# THE INVESTIGATION OF PREVALENCE RATE AND THE DIVERSITY OF LEARNING DISABILITIES AMONG MALE ELEMENTARY SCHOOL STUDENTS IN THE WEST OF MAZANDARAN PROVINCE

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**Abstract**
This study is entitled as the investigation of prevalence rate and the diversity of learning disabilities among male elementary school students in the west of Mazandaran. The purpose of this paper is surveying about the prevalence rate and the diversity of disabilities as well as helping officials for better planning. The research method is causative-comparative. The statistical population consists of all male elementary school students living in urban and rural areas in the west of Mazandaran in the 90-91 school years. The studying sample in the first stage concludes 600 students to determine the prevalence rate of learning disabilities. The materials for collecting data consist ofchecklist of learning disabilities according to diagnostic criteria of DSMIV and they are of acceptable validity and reliability. The study has 6 main questions. For exploring and analyzing the obtained data, frequency and the percentage of Z-ratio tests is applied as well as t-test and X2.
The findings of the present study show that the prevalence rate in rural area is 8.20% and in urban area it is equal to 7.30%. The prevalence rate of all elementary students is 7.69%, and the highestrate in elementary school is 11.11%, while the least one in the 3rdgrade is 6%.... the prevalence rate of reading disabilities of all students is about .61%, and the whole population has 1.44% of the prevalence rate of writing disabilities, 1.54% of the prevalence rate of math disabilities, and the combination of disabilities of all elementary school students is 4.11%.

**Keywords**: learning disabilities, reading disabilities, writing disabilities, math disabilities

## The statement of the problem

The children with learning disabilities are those who have disabilities in one or more basic psychological process such as understanding, using verbal or written language which may reveal as defect in listening, thinking, speaking, reading, writing, spelling, and doing math calculations (Afrooz, 2006).
According to global estimates, about 8% of children, mostly males have learning disabilities. Wallace and McLuffinn(1997) ,Fletcher (2007) show the rate of prevalence of this kind of disabilities in the whole population as 35% to 15%. In a study, Swanson(2003/2004) estimate that about 7% to 8% of children have learning disabilities.
According to noshpitz (1995), considering the different and acceptable definitions by academic and professional communities, 5% to 10% of such disabilities can be quite reasonable. The above mentioned statistics and numbers show that the population of students with learning disabilities is significantly increasing, with no doubt the real number of the students who have not yet been under the support of learning disabilities services is considerable. However, todays it is estimated that at least 3% of school-aged children somehow have learning disabilities.Unfortunately in most developing countries, including our Islamic homeland, Iran, it is not enough attention to the students' learning problems. Thus, it is necessary to survey this issue and to find the answer of the

basic question 'how is the diversity of learning disability among male students at elementary school and these disabilities are related with which variables?'

## The Questions and hypotheses of the Study

1. How much is the prevalence rate of learning disabilities among male students at elementary schoolin urban and rural areas?
2. The prevalence rate of learning disabilities among the male students at elementary school in urban and rural areas is different.
3. The prevalence rate of reading disabilities among the male students at elementary school in urban and rural areas is different.
4. The prevalence rate of math disabilities among the male students at elementary school in urban and rural areas is different.
5. The prevalence rate of combination disabilities (reading, writing, math) among the male students at elementary school in urban and rural areas is different.

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**Method**

The method of the study is causative-comparative or post-events. The statistical population consists of all male elementary school students in urban and rural areas in the west of Mazandaran in the 90-91 school years. For gaining the learning disabilities diversity and because of several classes of the statistic population, cluster sampling method is used, the 8 education area is divided to 3 areas of rich, middle, and deprived. And from each area two schools for boys (urban and rural) are selected. And from each school 5 classes (one class from each grade) are chosen, the number of the students in each class is 20, thus the whole population is 600 students.

Collecting data was due to individual data collection and was done in the related schools. In the first stage, the study was performed for 600 students by trained teachers and testers and the necessary data was collected through interview and surveying informal homework such as their homework notebooks, dictation, math, and checklist based on DSMIV.

For analyzing the data descriptive statistics was used to show the frequency, percentage, mean, and graphs and due to inferential statistics, Z-ratio tests and X2 were performed.

Data collection instruments consist of:

1. a questionnaire concluding the characteristics of sample group.
2. checklist of learning disabilities according to diagnostic criteria of DSMIV, differentiating 3 learning disabilities specified for reading, writing, and math.

The dyslexic checklist consists of 14 items, if each of them is ticked more than 5 times, the student may seem to have dyslexic problem.The dysorthography checklist consists of 15 items, if at least each of them is ticked more than 5, the student may seem to be dysortographic.The dyscalculia checklist consists of 19 items in which math problems are mentioned and like the two mentioned checklists is filled by the trained teacher and if at least 5 items of it are ticked, the student may seem to have the dyscalculia problem.Those students who are suspected to have learning disabilities may have only one of these disabilities, or two of them, or all of them, to evaluate more precisely other stages will be done.

**Findings**

The frequency distribution of sample persons and the percentage of learning disabilities rate of prevalence in different levels of urban and rural areas are shown in table 1.

Table 1- The frequency distribution of sample persons and the percentage of learning disabilities rate of prevalence in different levels of urban and rural areas

| Living area | explanation | 1st | 2nd | 3rd | 4th | 5th | Total |
|---|---|---|---|---|---|---|---|
| urban | total | 133 | 153 | 139 | 161 | 153 | 739 |
| | disorders | 14 | 11 | 8 | 8 | 13 | 54 |
| | Prevalence | 10.52 | 7.18 | 5.75 | 4.96 | 8.49 | 7.31 |
| rural | Total | 101 | 109 | 111 | 117 | 135 | 573 |
| | disorders | 12 | 9 | 7 | 10 | 9 | 47 |
| | Prevalence | 11.88 | 8.25 | 6.31 | 8.54 | 66.6 | 8.20 |
| total | total | 234 | 262 | 250 | 278 | 288 | 13.2 |
| | disorders | 26 | 20 | 15 | 18 | 22 | 101 |
| | Prevalence | 1.11 | 7.63 | 6 | 6.47 | 7.64 | 7.69 |

As the above table shows, learning disabilities rate of prevalence among the elementary students in different levels considering the variables of level and the place of education (urban or rural) is between 4.96% and 11.88%, the prevalence rate in rural areas is 8.20% and in urban areas is 7.13.%. Consequently, the probability of learning disabilities prevalence rate among rural students is more than urban students, the highest rate is 11.88 % among first grade rural students and the least rate is 4.96% among fourth grade urban students. However, the prevalence rate of all elementary students is 7.69%.

Table 2- The frequency distribution of those with reading disabilities and the prevalence rate due to the living area in different levels

| Living area | explanation | 1st level | 2ndlevel | 3rd level | 4th level | 5th level | Total |
|---|---|---|---|---|---|---|---|
| Urban | Total | 133 | 153 | 139 | 161 | 153 | 739 |
| | Disabilities | 0 | 2 | 0 | 0 | 0 | 2 |
| | Prevalence | 0 | 1.31 | 0 | 0 | 0 | .27 |
| Rural | Total | 101 | 109 | 111 | 117 | 135 | 573 |
| | Disabilities | 2 | 1 | 2 | 0 | 1 | 6 |
| | Prevalence | 1.98 | .92 | 1.80 | 0 | .74 | 1.05 |
| Total | Total | 234 | 262 | 250 | 278 | 288 | 1312 |
| | Disabilities | 2 | 3 | 2 | 0 | 1 | 8 |
| | Prevalence | .85 | 14.1 | .8 | 0 | .35 | .61 |

Table 2 shows that reading disabilities among 2nd grade urban students is 1.31% while in 1st grade rural area it is 1.98% means the highest prevalence rate. But in 1st, 3rd, 4th and 5th of urban area and 4th of rural area, no prevalence rate is observed. Totally, the 2nd grade students have 1.14% of the prevalence rate as the highest percent while in 4th grade no rate is seen. The prevalence rate of reading disabilities in urban areas is .27% and in rural area is 1.05%, and totally it is .61%.

Table 3- the frequency distribution of those with writing disabilities and the prevalence rate due to the area of living in different levels

| Living area | explanation | 1st level | 2nd level | 3rd level | 4th level | 5th level | Total |
|---|---|---|---|---|---|---|---|
| urban | Total DisabilitiesPrevalence | 133<br>8<br>6.01 | 153<br>2<br>1.31 | 139<br>1<br>.72 | 161<br>1<br>.62 | 153<br>0<br>0 | 739<br>12<br>1.62 |
| rural | Total Disabilities<br>Prevalence | 101<br>4<br>3.96 | 109<br>2<br>1.38 | 111<br>0<br>0 | 117<br>1<br>.85 | 135<br>0<br>0 | 573<br>7<br>1.22 |
| total | Total Disabilities<br>Prevalence | 234<br>12<br>5.13 | 262<br>4<br>1.53 | 250<br>1<br>.4 | 278<br>2<br>.72 | 288<br>0<br>0 | 1312<br>19<br>1.45 |

According to table 3, the highest prevalence rate of writing disabilities is 6.01% in the 1st grade urban students and 3.96% in the 1st grade rural students. There is no disability in 4th and 5th grade in both areas. Among the different levels, 1st grade students have the highest rate of prevalence of 5.13, while no disability is observed in 5th grade. As a whole, writing disabilities rate of prevalence in urban area is 1.62%, and in rural area is 1.22%, and in all population is 1.45%.

Tables 4- the frequency distribution of those have math disabilities and the rate of prevalence due to living area in different levels

| Living area | explanation | 1st level | 2nd level | 3rd level | 4th level | 5th level | Total |
|---|---|---|---|---|---|---|---|
| urban | Total<br>Disabilities<br>Prevalence | 133<br>0<br>0 | 153<br>2<br>1.31 | 139<br>1<br>.72 | 161<br>3<br>1.82 | 153<br>5<br>3.27 | 739<br>11<br>1.94 |
| rural | Total<br>Disabilities<br>Prevalence | 101<br>2<br>1.98 | 109<br>0<br>0 | 111<br>1<br>.90 | 117<br>3<br>2.56 | 135<br>3<br>2.22 | 573<br>9<br>1.57 |
| total | Total<br>Disabilities<br>Prevalence | 234<br>2<br>.85 | 262<br>2<br>.76 | 250<br>2<br>.8 | 278<br>6<br>2.16 | 288<br>8<br>2.78 | 1312<br>20<br>1.52 |

The data in table 4 shows that the highest learning disabilities rate of prevalence of 5thgrade in urban area is 3.27%, 4th grade in rural area is 2.56%, no disability in 2nd grade of rural area, in 2nd grade equal to .76%, the least rate of prevalence, in 5th grade equal to 2.78% as the highest rate, 1.94% math disabilities in urban area, 1.57% math disabilities in rural area. Totally, math disabilities rate of prevalence among elementary students is 1.52%.

Table 5- The frequency distribution of those with combination disabilities and the rate of prevalence due to the living area in different levels

| Living area | Explanation | 1st level | 2nd level | 3rd level | 4th level | 5th level | Total |
|---|---|---|---|---|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | 133 | 153 | 139 | 161 | 153 | 739 |
| urban | Disabilities | 6 | 5 | 6 | 4 | 8 | 29 |
| | Prevalence | 4.51 | 3.27 | 4.32 | 2.48 | 5.32 | 3.92 |
| | Total | 101 | 109 | 111 | 117 | 135 | 573 |
| rural | Disabilities | 4 | 6 | 4 | 6 | 5 | 25 |
| | Prevalence | 3.96 | 5.50 | 3.60 | 5.12 | 3.70 | 4.36 |
| | Total | 234 | 262 | 250 | 278 | 288 | 1312 |
| total | Disabilities | 10 | 11 | 10 | 10 | 13 | 54 |
| | Prevalence | 4.27 | 4.19 | 4 | 3.59 | 4.51 | 4.11 |

Table 5 show that the highest rate of prevalence of 5th grade in urban area is 5.23%, 2nd grade in rural area equal to 5.50%, the least rate in urban in 4th grade equal to 2.48%, 3rdgrade in rural area equal to 3.60%, the combination disabilities rate in urban area equal to 3.92%, in rural area 4.36%, and totally the rate is 4.11%.

Table 6- the frequency distribution of those with disabilities and the rate of prevalence of male students in different levels

| disability | explanation | 1st level | 2ndlevel | 3rd level | 4th level | 5th level | Total |
|---|---|---|---|---|---|---|---|
| reading | Total | 234 | 262 | 250 | 278 | 288 | 1312 |
| | disabilities | 2 | 3 | 2 | 0 | 1 | 8 |
| | prevalence | .85 | 1.15 | .8 | 0 | .35 | .61 |
| Writing | Total | 234 | 262 | 250 | 278 | 288 | 1312 |
| | disabilities | 12 | 4 | 1 | 2 | 0 | 19 |
| | Prevalence | 5.13 | 1.53 | .4 | .72 | 0 | 1.45 |
| Math | Total | 234 | 262 | 250 | 278 | 288 | 1312 |
| | disabilities | 2 | 2 | 2 | 6 | 8 | 20 |
| | prevalence | .85 | .77 | .8 | 2.16 | 2.78 | 1.52 |
| Combination | Total | 234 | 262 | 250 | 278 | 288 | 1312 |
| | disabilities | 10 | 11 | 10 | 10 | 13 | 54 |
| | prevalence | 4.27 | 4.20 | 4 | 3.60 | 4.51 | 4.12 |

As table 6 shows, the highest reading disability rate of prevalence in 2nd grade is 1.15%, the least rate of reading disabilities is in 4th grade with no disability, totally the rate among all equal to .61%.

The highest rate of writing disability is among 1st grade students equal to 5.13%, the least rate is among 5th grade students equal to 0, totally the rate among all statistical population is 1.45%.

The highest math disability rate of prevalence is in 5th grade equal to 2.78%, the least rate is among 2nd grades equal to .77%, totally the rate among all the population is equal to 1.52%.

The highest combination disability rate of prevalence (reading, writing, math) among 5th grades is equal to 4.51%, and the least rate equal to 3.60% among 4th grades, totally equal to 4.12% among all elementary school students.

As a result, the most kind of disability is combination one equal to 4.12% while the least one is reading disability equal to .61%.

**Hypothesis 1: learning disabilities rate of prevalence among urban and rural male students in elementary school is different.**

The results are shown in table 7 in which the data reveals a comparison between learning disabilities among rural and urban students in each of educational levels. As it can be observed the proportion of learning disabilities prevalence between rural and urban students due to Z-ratio statistical model is used for comparing two independent groups, the results show that learning disabilities rate of prevalence among rural and urban students in each of the educational grades is not significant alone, the only obtained difference at the level of .05 is related to the total rural and urban students. In other words, learning disabilities rate of prevalence among the total urban students is less than the rural ones, ($Z=.204$, $p<.05$).

Table 7- The comparison between learning disabilities of urban and rural students in different elementary levels

| level | group | urban | rural | $P_1$ | $P_2$ | Z | P |
|---|---|---|---|---|---|---|---|
| | disability | 14 | 12 | .105 | .118 | .900 | P>.05 |
| | Total | 133 | 101 | | | | |
| 1st | | | | | | | |
| | disability | 11 | 9 | .071 | .082 | .093 | P>.05 |
| | Total | 153 | 109 | | | .09 | |
| 2nd | | | | | | | |
| | disability | 8 | 7 | .057 | .063 | .049 | P>.050 |
| | Total | 139 | 111 | | | | |
| 3rd | | | | | | | |
| | disability | 8 | 10 | .049 | .085 | .305 | P>.05 |
| | Total | 161 | 117 | | | | |
| 4th | | | | | | | |
| 5th | disability | 13 | 9 | .085 | .066 | .167 | P>.05 |
| | Total | 153 | 135 | | | | |
| | | | | | | | |
| Total | disability | 54 | 47 | .073 | .082 | .204 | P<.05 |
| | Total | 739 | 573 | | | | |

**Hypothesis 2: reading disabilities rate of prevalence among urban and rural male students at different elementary levels is different.**

Table 8 shows the comparison between reading disabilities rate of prevalence of the male students in different elementary grades in urban area and rural area in each grade and totally. The proportion of reading disabilities rate of prevalence between urban and rural students is compared by the use of Z-ratio statistical model for two independent groups.

Table 8- The comparison of reading disabilities between urban and rural elementary school students in different levels

| level | Group | urban | rural | $P_1$ | $P_2$ | Z | P |
|---|---|---|---|---|---|---|---|
| 1st | disability | 0 | 2 | 0 | .019 | 0 | P>.05 |
| | Total | 133 | 101 | | | | |
| 2nd | disability | 2 | 1 | .013 | .009 | 0/031 | P>.05 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Total | 153 | 109 | | | | |
| 3rd | disability | 0 | 2 | 0 | .018 | 0 | P>.05 |
| | Total | 139 | 111 | | | | |
| 4th | disability | 0 | 0 | 0 | 0 | 0 | P>.005 |
| | Total | 161 | 117 | | | | |
| 5th | disability | 0 | 1 | 0 | .007 | 0 | P>.05 |
| | Total | 153 | 135 | | | | |
| total | disability | 2 | 6 | .002 | .010 | 0/145 | P>.05 |
| | Total | 739 | 573 | | | | |

The results show that the obtained Z in all grades and totally is not significant, it means learning disability rate of prevalence between urban and rural students in different levels is not different.

**Hypothesis 3: writing disability rate of prevalence is different among urban and rural male students in elementary level.**

Table 9- The comparison between writing disability of urban and rural elementary students in different levels

| level | Group | Urban | Rural | $P_1$ | $P_2$ | Z | $P_M$ | P |
|---|---|---|---|---|---|---|---|---|
| 1st | disability | 8 | 4 | .060 | .039 | .161 | .049 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 2nd | disability | 2 | 2 | .015 | .019 | .031 | .017 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 3rd | disability | 1 | 0 | .007 | 0 | 0 | .003 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 4th | disability | 1 | 1 | .007 | .009 | .016 | .008 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 5th | disability | 0 | 0 | 0 | 0 | 0 | 0 | P>.05 |
| | Total | 133 | 101 | | | | | |
| total | disability | 12 | 7 | .016 | .012 | .072 | .014 | P>.05 |
| | Total | 739 | 573 | | | | | |

Table 9 shows that writing disabilities rate of prevalence is compared between rural and urban students by the use of Z-ratio statistical model for two independent groups. The results reveal that the obtained Z is not significant, it means there is no difference between rural and urban students in different levels.

**Hypothesis 4: math disabilities rate of prevalence between male students in urban and rural areas are different.**

Table 10- the comparison of math disability rate of prevalence between elementary male students in urban and rural areas in different levels

| grade | \|group | Urban | Rural | $P_1$ | $P_2$ | Z | $P_M$ | P |
|---|---|---|---|---|---|---|---|---|
| 1st | disability | 0 | 2 | 0 | .019 | 0 | .009 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 2nd | disability | 2 | 0 | .015 | .015 | 0 | 0 | P>.05 |
| | Total | 133 | 101 | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3rd | disability | 1 | 1 | .007 | .009 | .133 | .008 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 4th | disability | 3 | 3 | .023 | .029 | .055 | .025 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 5th | disability | 5 | 3 | .037 | .029 | .061 | .033 | P>.05 |
| | Total | 133 | 101 | | | | | |
| Total | disability | 11 | 9 | .014 | .015 | .022 | .014 | P>.05 |
| | Total | 739 | 573 | | | | | |

As table 10 shows, math disability rate of prevalence is compared between rural and urban students through Z-ratio statistical model for two independent groups. The results reveal that the obtained Z is not significant, it means there is no difference between urban and rural students in different levels due to math disability.

**Hypothesis 5: combination disabilities rate of prevalence (reading, writing, math) is different between rural and urban male students at different elementary levels.**

Table 11- The comparison of rural and urban male elementary students in different levels

| Level | Group | Urban | Rural | $P_1$ | $P_2$ | Z | $P_M$ | P |
|---|---|---|---|---|---|---|---|---|
| 1st | disability | 6 | 4 | .045 | .039 | .047 | .042 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 2nd | disability | 5 | 6 | .037 | .059 | .147 | .048 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 3rd | disability | 6 | 4 | .045 | .039 | .047 | .42 | P>.05 |
| | Total | 133 | 101 | | | | | |
| 4th | disability | 4 | 6 | .030 | .059 | .223 | .044 | P<.05 |
| | Total | 133 | 101 | | | | | |
| 5th | disability | 8 | 5 | .060 | .049 | .087 | .054 | P>.05 |
| | Total | 133 | 101 | | | | | |
| Total | disability | 29 | 25 | .039 | .043 | .091 | .004 | P>.05 |
| | Total | 739 | 573 | | | | | |

According to table 11, the combination disabilities rate of prevalence of rural and urban students is compared through Z-ratio statistical model for two independent groups. The results show that except in 4th level, the obtained Z is not significant in other levels.

**Results**

1. In analyzing the first hypothesis 'learning disabilities rate of prevalence among urban and rural male students in elementary school is different', the obtained results show that from among 101 students, 54 means 7.31% in urban schools, and 47 means 8.20% in rural schools have disabilities. The data by the use of statistical ratio test was performed for comparing two independent groups which shows the obtained Z is significant at the level of .05, it means there is a difference between rural and urban elementary students in different levels due to learning disabilities rate of prevalence. The results are the same as those findings gained by Stanovich, et al. (1997), Noshpitz, et al. (1998),Narimani (2002), Swanson, et al. (2003), Komola, Tsironi, Stamouli, Bardani (2004), Gery(2004)Karami (2005), Sedaghati, et al. (2008), Nojabaee, et al. (2011). Probably it can be claimed that cultural poverty, lack of educational facilities, low educated parents, and … has increased learning disability rate of prevalence.
2. The results of analyzing the second hypothesis 'reading disabilities rate of prevalence among urban and rural male students at different elementary levels is different' show that reading disability rate of prevalence in urban area is .27% and in rural area is 1.05% and

totally it is .61%, it reveals that the obtained Z is not significant and there is no difference in reading disabilities rate of prevalence between urban and rural students.

3. The results of analyzing the 3rd hypothesis 'writing disability rate of prevalence is different among urban and rural male students in elementary level' reveal that writing disabilities rate of prevalence is equal to 1.62% in urban area and 1.22% in rural area, totally 4% obtained is not significant which means there is no difference between urban elementary students and rural ones due to writing disabilities.
4. The analyzing of fourth hypothesis 'math disabilities rate of prevalence between male students in urban and rural areas are different' shows that math disabilities rate of prevalence is 1.49% in urban area and 1.57% in rural ones, totally it is not significant. It means there is no difference between elementary students in urban and rural areas due to math disabilities.
5. The studies about fifth hypothesis 'combination disabilities rate of prevalence (reading, writing, math) is different between rural and urban male students at different elementary levels' reveals that the combination disabilities rate of prevalence is 3.92% in urban, 4.36% in rural areas, and totally 4.11% which means the combination disabilities in urban and rural areas is significant only in 4th elementary grade at the level of .05 and in other grades it is not significant.In other words, there is only a difference between 4th grade elementary students in urban and rural areas and no difference between others. Silver and Hagin(2002),Hartas(2006),Hamill and Nettie(2001) ,Tamblin, et al. (2000), Abolfathi (1996), Sedaghati, et al. (2008), Nojabaee,et,al (2011),Karimi(2005),Ramezani(2002) have the same idea about cultural poverty, lack of educational facilities, low educated parents and … have increased learning disabilities rate of prevalence in rural areas rather than urban ones.

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