatic data collection and analysis the assumptions were proved in the study area.

##### A. Age of Children's Disability Pattern and Severity

Age distribution of children's disability patterns and its severities was one of the comparison areas of the study. Regarding this we assumed that prevalence of disability patterns and its severity in the middle childhood were higher than in the infancy or latter childhood in the *Parila* union of *Rajshahi* of Bangladesh. Our findings reveal that middle childhood (45.09%) with multiple disabilities (29.41%) was higher than the early childhood (20.58%) or late childhood (34.31%) with single disability symptoms, such as physical (22.55%), intellectual (17.65%), visual (9.80%) and hearing and speech (20.58%) impairments. In addition, severity of children's disability patterns was categorized into mild, moderate and severe on which data also showed that severe disability patterns (66.66%) across the childhood were higher than the mild (only 5 cases) or moderate (28.43%) ones. It is interesting to note that severe disability patterns (63%) in the middle childhood was also higher than the mild or moderate ones in the early or late childhood. These findings are supported by several studies conducted in abroad, including Bangladesh [25, 34-37]. For example, McKay and Atkinson [25] in their study found the same tendency in children's

disability patterns and its severity. That is out of 14,000 children aged 3-16 2.5% were working problems, 2.7% for intellectual, 2.9% for physical health, 6.9% for speech and hearing, 8.5% for sensory, and 48% for severe long-term health problems. The study also found that the low rates for very young children may simply reflect the length of time taken to get a diagnosis of the potential problem. Another study [34] in disability patterns and its severity found that both intellectual/learning (3.7%) and physical (3.7%) were two fold higher than the other patterns, sensory /speech (3.1%), psychiatric (1.1%), ABI (0.3%), but intellectual/learning (2.1%) and sensory/speech (2%) in severity were almost twice as many as other disability patterns. Another study [35] found that children with age 3-10 irrespective of age, sex and race were from 5.2 to 16.6 per 1,000 for mental retardation in which 1/3 of the children were severe retardation (i.e. an intelligence of <50). The rate of moderate to severe hearing impairment was 1.1 per 1,000 in which black males were more severe hearing problems than were other sex and race, whereas rate of vision impairment was also slightly different between the groups studied. Bizier et al. [36] also found that 1.7% for 0 to 4 age group and 4.6% for 5-14 ones.

disability patterns was also higher than its counter part, females in the study area. For example, males' severity of disability patterns was 39.22% for severe, 20.59% for moderate and only 2 cases for mild, while females' severity of disability patterns was 27.45% for severe, 7.84% for moderate and only 3 cases for mild. In addition, males' physical (9.8%) and multiple disabilities (12.75%) in severity were also higher than the females (5.88% for physical and 11.76% for multiple disabilities respectively). These explorations of the study are also supported by earlier studies reviewed [25, 34-37].

For example, McKay and Atkinson [25] in their study found that out of 14,000 children aged 3-16 2.5% rates of the disability patterns were somewhat higher among the boys (4.9%) than among the girls (3.6%). For both genders, rates of disability rose steadily from birth until around age 6 or 7, at which point they tended to vary less with age, although they peaked at age 12 for boys and 15 for girls. Australia study group [34] found that boys (192,800 or 9.6%) compared to girls (103,600 or 5.4%) were two-fold higher in disability patterns and its severity. Another metropolitan Atlanta, U. S. study group [35] found that children with age 3-10 irrespective of age, sex and race were from 5.2 to 16.6 per 1,000 for mental retardation in which 1/3 of the children were severe retardation (i.e. an intelligence of <50). The rate of moderate to severe hearing impairment was 1.1 per 1,000 in which black males were more severe hearing problems than were other sex and race, whereas rate of vision impairment was also slightly different between the groups studied. Regarding these Bizier et al. [36] also found that disability patterns and its severity were to some extent higher among the boys than the girls. Likely, a study group in New Zealand [37] found that of the 716,500 respondents 13% for boys and 9% for girls were disabled. In Bangladesh N. Anam [43] of the 120 street children aged 0-16 years prevalence of male children's disability pattern and its severity was higher than the female children's ones (39.17% boys and 12.5% girls for physical disability, 10% boys and 5% girls for speech and hearing, 10% both for visual, 7.5% boys and 2 girls for intellectual, and 2 boys and 4.17% girls for multiple).

TABLE IV  
PROPORTION OF TYPES OF CHILDREN'S DISABILITY AND ITS SEVERITY BY SEX, PARILA UNION, BANGLADESH 2008

	Disability Patterns	Severity of Children's Disability			Total
		Mild	Moderate	Severe	
Male	Physical	-	5	10	15
	Intellectual	2	7	4	13
	Visual	-	3	4	7
	Hearing /Speech	-	3	9	12
	Multiple	-	3	13	16
	<b>Total</b>		<b>2</b>	<b>21</b>	<b>40</b>
Female	Physical	-	2	6	8
	Intellectual	-	2	3	5
	Visual	-	2	1	3
	Hearing /Speech	2	1	6	9
	Multiple	1	1	12	14
<b>Total</b>		<b>3</b>	<b>8</b>	<b>28</b>	<b>39</b>

#### B. Sex of Children's Disability Pattern and Severity

Sex distribution of children's disability patterns and its severity was another aspect of the study in the study area of Bangladesh. For this our assumption was: Prevalence of disability patterns and its severity among the boys compared to girls are higher in the study area of Bangladesh. The findings of the study revealed that males (61.76%) compared to females (38.23%) across the disability patterns were more disabled, including its severity. That is males' multiple disability (15.69%) including physical (14.71%), intellectual (12.75%), hearing and speech (11.76%), and visual (7 cases) compared to the females' ones (13.73% for multiple, 8.82% for hearing and speech, 7.84% for physical and only 5 and 3 cases for intellectual and visual respectively) was higher in the study union. It is important to note that severity of males'

#### V. CONCLUSION

Children's disability is a social and behavioral problem in Bangladesh, as are many other societies around the world. Purpose of the study was to explore age and sex patterns of children's disability and its severity in Parila union of Bangladesh. For this we assumed that (1) Prevalence of disability patterns and its severity among the boys compared to girls are higher in the Parila union of Rajshahi of Bangladesh, (2) Disability patterns and its severity in the middle childhood are higher than in the infancy or latter childhood in the study area of Bangladesh. In order to examine the assumptions 102 disabled children, including their mothers for interview were selected from the study area. The results of the study were consistently supported the assumptions mentioned. These findings of the study were

replicated in several studies conducted in different societies. Further studies should conduct how bio-social-cultural factors influence differentials disability patterns and its severity among the children in Bangladesh.

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