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Estimated mental retardation and school dropout in a sample of students from state public schools in Porto Alegre, Brazil

Retardo mental estimado e evasão escolar em uma amostra de estudantes da rede estadual de Porto Alegre

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Abstract

Objectives: To assess the association between estimated Mental Retardation (MR) and school dropout in a sample of students of the third and fourth grades at state schools in Porto Alegre, the capital of the southernmost state of Brazil.

Method: In this case - control study, students that dropped out from schools (n=44) and a control group who continued attending schools (n=44) had their intelligence quotient (IQ) determined by the vocabulary and cubes subtests of the Wescheler Intelligence Scale – third edition (WISC–III). Students with IQ lower than 70 were considered as potential cases of MR. Other prevalent mental disorders in this age range were assessed in both groups using the Schedule for Affective Disorders and Schizophrenia for School– Age Children, Epidemiological Version (K-SADS-E).

Results: The prevalence of potential MR was significantly higher in the dropped out group than in the control group ($p<0.001$). *Odds ratio* for school dropout was significantly higher in the presence of MR even after controlling for potentially confounding factors (age, conduct disorder, grade repetition, family structure and income) ($p<0.01$).

Conclusion: Children with IQ lower than 70 (potential MR) were at higher risk for school dropout. These children need to be identified at school and specific educational strategies should be implemented to assure their inclusion in the learning process.

Keywords

School dropouts. Mental retardation. absenteeism. Students.

Resumo

Objetivos: Avaliar a associação entre retardo mental estimado (RM) e evasão escolar numa amostra de escolares de terceira e quarta séries da rede estadual de Porto Alegre.

Método: Neste estudo caso-controle, estudantes que evadiram da escola (n=44) e um grupo controle que se mantinha na escola (n=44) tiveram o seu quociente de inteligência (QI) determinado através dos sub-testes vocabulário e cubos da Escala de Inteligência de Wescheler – terceira edição (WISC–III). Estudantes com QI<70 foram considerados potenciais casos de RM. Outros transtornos mentais prevalentes nesta faixa etária foram avaliados nos dois grupos por meio da aplicação da Entrevista para Transtornos Afetivos e Esquizofrenia na Idade Escolar- Versão Epidemiológica, 4ª versão em português (K-SADS-E).

Resultados: O grupo de evadidos apresentou um número significativamente maior de indivíduos com provável RM do que o grupo controle ($p<0,001$). A razão de chances para evasão escolar manteve-se significativamente maior para os indivíduos com RM estimado, mesmo após ajuste para potenciais variáveis confundidoras (idade, transtorno de conduta, repetência escolar, renda e estrutura familiar) ($p<0,01$).

Conclusão: Crianças com menor capacidade de inteligência representam um grupo de risco para evasão escolar, necessitando estratégias, em nível escolar, que possibilitem o seu reconhecimento e adequada inclusão no processo de aprendizagem.

Descritores

Evasão escolar. Retardo mental. Absenteísmo. Escolares.

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Introduction

The level of school dropout reflects the educational situation of a country.[1] In Brazil, the estimations are that 95% of the children have access to school but only 59% of them finish the 8th grade.[2] In 1998, the children population out of classroom was calculated at 1,5 million.[3] In the state of Rio Grande do Sul, a first peak of school dropout (6%) has been detected in the third and fourth grades at state public schools of Porto Alegre.[4] It is noteworthy that this early peak of school dropout was found even in this state that has the best educational level in the country.[2]

School dropout is a complex phenomenon that has to be understood considering a country's socioeconomic and educational context. Therefore, in developing countries such as Brazil, frequently adolescents quit school to work and children in school age remain out of school to take care of younger brothers and sisters.[5] Additionally, several studies indicate that the inadequacy of Brazil's educational system to meet the capabilities and necessities of children of the poorer layers stimulates a significant number of these youngsters to drop out from school.[6-9]

Mental health problems can also be determinants of school dropout even among children. The international literature clearly documents an association between school dropout and conduct disorder.[10-17] However, an extensive review of the Brazilian literature about school dropout of the ten last years does not identify any study assessing the association between mental disorders and school dropout. Recently, Tramontina et al[18] demonstrate a significant association between the presence of conduct disorder diagnosed with the DSM-IV criteria[19] and school dropout in a sample of students of the third and fourth grades at state public schools of Porto Alegre.

Mental retardation (MR) is one of the most prevalent mental health disorders in developing countries. Although there are no studies determining the actual prevalence of MR in our population, it is certainly higher than the 2-3% found in studies in developed countries.[20] Despite the fact that clinical experience and common sense clearly indicate that the presence of MR is associated with difficulties in school such as high levels of repetition and dropout, no study has assessed yet these associations in our population. These investigations seem to be even more important in our country, as the recent educational policies have emphasized the strategy of inclusive education as a way to diminish distortions and chronic educational problems.[21]

Therefore, the main objective of this study was to verify the association between school dropout and mental retardation in a sample of students of the third and fourth grades at state public schools of Porto Alegre. The main hypothesis was that a significant association between school dropout and mental retardation would be found even after controlling for potentially confounding factors.

Method

Sample

Out of 246 state schools existent in Porto Alegre when this study was conceived, 64 were chosen through a random cluster sampling based on the schools' size.[22] Each selected school was contacted, and both the study's objectives and design were explained. Researchers maintained weekly contacts by phone with each selected school in order to detect any case of dropout of third- and fourth-grade students.

School dropout was operationally defined as the absence from school for 15 consecutive days without any justifying reason, such as physical disease or travel.[4] Other researches used similar cutoff points (10 days) in order to define school dropout.[15] For each dropped-out student, a class mate of the same gender who kept attending school was randomically selected to be included in the control group.

Diagnostic procedures

The presence of MR was estimated from the vocabulary and cubes sub-tests of the Wescheler Intelligence Scale – third edition (WISC – III)[23] applied by a trained psychologist at the students' house. According to the standardized definition, subjects with intelligence quotient (IQ) bellow 70 were considered as potential cases of MR.[23] The WISC-III was translated into Portuguese and is currently used in Brazil. Its transcultural validity as a cognitive measure has been previously assessed[24] and several studies have used the mentioned subtests as estimators of the total IQ.[22,25,26]

Other prevalent mental disorders in this age range (anxiety, depressive and disruptive conduct disorders) were assessed by the application of the Schedule for Affective Disorders and Schizophrenia for School–Age Children, Epidemiological Version, 4th Portuguese version (K-SADS-E),[27] which was translated into Portuguese (Mercadante et al, 1995 - non published material), and is being currently used in our Childhood and Adolescence Unit. The instrument was applied to one of the parents (usually the mother) by two trained Childhood and Adolescence psychiatrists (S.T. and S.M.) who had had their reliability among interviewers previously assessed (Kappa Coefficient from 0.72 to 0.96, $p<0.001$). In this study, only positive diagnoses at the time of the interview were considered (symptoms present in the month prior the interview).

The presence of psychopathology in the mother was assessed by the application of the *Self – Report Questionnaire, 20-item version* (SRQ-20), which is an instrument conceived to screen non-psychotic patients in health care centers.[28] This questionnaire is composed by 20 items (questions), allowing dichotomic answers (yes or no). Higher scores are associated to higher chances of psychopathology. In a previous study in Brazil, it was demonstrated that a score ≥8 is an adequate cutoff point to detect non-psychotic mental disorders.[29]

Sociodemographic and school data (repetitions, expulsions and suspensions) have been systematically collected with parents and schools. The project was approved by the State Secretary of Education and by the Research Ethics Committee of the Clinical Hospital of Porto Alegre. Parents gave their written post-information consent and the children gave their oral consent to participate in the research.

Data analysis

Comparisons between categorical variables were made with the chi-square test or the Fisher's exact test. As most of continuous data had not a normal distribution, a non-parametric test was used (Mann-Whitney's U Test). Multivariate analysis of logistic regression was performed to control potentially confounding variables (those with $p<0.20$ in the univariate analyses). Accepted significance level was of 5% and all tests were two-tailed.

Results

The sample was composed by 93 students, 49 in the group of school dropout and 44 in the control group. Five students from the dropped-out group (10.2%) could not be found. Demographic characteristics of students of both groups are in Table. The only significant difference between the groups was regarding age. The dropped-out group was significantly older than the control group (Mann-Whitney's U Test, U=456.5; $p<0.001$).

As expected, a significant association was found between school dropout and the number of repetitions. The dropped-out group had a significantly higher number of school repetitions than the control group (U=612.5; $p<0.01$). However, we did not find significant differences between both groups regarding the number of school expulsions and suspensions.

There was no significant difference between the groups regarding the screening measure for maternal psychopathology neither when SRQ-20 scores were continuously assessed (U=887.5; non-significant) nor when they were dichotomically assessed using the previously established cutoff point (score ≥8) ($\chi^2=0$; df=1; non-significant).

Mental retardation and other mental disorders

The prevalence of estimated Mental Retardation in both groups is shown in Figure. The dropped-out group had significantly more subjects with probable MR than the control group (37% *vs*. 5%; Fisher's exact test; $p<0.001$).

Concerning other assessed mental disorders, only conduct disorder was significantly associated to school dropout. The dropped-out group had a significantly higher number of subjects with conduct disorder than the control group (Fisher's exact test; $p<0.001$). There were no significant differences between the groups concerning for anxiety, depressive and other conduct disruptive disorders (attention deficit/hyperactivity disorder and opposition defying disorder). Further details of the analysis of the association of these mental disorders with school dropout are presented elsewhere.[18]

Multivariate analyses

For the multivariate analysis we have defined as potentially confounding variables all those associated with school dropout in univariate analyses with a $p<0.20$.[30] Thus, age, school repetition, conduct disorder, income and family structure were deemed potentially confounding variables. As most of these variables were intrinsically associated (e.g., age and school repetition), we did not make a concomitant adjustment for all variables in order to prevent the multicollinearity. We chose to create five independent models for school dropout, including in each model the estimated MR (independent variable) and one of the potentially confounding variables. In all five models the odds ratio for school dropout was significantly higher for subjects with IQ bellow 70 (estimated MR) ($p<0.01$; non-displayed data but available under request).

Discussion

In a sample of students of the third and fourth grades at state public schools of Porto Alegre we found a significant association between school dropout and mental retardation estimated by an IQ bellow 70. Reviewing the Brazilian literature of the last ten years we have found no study assessing the association of school dropout and mental disorders.

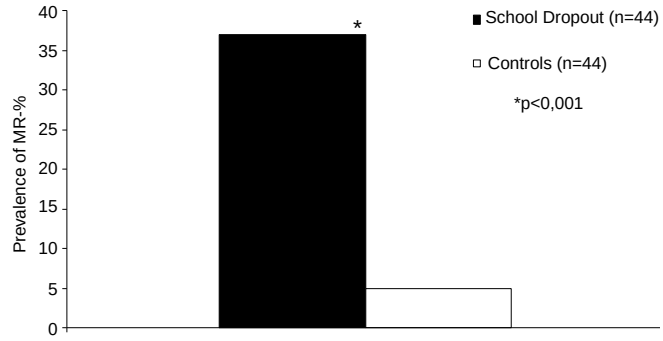

Figure - Prevalence of estimated mental retardation (MR) in the control and dropped out groups.

Table - Demographic characteristics of both groups.

Characteristics*	Dropped-out (N=44)		Controls (N=44)		P Value
Age (years)	13	(8-17)	10	(8-15)	0.001
Gender (male)	23	(52.3)	26	(59.1)	N.S.
Race (Caucasian)	31	(73.8)	31	(77.5)	N.S.
Grade (Fourth)	21	(47.7)	21	(47.7)	N.S.
Mother's educational level (Up to eighth grade)	34	(77.3)	29	(65.9)	N.S.
Father's educational level (Up to eighth grade)	23	(52.3)	24	(54.5)	N.S.
Family structure (Uniparental family)	21	(47.8)	13	(29.5)	N.S.
Monthly household income (per family member)					
≥3/4 of the minimum wage	21	(47.7)	29	(65.9)	N.S.
<3/4 of the minimum wage	23	(52.3)	15	(34.1)	

N.S. = non-significant;
**Median and variation (in brackets) are reported for continuous variables;*
N and percentage (in brackets) are reported for categorical variables.

Obviously, school dropout, especially in developing countries such as Brazil, is an extremely complex phenomenon. Mental health problems account only for a small part of the school dropout in our country. In this sense, several international researches have demonstrated that school dropout is associated with other factors, among them poverty, uniparental families, low school performance and repetition, dissatisfaction with the school, inappropriate school environment and/or educational practices, low level of parental education, high levels of parental psychopathology and pregnancy in adolescence.[17,31-38]

Therefore, any study assessing the association between mental health problems and school dropout must consider this association in the context of the factors mentioned above. Our findings suggest an independent association between MR and school dropout, as such association persisted even when social, family and individual confounding factors were controlled by the case-control research design and by multivariate analyses of logistic regression.

The comparison of our findings with those of international studies is not feasible as the few studies found were performed in developed countries where MR is an excluding criterion as most students with this condition attend special educational programs.

What would be the importance of confirming something that the common sense suggests? In other words, would not an association between MR and school dropout be expected? In this sense, some points must be highlighted. Firstly, all students with probable MR in both groups were attending regular public state schools and their teachers never suspected of their having MR. Although being aware that probable cases of MR might include false positives, our findings suggest that teachers are not always prepared to suspect of the disease in our schools. Such a diagnosis, the more difficult the milder the MR, is usually thought of especially when there are phenotypic alterations which are characteristic of syndromes such as the Down Syndrome that are normally associated to more important levels of MR. Therefore, a special attention is needed to not create a perverse mechanism in the school: children with unrecognized mild mental retardation are kept in regular schools which are not prepared to give them the appropriate pedagogical work, and, consequently, they repeat the grade year after year until dropping out of school.

Secondly, our findings warn against very fashionable strategies such as school inclusion, which proposes to maintain children with severe mental health problems (e.g., autism, that in most of the cases is associated with MR) in the regular school setting.[21] Without an appropriate pedagogical training of teachers, there is a risk of just maintaining the vicious cycle mentioned above.

Our findings must be understood in the context of several methodological limitations. Firstly, data were collected only at state schools of the city of Porto Alegre. In this way, the observed association may be not generalized to other school, sociodemographic or geographical groups. Secondly, the modern definitions of MR emphasize that, besides the intellectual functioning significantly bellow the average expected for the populational mean, it is needed the presence of impairment in at least two areas of adaptive functioning.[19,20] Furthermore, the Wescheler's intelligence scale, although currently used in our country, is not standardized for the Brazilian population, that is, it utilizes cutoff points established in populations of developed countries. Lastly, the IQ in our study was estimated from two subtests of the mentioned scale due to logistic reasons (impossibility of applying all the scale at the students' house). This strategy has been widely used in other studies,[22,25,26] as the IQ estimated from these two subtests is correlated to the total IQ. Thus, a IQ bellow 70 in our study must be seen, at most, as an indication of MR.

Studies in the local and international mental health literature assessing the problem of school dropout in children and young adolescents are clearly scarce. The results of the current study suggest a significant association between MR and school dropout. Thus, comprehensive mental health programs must be implemented in schools of developing countries such as Brazil, as to help teachers to recognize mental health problems, such as MR and to enable them to develop pedagogical strategies that better include these children in the school setting.[39] In the context of secondary prevention, the findings of our study and of another one in our country[18] indicate that the absence from school of a student for 15 consecutive days must alert teachers to the possibility of mental disorders such as MR and conduct disorder. It is important to highlight that in developing countries the school is frequently in a unique position to provide a 'safe network', protecting children from the dangers that affect not only their learning process but also their psychological development and well-being.[39]

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