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Reference values of the Strengths and Difficulties Questionnaire (SDQ) version for parents in the Spanish population, 2006

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Introduction: The Strengths and Difficulties Questionnaire (SDQ) is one of the most frequently used screening test for children and adolescents mental health (MH). In 2006, the Spanish National Health Survey included the child's MH section through the SDQ version for parents.

Objective: To obtain reference values of the SDQ-parents Spanish version for the 4-15 year-old population living in Spain during 2006-2007.

Methodology: From the Spanish National Health Survey-2006, measurements of central tendency, dispersion and percentiles scores were calculated for the "Total Difficulties Score" (TDS-SDQ) Index and for the five dimensions of the questionnaire.

Results: A sample made up of 6266 children, ages 4 to 15 years, having national representativeness was obtained. Regarding the TDS-SDQ Index, scores were higher (worse MH) in boys than in girls (9.66 vs 9.04) and were higher in the younger age group in the total sample (9.90, 9.49 and 8.73) and also in boys. Girls scored higher than boys on the emotional symptoms and prosocial dimensions, and the scores were higher in older age group for the total sample. Regarding behavior problems, the younger age group scored higher in the total sample (2.19, 1.87 and 1.76) and by sex. Boys scored higher than girls on hyperactivity (4.51 vs. 3.92) and scores were lower in older ages in total sample (4.71, 4.19 and 3.82) and by sex. Peer problems dimension has no statistically significant differences by sex or age.

Conclusions: The population values shown are informative and extend the knowledge and interpretation of the SDQ results.

Key words: Mental health, SDQ Questionnaire, Preschool, Child, Adolescent, Spain

Actas Esp Psiquiatr 2014;42(2):43-8

Valores de referencia de la versión para padres del Cuestionario de Capacidades y Dificultades (SDQ) en población española, 2006

Introducción: El *Strengths and Difficulties Questionnaire* (*SDQ*) -Cuestionario de Capacidades y Dificultades-, es uno de los test de cribado de salud mental (SM) infanto-juvenil empleado con más frecuencia. En 2006, la Encuesta Nacional de Salud de España (ENSE), introdujo el apartado de SM del menor a través de la versión para padres del *SDQ*.

Objetivo: Obtener los valores de referencia de la versión española del cuestionario *SDQ*-padres para la población de 4 a 15 años residente en España en los años 2006-2007.

Metodología: A partir de la ENSE-2006, se calculan las medidas de tendencia central, dispersión y percentiles de las puntuaciones del Índice *Total Difficulties Score* (*TDS-SDQ*) y de las cinco dimensiones del cuestionario.

Resultados: Muestra con representatividad nacional constituida por 6266 niños/as de 4 a 15 años. Para el Índice *TDS-SDQ*, los niños puntúan más elevado (peor SM) que las niñas (9,66 *vs* 9,04) y la puntuación disminuye al aumentar la edad en la muestra total (9,90, 9,49 y 8,73) y en los niños. En las dimensiones síntomas emocionales y conducta prosocial, las niñas puntúan más elevado que los niños y la puntuación aumenta con la edad. Para problemas de conducta, la puntuación es mayor en los más jóvenes en el conjunto de los entrevistados (2,19, 1,87 y 1,76) y desagregando por sexo. Para hiperactividad, los niños puntúan más que las niñas (4,51 *vs* 3,92) y la puntuación disminuye con la edad en

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el total de la muestra (4,71, 4,19 y 3,82) y por sexos. La dimensión problemas con compañeros no presenta diferencias estadísticamente significativas según sexo ni edad.

Conclusiones: Los valores poblacionales presentados resultan informativos y amplían los conocimientos y la interpretación de los resultados del *SDQ*.

Palabras clave: Salud mental, Cuestionario SDQ, Preescolar, Niño, Adolescente, España

INTRODUCTION

Child-adolescent Mental Health (MH) problems are frequent with approximately 10 to 20% of children and adolescents being affected.[1-4] More than half of mental disorders arise in childhood and there seems to be continuality between child mental disorders and those in adult life.[3] On the other hand, child-adolescent MH problems are associated to the more frequent use of health, educational and social services and involve a high disease burden for both the child and his/her surroundings.[3] All this means worse health-related quality of life.[5]

The *Strengths and Difficulties Questionnaire* (*SDQ*) is a short questionnaire designed in 1997 by Goodman for screening MH problems in 4 to 16 year old children.[6] It is effective for screening behavior, emotional and hyperactivity disorders.[7] Within a few years, this questionnaire has become one of the instruments used the most in clinical assessments and research since it makes it possible to measure behavior problems and competences from a very early age using a flexible, easy, well-accepted tool that has been translated into more than 40 languages. There is one version for parents and teachers (4-16 years) and another self-administered for adolescents (11-16 years). The questionnaire can be accessed free of charge from its web page.[8]

The recent validation of the Spanish version of the *SDQ* questionnaire for parents and teachers has shown the goodness of fit of the *SDQ* as a screening test of mental disease in the 7-10 year old Canary Island population.[9] Once validated, being able to have population reference values will facilitate the interpretation of the results of its application in both individuals and in groups. These values make it possible to identify deviations in the scores of an individual or group in relation with that expected for their age and gender and also may serve to establish therapeutic objectives. Equally, they may be useful to evaluate the impact of certain situations (e.g., conflictivity, crisis, stress, etc.) on child-adolescent MH and they are complementary to the knowledge of sensitivity and specificity of the cutoffs of this test.

In spite of all the above mentioned, no national scope studies have been carried out in our country on the prevalence of risk of mental disease or on the population reference values of the *SDQ* questionnaire.

The Spanish National Health Survey (SNHS) (La Encuesta Nacional de Salud de España) (ENSE) introduced the MH section for the first time in the Child's Questionnaire in the year 2006.[10] To do so, it included the *SDQ* questionnaire version for parents.

The proposed objective in this work is to obtain reference values for the Spanish version of the *SDQ* questionnaire (parents) for the 4 to 15 year old population of residents in Spain in the years 2006-2007.

SUBJECTS AND METHODS

A descriptive study based on the Child Questionnaire of the SNHS-2006, which studied MH in the last 6 months of children aged 4 to 15, through the *SDQ* questionnaire (version for parents) is presented.

The field of work for the SNHS-2006 was carried out by the National Institute of Statistics on request of the Ministry of Health, Social and Equality Services between June 2006 and June 2007 in the entire national territory. The sample was stratified and multi-staged, the census sections being the units of the first stage and the principal family homes the second stage. Within each home, when there were children (0-15 years), one was randomly selected to fill out the questionnaire. The sample is independent and representative for each regional community. However, it is not proportional, so that the results should be weighted to obtain state and regional indicators. The information was collected by personal interview and on rare occasions was complemented by telephone. The best informer on the Child's Questionnaire was the person who had the best knowledge about the aspects regarding state of health and health care of the child, this usually being the mother or father. The detailed methodology of the SNHS and the database can be accessed on the web page of the Ministry of Health, Social and Equality Services.[10] The national rate of response of the SNHS-2006 was 96% (65% of the home titleholders and 31% substitutions).

The *SDQ* questionnaire has acceptable validity and reliability.[11,12] It consists of 25 items grouped into 5 dimensions (emotional symptoms, conduct problems, hyperactivity, peer relationship problems and positive socialization problems, herein after prosocial) with 5 questions each one. Each item provides 3 possible answers, not true, somewhat true and certainly true, which are scored as 0, 1 and 2 points, respectively, except for items 7, 11, 14, 21 and 25 that are scores inversely. Thus, each dimension was scored from 0 to 10. The greater the score, the worse the MH, except for the prosocial dimension that was scored inversely. The sum of the first 4 dimensions (all, except the prosocial) generates the *Total Difficulties Score* of the *SDQ*

questionnaire (*TDS-SDQ*), which was scored from 0 to 40. The greater the score on the *TDS-SDQ*, the worse the MH.[6]

The scores on the *TDS-SDQ* Index and their five dimensions are described by distribution in percentiles, median, media and standard deviation.

Statistical analysis was performed with the SPSS v.15 (weighted sample) and Stata v.10 (complex sampling design) programs to elaborate the national indicators.

RESULTS

The information from a sample with national representativeness was made up of 6266 children aged 4 to 15 years living in Spain was analyzed after eliminating 7.89% of the initial questionnaire as they had some unknown value in the variables of interest (Table 1). A total of 51.41% were boys, 31.39% were aged 4 to 7 years, 34.10% aged 8 to 11 and the remaining 34.52% aged 12 to 15. The results are listed in table form for the *TDS-SDQ* Index (Table 2) and for the different dimensions for the total and broken down by sex and age (Table 3).

Age had a statistically significant association with the score on the *TDS-SDQ* Index and the emotional symptoms, conduct problems, hyperactivity and prosocial dimensions. Gender was significant with the Index and with the emotional symptoms, hyperactivity and prosocial (data not shown) dimensions.

The curve of the *TDS-SDQ* Index values did not follow a normal curve (p<0.001- Kolmogorov-Smirnov test), its being shifted to the left. A total of 2.7% of the children obtained the minimum value (0 points). Maximum value achieved was 35 points over the possible 40 and fewer than 1% of the children obtained scores greater than 24 points.

For the *TDS-SDQ* Index, the boys scored higher than the girls (9.66 *vs* 9.04) and the score decreased with age in the global score (9.90, 9.49 and 8.73) and in the boys. By dimensions, in the emotional symptoms dimension, the girls scored more than the boys (2.05 *vs* 1.85) and the score increased with the older ages in the global ones (1.84, 2.10 and 1.89). For conduct problems, the score decreased with age when considering the global interviews (2.19, 1.87 and 1.76) and broken down by sex. For hyperactivity, the boys scored higher than the girls (4.51 *vs* 3.92) and the score decreased with age (4.71, 4.19 and 3.82) and broken down by gender. The peer relationship problems dimension had the lowest values (1.24) the differences not being statistically significant for age or gender. For the prosocial dimension, girls scored higher than the boys, the differences not being statistically significant (8.82 *vs* 8.58) and this was greater in the older groups in the global scores (8.57, 8.81 and 8.71) and when broken down by genders.

Table 1 Description of the weighted sample, 4-15 years. Child Questionnaire

		(%)
Age (years)	4 to 7	31.39
	8 to 11	34.10
	12 to 15	34.52
Sex	Boy	51.41
	Girl	48.59
Regional Community	Andalusia	21.17
	Aragon	2.89
	Principality of Asturias	1.93
	Balearic Islands	2.32
	Canary Islands	5.62
	Cantabria	1.16
	Castilla y León	5.36
	Castilla-La Mancha	5.15
	Catalonia	10.71
	Valencian Community	11.49
	Extremadura	2.72
	Galicia	5.19
	Madrid Community	13.96
	Region of Murcia	3.99
	Autonomous Community of Navarre	1.46
	Basque Country	3.71
	La Rioja	0.71
	Ceuta and Melilla	0.47
Origin	Spain	91.30
	Foreigner	8.70
Social Class	I-II	23.78
	III	24.04
	IV to V	52.18
Education level of mother	Primary	31.79
	Secondary	47.10
	University	21.11
Single parenting	No	91.37
	Yes	8.63
Family size (members)	2 or 3	18.15
	4 or 5	72.98
	>5	8.87
Limitation (presence of)	No	91.56
	Yes	8.44

Table 1 Continuation

		(%)
Chronic disease (at least one)	No	68.67
	Yes	31.33
Discrimination perceived (last 12 months)	No	95.46
	Yes	4.54
Hospitalization (last 12 months)	No	96.11
	Yes	3.89

Source: National Health Survey, 2006. Prepared by authors.

DISCUSION

The reference population values of the *SDQ* Spanish version for parents questionnaire in a 4 to 15 year old population of subjects living in Spain in the years 2006-2007 was obtained.

The sample studied consisted of 6266 boys and girls aged 4 to 15, residents in Spain. If we keep in mind the rate of no response of the SNHS and the questionnaires that were rejected because the information was not complete, the subjects analyzed account for 88.5% of that initially foreseen, this resulting in high representativeness of the origin population. The SNHS design did not include the institutionalized population, however it is not feasible that this would have altered the results given that this was a very small proportion for these ages.

There was a statistically significant association of age with the *TDS-SDQ* index and emotional symptoms, conduct problems, hyperactivity and prosocial dimensions. Gender had a significant association with the Index score and emotional symptoms, hyperactivity and prosocial dimensions. Thus, in the strict sense, it the information only had to be broken down by age and gender in these sections. However, it was decided to do so for all the questionnaire scores because of operability questions.

Regarding gender, boys scored higher (worse score) than the girls for the *TDS-SDQ* Index for the hyperactivity, conduct problems and peer relationship problems dimensions while the girls scored higher than the boys for emotional symptoms (worse score) and for the prosocial dimension (better score). These results coincide with those obtained in three other almost contemporary populations: two Spanish ones with regional representativeness (Canary Islands and Catalonia)[9,13] and another German one with national representativeness.[14] Regarding age, the results of the use of the SNHS-2006 (4-15 years) are very similar to those of the Catalonia[13] and German[14] studies in spite of small differences in the age ranges investigated (Catalonia: 4-14 years, and Germany: 3-17 years). The score increases with age for the *TDS-SDQ* Index and in the emotional symptoms, peer and prosocial problems dimensions and decreases in the hyperactivity dimension.[13,14]

When interpreting these results, their limitations must be considered. These limitations are those fundamentally characteristic of health surveys: biases of memory and social desirability of the responder and the cross-sectional design. On the other hand, because of the lack of a psychiatric clinical diagnosis, it was not possible to determine the cutoffs from which it would have been possible to obtain greater likelihood of suffering MH problems. However, because of the characteristics of the distribution of the *TDS-SDQ* Index

Table 2 Population values of the scores on the SDQ questionnaire (parent version), 4-15 years, Spain 2006-2007. Weighted sample

		Total				Male				Female			
		4-7 years	8-11 years	12-15 years	Total	4-7 years	8-11 years	12-15 years	Total	4-7 years	8-11 years	12-15 years	Total
TDS-SDQ Index	mean	9.90	9.49	8.73	9.36	10.65	9.63	8.82	9.66	9.15	9.34	8.64	9.04
	SD	0.19	0.18	0.17	0.11	0.26	0.25	0.24	0.15	0.23	0.26	0.24	0.15
	P^{5}	2	1	1	1	2	2	1	2	1	1	1	1
	P^{10}	3	3	2	2	4	3	2	3	3	3	2	2
	P^{25}	6	5	4	5	7	5	4	5	5	5	4	5
	median	9	9	8	8	10	9	8	9	8	8	8	8
	P^{75}	13	13	12	13	14	13	12	13	13	13	12	13
	P^{90}	18	18	17	18	19	18	17	18	16	18	17	17
	P^{95}	20	21	20	21	22	21	20	21	19	22	20	20

The range goes from 0 to 40 points; SD: standard deviation. Source: Spanish National Health Survey, 2006. Prepared by authors.

Table 3 Population values of the scores on the SDQ questionnaire (parent version), 4-15 years, Spain 2006-2007, Weighted Sample

		Total				Male				Female			
		4-7 years	8-11 years	12-15 years	Total	4-7 years	8-11 years	12-15 years	Total	4-7 years	8-11 years	12-15 years	Total
Dimension 1: emotional symptoms	mean	1.84	2.10	1.89	1.94	1.86	2.00	1.69	1.85	1.81	2.19	2.12	2.05
	SD	0.06	0.06	0.05	0.03	0.08	0.08	0.07	0.04	0.08	0.08	0.08	0.05
	P^{5}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{10}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{25}	0	0	0	0	0	0	0	0	0	0	0	0
	median	1	2	1	1	1	2	1	1	1	2	2	2
	P^{75}	3	3	3	3	3	3	3	3	3	3	3	3
	P^{90}	4	5	5	5	4	5	4	4	4	5	5	5
	P^{95}	6	6	6	6	5	6	6	6	6	6	7	6
Dimension 2: conduct problems	mean	2.19	1.87	1.76	1.93	2.33	1.91	1.77	1.99	2.05	1.83	1.75	1.87
	SD	0.06	0.05	0.05	0.03	0.08	0.07	0.07	0.04	0.07	0.07	0.06	0.04
	P^{5}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{10}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{25}	1	0	0	1	1	1	0	1	1	0	0	0
	median	2	1	1	2	2	1	1	2	2	1	1	1
	P^{75}	3	3	3	3	3	3	3	3	3	3	3	3
	P^{90}	5	4	4	5	5	4	4	5	4	4	4	4
	P^{95}	6	5	5	6	6	5	6	6	5	5	5	5
Dimension 3: hyperactivity	mean	4.71	4.19	3.82	4.23	5.19	4.39	4.04	4.51	4.23	3.97	3.58	3.92
	SD	0.08	0.08	0.08	0.05	0.11	0.11	0.10	0.06	0.12	0.12	0.11	0.07
	P^{5}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{10}	1	0	0	0	2	1	0	1	1	0	0	0
	P^{25}	3	2	2	2	3	2	2	2	2	2	1	2
	median	5	4	4	4	5	5	4	4	4	4	3	4
	P^{75}	7	6	6	6	7	6	6	6	6	6	5	6
	P^{90}	8	8	8	8	9	8	8	8	8	8	8	8
	P^{95}	9	9	9	9	10	9	9	9	9	9	8	9
Dimension 4: peer relationship problems	mean	1.14	1.32	1.24	1.24	1.25	1.31	1.30	1.29	1.04	1.33	1.18	1.19
	SD	0.04	0.05	0.04	0.02	0.06	0.06	0.07	0.04	0.05	0.06	0.06	0.03
	P^{5}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{10}	0	0	0	0	0	0	0	0	0	0	0	0
	P^{25}	0	0	0	0	0	0	0	0	0	0	0	0
	median	1	1	1	1	1	1	1	1	1	1	1	1
	P^{75}	2	2	2	2	2	2	2	2	2	2	2	2
	P^{90}	3	4	4	3	3	4	4	4	3	4	4	3
	P^{95}	4	4	5	4	4	5	4	4	4	4	5	4
Dimension 5: prosocial behavior*	mean	8.57	8.81	8.71	8.70	8.46	8.59	8.69	8.58	8.69	9.04	8.73	8.82
	SD	0.06	0.04	0.04	0.03	0.08	0.07	0.06	0.04	0.07	0.05	0.06	0.04
	P^{5}	5	5	5	5	5	5	5	5	5	6	5	5
	P^{10}	6	6	6	6	5	6	6	6	6	7	6	6

Table 3 Continuation

		Total				Male				Female			
		4-7 years	8-11 years	12-15 years	Total	4-7 years	8-11 years	12-15 years	Total	4-7 years	8-11 years	12-15 years	Total
Dimension 5: prosocial behavior*	P^{25}	8	8	8	8	7	8	8	8	8	9	8	8
	median	9	10	9	9	9	9	9	9	9	10	9	10
	P^{75}	10	10	10	10	10	10	10	10	10	10	10	10
	P^{90}	10	10	10	10	10	10	10	10	10	10	10	10
	P^{95}	10	10	10	10	10	10	10	10	10	10	10	10

*The prosocial conduct dimension is scored inversely. The range goes from 0 to 10 points; SD: Standard Deviation. Source: Spanish National Health Survey. 2006. Prepared by authors.

variable, without ceiling/floor effects and with a wide range, it may be possible to discriminate different situations between individuals and/or populations and even potentially their evolution. The availability of reference values in the general population as well as by age groups and gender will make it possible to compare the MH of subgroups of specific populations (according to social-economic level, origin, ethnic group etc.) and will facilitate the interpretation of the results and evolution in future studies. This will permit detection of inequalities and needs in child-adolescent MH and make it possible to evaluate health care interventions. Considering the recent validation of the Spanish version of the questionnaire for parents in the Spanish population[9] and awaiting knowledge about the cutoff in said population, it is considered that in spite of the limitations stated, the population values presented are informative from a descriptive point of view and increase the knowledge regarding the population use of this questionnaire.

CONFLICT OF INTERESTS

The authors declare they have no conflict of interests.

ACKNOWLEDGEMENTS

To Mónica Suarez (Ministry of Health, Social and Equality Services) for her help in developing the database and to the Ministry of Health Social and Equality Services for the availability of the microdata.

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